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# EXPERIMENTAL THERMAL CONDUCTIVITY VALUES FOR MIXTURES OF METHANE AND ETHANE

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## Experimental Thermal Conductivity Values for Mixtures of Methane and Ethane

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The experimental measurements of thermal conductivity as obtained in a transient hot wire apparatus for mixtures of methane and ethane are recorded. The measurements were made at temperatures between 140 and 330 K with pressures between 0.1 and 70 MPa. The density range is 0 to 24 mol/L, the mole fractions of methane are 0.69, 0.50, and 0.35, and the total number of points recorded is 2476.

Key words: ethane; Rot wire, measurements, methane, mixtures, thermal conductivity; transient.

### 1. Introduction

New experimental measurements of the thermal conductivity of fluids are always of interest, especially if the measurement is an absolute one, and if the results are as accurate as those that can be obtained from a transient hot wire apparatus. Perhaps the single drawback of a transient hot wire system is the rapid accumulation of large quantities of data. This report is the archival record of results on mixtures of methane and ethane. There is a minimum of text since analysis, explanation and discussion of the results will be given in future papers [1,2]<sup>1</sup>.

The measurements were made with a transient hot wire thermal conductivity apparatus' [3] which has been tested with nitrogen [3], helium [3] and argon [4,5]. The system has been used previously to measure the thermal conductivity surfaces of oxygen [6], hydrogen [7,8,9,10], methane [10,11], ethane [10,12] and propane [10,13]. The temperature range of the instrument is 77 to 330 K and the pressure range is from near zero to 70 MPa.

The scheme used to measure the thermal conductivity surface of a given fluid is to conduct the measurements along isotherms. The spacing in temperature is chosen to be around 20 K resulting in a change of several percent in thermal conductivity between different isotherms. On each isotherm measurements are made at a number of different pressures. The spacing in pressure is arranged to give a spacing in density of about 0.5 mol/L. Finally, replicate measurements at the same cell temperature and pressure are made with three or four different power levels. The replicate measurements serve to verify the absence of convection, and, because the experimental temperatures vary with the applied power level, the measurements are actually independent of each other.

The sections for the individual mixtures give the tables of data, the correlating equations in the form of computer programs which were used to adjust the thermal conductivity values to the nominal temperatures, and the equation of state used to infer densities from the measured pressures and temperatures. Recorded in the tables of data are the run and the point numbers, the pressure, temperature and density of the mixture, the applied power, the experimental thermal conductivity and its associated linear regression statistic STAT. STAT is the uncertainty of the slope,

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<sup>1</sup>Numbers in brackets indicate the literature references at the end of the paper.

$d(\Delta T)/d(\Delta \ln t)$  at the two sigma level, determined in the the data reduction program [3]. STAT is a direct measure of the precision of the thermal conductivity, i.e., a STAT of 0.001 corresponds to a precision of 0.1 percent in thermal conductivity. In the analysis of the thermal conductivity surface it is desirable to have the thermal conductivities at integral values of temperature. Therefore, each point has been adjusted at constant density to a nominal temperature by a slight shift in temperature using the correlating equations for the surface in question. Printed in the data tables are the so adjusted thermal conductivities at the nominal isotherm temperature as well as the deviation between the adjusted values and the correlating surface.

## 2. Results for a 70/30 Mixture of Methane-Ethane.

A total of 899 points are given in table 1. The actual mole fraction of methane in the mixture is 0.68526 with the balance ethane. The computer programs developed for the thermal conductivity surface of this mixture are shown below. The equation of state used for this mixture is given in [14].

```

C      FUNCTION TC7030(RHO,T)
C      COEF. FROM TC021, FIRST PASS, 27 PAR 85
      DIMENSION A(3),B(5)
      DATA A/ .1876327E-02, .3060668E-04, .1941864E-06/
      DATA B/ .2091574E-02, .6109347E-06, .5868615E-05,
1   .3105442E-08, .5910959E-08/
      TCZERO=A(1)+A(2)*T+A(3)*T**2
      EXCESS=(B(1)+B(2)*T)*RHO+(B(3)+B(4)*T)*RHO**3+B(5)*RHO**5
      TC7030=TCZERO+EXCESS+CR7030(RHO,T)
      RETURN
      END

C      FUNCTION CR7030(RHO, TEMP)
C      COEF. FROM TC021 AND MINIMS, FIRST PASS, 27 MAR 85
      DIMENSION C(6)
      DATA (TC=239.779),(RHOC=8.75)
      DATA C/ .2766677E+00,-.2240000E+03, .1827450E-01,-.5571235E-04,
1   -.2212507E+00, .2119179E+00/
      T=TEMP
      IF(T.LT.TC) T=TC
      DEN=RHO
      IF(T.LT.363.590) GO TO 4
      5 CR7030=0.
      RETURN
      4 CONTINUE
      AMPL=C(1)/(T+C(2))+C(3)+C(4)*T
      DELRHO=DEN-RHOC
      X1=C(5)*DELRHO
      IF(DEN.GT.RHOC) X1=C(6)*DELRHO
      CR7030=AMPL*EXP(-X1**2)
      RETURN
      END

```

Table 1. The Thermal Conductivity of a 70/30 Methane-Ethane Mix

| Run Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Power<br>W/m | Experimental<br>Thermal<br>Conductivity |       | STAT  | Adjusted Thermal Conductivity<br>at a Nominal<br>Temperature of 140.7K from Correlation |                      |
|---------|-----------------|------------------|------------------|--------------|---|-------|-------|---|----------------------|
|         |                 |                  |                  |              | W/m.K                                   | W/m.K |       | W/m.K   | Deviation<br>percent |
| 92030   | 1.734           | 142.085          | 22.5980          | 1.25766      | .16996                                  | .001  |       | .16977  | .57                  |
| 92029   | 1.733           | 141.344          | 22.7462          | 1.14954      | .16845                                  | .001  |       | .16835  | -.33                 |
| 92028   | 1.732           | 140.827          | 22.7797          | 1.04161      | .16782                                  | .001  |       | .16780  | -1.56                |
| 92027   | 1.729           | 140.328          | 22.8119          | .94014       | .16734                                  | .001  |       | .16739  | -2.20                |
| 92025   | 14.853          | 141.791          | 23.3160          | 1.25516      | .18367                                  | .001  |       | .18351  | 1.12                 |
| 92025   | 14.851          | 141.080          | 22.3569          | 1.14998      | .18290                                  | .001  |       | .18284  | .24                  |
| 92024   | 14.850          | 140.676          | 23.3801          | 1.04257      | .18194                                  | .001  |       | .18194  | -.48                 |
| 92023   | 14.846          | 140.086          | 23.4138          | .93880       | .18046                                  | .001  |       | .18054  | -1.66                |
| 92022   | 28.027          | 141.510          | 23.8350          | 1.25950      | .19567                                  | .001  |       | .19555  | 1.42                 |
| 92021   | 28.026          | 140.846          | 23.8703          | 1.14458      | .19448                                  | .001  |       | .19445  | .45                  |
| 92020   | 28.023          | 140.397          | 23.8941          | 1.03770      | .19395                                  | .001  |       | .19399  | -.05                 |
| 92019   | 28.013          | 139.920          | 23.9192          | .93528       | .19271                                  | .001  |       | .19282  | -.97                 |
| 92018   | 41.123          | 141.183          | 24.2922          | 1.24375      | .20507                                  | .001  |       | .20499  | .92                  |
| 92017   | 41.123          | 140.649          | 24.3193          | 1.13149      | .20397                                  | .001  |       | .20397  | .01                  |
| 92016   | 41.116          | 140.179          | 24.3430          | 1.03397      | .20353                                  | .001  |       | .20360  | -.45                 |
| 92015   | 41.111          | 140.038          | 24.3499          | .93557       | .20342                                  | .001  |       | .20351  | -.57                 |
| 92014   | 54.861          | 140.874          | 24.7222          | 1.23919      | .21444                                  | .001  |       | .21441  | .32                  |
| 92013   | 54.854          | 140.540          | 24.7385          | 1.12993      | .21390                                  | .001  |       | .21392  | -.10                 |
| 92012   | 54.843          | 140.011          | 24.7643          | 1.03462      | .21324                                  | .001  |       | .21334  | -.67                 |
| 92004   | 64.291          | 141.195          | 24.9577          | 1.24366      | .21968                                  | .001  |       | .21950  | -.13                 |
| 92010   | 63.857          | 140.850          | 24.9729          | 1.34717      | .21966                                  | .001  |       | .21963  | -.18                 |
| 92009   | 63.838          | 140.788          | 24.9754          | 1.24753      | .22186                                  | .001  |       | .22184  | .79                  |
| 92003   | 64.302          | 140.807          | 24.9870          | 1.13565      | .21946                                  | .001  |       | .21944  | -.43                 |
| 92008   | 63.821          | 140.270          | 25.0003          | 1.13612      | .22033                                  | .001  |       | .22039  | -.15                 |
| 92002   | 64.312          | 140.509          | 25.0018          | 1.03349      | .22002                                  | .001  |       | .22004  | -.32                 |
| 92001   | 64.311          | 140.236          | 25.0151          | .93552       | .21999                                  | .001  |       | .22005  | -.47                 |
| 92007   | 63.821          | 139.821          | 25.0223          | 1.03122      | .21988                                  | .001  |       | .22001  | -.58                 |
| 92006   | 63.819          | 139.699          | 25.0283          | .93210       | .21917                                  | .001  |       | .21926  | -.99                 |
| Run Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Power<br>W/m | Experimental<br>Thermal<br>Conductivity |       | STAT  | Adjusted Thermal Conductivity<br>at a Nominal<br>Temperature of 161.9K from Correlation |                      |
|         |                 |                  |                  |              | W/m.K                                   | W/m.K | W/m.K | Deviation<br>percent  |                      |
| 93023   | 2.650           | 162.375          | 21.3226          | 1.11586      | .14350                                  | .001  |       | .14343  | -2.11                |
| 93022   | 2.650           | 161.810          | 21.3657          | 1.00460      | .14457                                  | .001  |       | .14458  | -1.81                |
| 93021   | 2.650           | 161.494          | 21.3895          | .90052       | .14449                                  | .001  |       | .14454  | -2.12                |
| 93024   | 2.650           | 161.367          | 21.3994          | .80696       | .14616                                  | .001  |       | .14623  | -1.06                |
| 93019   | 13.938          | 162.635          | 22.0174          | 1.23564      | .15815                                  | .001  |       | .15804  | -.44                 |
| 93018   | 13.940          | 162.244          | 22.0423          | 1.11544      | .15769                                  | .001  |       | .15754  | -.99                 |
| 93017   | 13.932          | 161.494          | 22.0893          | 1.00117      | .15759                                  | .001  |       | .15764  | -1.54                |
| 93020   | 13.944          | 161.339          | 22.0998          | .90475       | .15958                                  | .001  |       | .15965  | -.38                 |
| 93016   | 27.328          | 163.005          | 22.6517          | 1.36110      | .17263                                  | .001  |       | .17246  | .94                  |
| 93C15   | 27.322          | 162.420          | 22.6836          | 1.23398      | .17151                                  | .001  |       | .17143  | -.02                 |
| 93014   | 27.314          | 161.730          | 22.7211          | 1.11484      | .17187                                  | .001  |       | .17189  | -.19                 |
| 93013   | 27.321          | 161.265          | 22.7470          | 1.00169      | .17126                                  | .001  |       | .17134  | -.81                 |
| 93012   | 39.845          | 162.557          | 23.1824          | 1.35619      | .18380                                  | .001  |       | .18370  | 1.11                 |
| 93011   | 39.941          | 161.982          | 23.2109          | 1.23137      | .18340                                  | .001  |       | .18338  | .61                  |
| 93010   | 39.840          | 161.551          | 23.2324          | 1.11320      | .18319                                  | .001  |       | .18323  | .29                  |
| 93009   | 39.837          | 160.860          | 23.2668          | .99956       | .18253                                  | .001  |       | .18268  | -.42                 |
| 93007   | 53.184          | 162.295          | 23.6587          | 1.35460      | .19484                                  | .001  |       | .19477  | 1.46                 |
| 93006   | 53.183          | 161.882          | 23.6779          | 1.23165      | .19479                                  | .001  |       | .19479  | 1.25                 |
| 93008   | 53.194          | 161.468          | 23.6975          | 1.01305      | .19738                                  | .001  |       | .19744  | 2.35                 |
| 93005   | 53.181          | 161.171          | 23.7108          | 1.10803      | .19334                                  | .001  |       | .19344  | .18                  |
| 93004   | 61.106          | 162.435          | 23.8903          | 1.48434      | .20161                                  | .001  |       | .20149  | 2.17                 |
| 93003   | 61.100          | 162.312          | 23.9046          | 1.35294      | .20102                                  | .001  |       | .20095  | 1.74                 |
| 93002   | 61.095          | 161.539          | 23.9392          | 1.22483      | .19945                                  | .001  |       | .19950  | .63                  |
| 93001   | 61.093          | 161.025          | 23.9619          | 1.10547      | .19859                                  | .001  |       | .19871  | -.02                 |
| Run Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Power<br>W/m | Experimental<br>Thermal<br>Conductivity |       | STAT  | Adjusted Thermal Conductivity<br>at a Nominal<br>Temperature of 182.6K from Correlation |                      |
|         |                 |                  |                  |              | W/m.K                                   | W/m.K | W/m.K | Deviation<br>percent  |                      |
| 94024   | 3.790           | 183.514          | 19.6385          | 1.15618      | .12135                                  | .001  |       | .12122  | -1.73                |
| 94023   | 3.794           | 182.840          | 19.7022          | 1.03562      | .12194                                  | .002  |       | .12191  | -1.89                |
| 94022   | 3.795           | 182.499          | 19.7341          | .92218       | .12262                                  | .001  |       | .12263  | -1.66                |
| 94021   | 3.791           | 182.075          | 19.7729          | .81582       | .12287                                  | .001  |       | .12294  | -1.85                |
| 94020   | 14.795          | 183.661          | 20.6639          | 1.28608      | .13797                                  | .001  |       | .13782  | -.54                 |
| 94019   | 14.793          | 182.951          | 20.7138          | 1.15615      | .13806                                  | .001  |       | .13801  | -.97                 |
| 94018   | 14.786          | 182.419          | 20.7506          | 1.03503      | .13873                                  | .001  |       | .13875  | -.85                 |
| 94017   | 14.780          | 181.835          | 20.7911          | .92073       | .13847                                  | .001  |       | .13858  | -1.45                |
| 94016   | 27.563          | 183.093          | 21.5254          | 1.28210      | .15293                                  | .001  |       | .15286  | -.01                 |
| 94015   | 27.558          | 182.525          | 21.5582          | 1.15384      | .15342                                  | .001  |       | .15343  | -.02                 |
| 94014   | 27.550          | 181.917          | 21.5937          | 1.03282      | .15305                                  | .001  |       | .15315  | -.61                 |
| 94013   | 27.554          | 181.298          | 21.5293          | .91820       | .15330                                  | .001  |       | .15349  | -.79                 |
| 94011   | 39.433          | 183.405          | 22.1064          | 1.41681      | .16553                                  | .001  |       | .16541  | 1.23                 |

|       |        |         |         |         |        |       |        |      |
|-------|--------|---------|---------|---------|--------|-------|--------|------|
| 94110 | 39.475 | 182.740 | 22.1404 | 1.28002 | .16488 | .001  | .16486 | .51  |
| 94012 | 39.477 | 182.378 | 22.1596 | 1.04377 | .16791 | .001  | .16794 | 2.12 |
| 94009 | 39.476 | 181.974 | 22.1800 | 1.14735 | .16403 | .001  | .16412 | .39  |
| 94007 | 55.159 | 183.545 | 22.7456 | 1.55392 | .17029 | .001  | .17914 | 1.88 |
| 94006 | 55.152 | 182.613 | 22.7987 | 1.40523 | .17835 | .001  | .17835 | .96  |
| 94008 | 55.144 | 182.435 | 22.7969 | 1.16328 | .18234 | .001  | .18236 | 3.05 |
| 94005 | 55.149 | 182.151 | 22.8095 | 1.27118 | .17779 | .001  | .17786 | .45  |
| 94002 | 64.806 | 182.574 | 23.1217 | 1.39539 | .18712 | .0031 | .18711 | 1.94 |
| 94001 | 64.804 | 182.357 | 23.1348 | 1.26948 | .18858 | .001  | .18862 | 2.57 |

| Run Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Power<br>W/m | Experimental<br>Thermal<br>Conductivity<br>W/m.K | STAT | Adjusted Thermal Conductivity<br>at a Nominal Deviation<br>Temperature of 194.2K from Correlation<br>percent |      |
|---------|-----------------|------------------|------------------|--------------|--|------|--|------|
|         |                 |                  |                  |              |  |      | Temperature of 194.2K from Correlation percent   |      |
| 91083   | .360            | 194.852          | .2334            | .08742       | .01654   | .003 | .01647   | 1.01 |
| 91082   | .360            | 194.064          | .2345            | .07096       | .01644   | .003 | .01645   | .90  |
| 91084   | .365            | 195.756          | .2354            | .10559       | .01681   | .002 | .01664   | 2.01 |
| 91081   | .360            | 193.359          | .2355            | .05427       | .01619   | .005 | .01628   | -.19 |
| 91084   | .360            | 192.739          | .2364            | .04135       | .01630   | .009 | .01646   | .87  |
| 91087   | .365            | 194.917          | .2366            | .08733       | .01664   | .003 | .01656   | 1.51 |
| 91086   | .365            | 194.362          | .2374            | .07098       | .01654   | .007 | .01652   | 1.26 |
| 91085   | .365            | 193.579          | .2385            | .05534       | .01612   | .007 | .01619   | -.82 |

| Run Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Power<br>W/m | Experimental<br>Thermal<br>Conductivity<br>W/m.K | STAT | Adjusted Thermal Conductivity<br>at a Nominal Deviation<br>Temperature of 203.7K from Correlation<br>percent |       |
|---------|-----------------|------------------|------------------|--------------|--|------|--|-------|
|         |                 |                  |                  |              |  |      | Temperature of 203.7K from Correlation percent   |       |
| 91079   | .372            | 205.073          | .2275            | .09265       | .01768   | .005 | .01753   | 1.23  |
| 91078   | .372            | 204.311          | .2285            | .07523       | .01752   | .009 | .01745   | .78   |
| 91077   | .372            | 203.461          | .2296            | .05946       | .01747   | .006 | .01750   | 1.01  |
| 91080   | .372            | 202.840          | .2304            | .04595       | .01751   | .008 | .01760   | 1.60  |
| 91073   | .400            | 203.230          | .3812            | .05962       | .01801   | .007 | .01806   | 1.77  |
| 91075   | .516            | 204.547          | .3887            | .09248       | .01824   | .003 | .01815   | 2.12  |
| 91074   | .614            | 203.882          | .3889            | .07514       | .01808   | .003 | .01806   | 1.64  |
| 91076   | .615            | 202.619          | .3937            | .04591       | .01782   | .009 | .01794   | .90   |
| 95024   | 5.110           | 205.034          | 17.5257          | 1.05484      | .10205   | .001 | .10187   | 1.36  |
| 95023   | 5.113           | 203.715          | 17.6926          | .92468       | .10173   | .002 | .10173   | -.50  |
| 95022   | 5.113           | 203.237          | 17.7510          | .81221       | .10181   | .001 | .10187   | -.98  |
| 95021   | 5.114           | 202.438          | 17.8481          | .70599       | .10217   | .001 | .10234   | -1.55 |
| 95017   | 14.662          | 204.301          | 10.0988          | 1.16925      | .11707   | .001 | .11698   | -1.71 |
| 95018   | 14.664          | 203.890          | 19.1326          | 1.04422      | .11829   | .001 | .11826   | -.98  |
| 95019   | 14.663          | 203.256          | 19.1825          | .92526       | .11762   | .001 | .11758   | -2.04 |
| 95020   | 14.665          | 202.652          | 19.2307          | .81263       | .11907   | .001 | .11922   | -1.26 |
| 95013   | 27.532          | 204.356          | 20.2440          | 1.30126      | .13367   | .001 | .13357   | -1.16 |
| 95014   | 27.533          | 203.994          | 20.2666          | 1.16941      | .13449   | .001 | .13445   | -.76  |
| 95015   | 27.539          | 203.387          | 20.3044          | 1.040303     | .13539   | .001 | .13544   | -.44  |
| 95016   | 27.538          | 202.917          | 26.3334          | .92541       | .13601   | .001 | .13613   | -.26  |
| 95010   | 40.137          | 204.792          | 21.0203          | 1.29763      | .15046   | .001 | .15029   | 1.92  |
| 95009   | 40.133          | 204.399          | 21.0410          | 1.43987      | .16644   | .001 | .14633   | -.97  |
| 95011   | 40.145          | 203.625          | 21.0826          | 1.15544      | .14933   | .001 | .14934   | .60   |
| 95012   | 40.145          | 203.043          | 21.1135          | 1.02840      | .14918   | .001 | .14928   | .21   |
| 95005   | 53.637          | 203.874          | 21.7358          | 1.43832      | .19964   | .001 | .15961   | -.12  |
| 95006   | 53.637          | 203.843          | 21.7392          | 1.30504      | .16108   | .001 | .16106   | .76   |
| 95007   | 53.547          | 203.353          | 21.7617          | 1.17174      | .16205   | .001 | .16210   | 1.14  |
| 95008   | 53.647          | 202.834          | 21.7862          | 1.04548      | .16296   | .001 | .16309   | 1.47  |
| 95002   | 62.469          | 204.501          | 22.0771          | 1.59021      | .16775   | .001 | .16752   | .94   |
| 95003   | 62.462          | 203.845          | 22.1059          | 1.30725      | .17008   | .001 | .17006   | 2.04  |
| 95001   | 62.471          | 203.810          | 22.1078          | 1.43787      | .16737   | .001 | .16735   | .43   |
| 95004   | 62.462          | 203.246          | 22.1325          | 1.17157      | .16989   | .001 | .16996   | 1.69  |

| Run Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Power<br>W/m | Experimental<br>Thermal<br>Conductivity<br>W/m.K | STAT | Adjusted Thermal Conductivity<br>at a Nominal Deviation<br>Temperature of 214.4K from Correlation<br>percent |       |
|---------|-----------------|------------------|------------------|--------------|--|------|--|-------|
|         |                 |                  |                  |              |  |      | Temperature of 214.4K from Correlation percent   |       |
| 91072   | .418            | 215.958          | .2421            | .11790       | .01925   | .003 | .01908   | 2.73  |
| 91071   | .418            | 215.080          | .2432            | .09769       | .01915   | .003 | .01908   | 2.71  |
| 91070   | .418            | 214.352          | .2441            | .07929       | .01904   | .009 | .01905   | 2.56  |
| 91069   | .419            | 213.791          | .2449            | .06298       | .01908   | .010 | .01915   | 3.08  |
| 91068   | .824            | 215.431          | .4991            | .11780       | .01983   | .003 | .01972   | 2.21  |
| 91067   | .824            | 214.739          | .5012            | .09768       | .01977   | .004 | .01974   | 2.27  |
| 91066   | .824            | 213.993          | .5034            | .07920       | .01931   | .006 | .01936   | .35   |
| 91065   | .824            | 213.592          | .5047            | .06295       | .01959   | .006 | .01969   | 1.98  |
| 91060   | 1.168           | 215.221          | .7367            | .11778       | .02052   | .003 | .02043   | 2.22  |
| 91059   | 1.168           | 214.660          | .7395            | .09752       | .02041   | .004 | .02039   | 1.96  |
| 91058   | 1.167           | 214.205          | .7416            | .07929       | .02063   | .004 | .02066   | 3.22  |
| 91057   | 1.156           | 213.341          | .7451            | .06286       | .02058   | .006 | .02071   | 3.39  |
| 91064   | 1.190           | 215.124          | .7530            | .11781       | .02012   | .002 | .02004   | .08   |
| 91063   | 1.190           | 214.412          | .7567            | .09748       | .02007   | .004 | .02007   | .18   |
| 91062   | 1.190           | 213.862          | .7596            | .07919       | .01961   | .004 | .01968   | -1.88 |
| 91061   | 1.190           | 213.388          | .7622            | .05283       | .01956   | .005 | .01968   | -1.90 |

| Qu Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Power<br>W/m | Experimental<br>Thermal<br>Conductivity |       | STAT | Adjusted Thermal Conductivity<br>at a Nominal Deviation<br>Temperature of 223.1K from Correlation<br>W/m.K |         |
|--------|-----------------|------------------|------------------|--------------|---|-------|------|--|---------|
|        |                 |                  |                  |              |   | W/m.K |      |  | percent |
| 91055  | .387            | 224.833          | .2137            | .10278       | .01951                                  | .004  |      | .01931   | -.90    |
| 91054  | .387            | 224.037          | .2145            | .08352       | .01951                                  | .005  |      | .01940   | -.43    |
| 91053  | .387            | 223.375          | .2152            | .06627       | .01950                                  | .006  |      | .01955   | .32     |
| 91056  | .387            | 222.896          | .2157            | .05105       | .01953                                  | .011  |      | .01955   | .35     |
| 91052  | .783            | 225.227          | .4464            | .12383       | .02026                                  | .004  |      | .02001   | -.62    |
| 91051  | .783            | 224.383          | .4484            | .10255       | .02016                                  | .002  |      | .02004   | -.65    |
| 91050  | .783            | 223.642          | .4502            | .08334       | .02011                                  | .004  |      | .01990   | -.50    |
| 91049  | .783            | 223.074          | .4517            | .06611       | .01990                                  | .005  |      |  | -1.23   |
| 91047  | 1.080           | 225.037          | .6337            | .12383       | .02058                                  | .003  |      | .02035   | -1.60   |
| 91046  | 1.080           | 224.339          | .6364            | .10266       | .02070                                  | .004  |      | .02055   | -.63    |
| 91045  | 1.080           | 223.609          | .6392            | .08346       | .02052                                  | .005  |      | .02046   | -1.14   |
| 91048  | 1.080           | 223.042          | .6414            | .06628       | .02047                                  | .007  |      | .02048   | -1.08   |
| 91044  | 1.510           | 225.170          | .9258            | .14700       | .02180                                  | .004  |      | .02155   | .02     |
| 91043  | 1.910           | 224.630          | .9292            | .12377       | .02180                                  | .003  |      | .02152   | .23     |
| 91042  | 1.510           | 323.963          | .9336            | .10252       | .02176                                  | .003  |      | .02156   | .35     |
| 91041  | 1.510           | 223.253          | .9382            | .09336       | .02140                                  | .004  |      | .02138   | -1.01   |
| 96024  | 6.484           | 223.032          | 15.2335          | .89669       | .08483                                  | .004  |      | .08484   | 1.28    |
| 96023  | 6.485           | 222.640          | 15.3087          | .77999       | .08505                                  | .005  |      | .08511   | 1.03    |
| 96022  | 6.485           | 221.895          | 15.4480          | .57166       | .08510                                  | .008  |      | .08527   | .11     |
| 96021  | 6.486           | 221.134          | 15.5857          | .57164       | .08620                                  | .001  |      | .08647   | .40     |
| 96020  | 16.137          | 223.603          | 17.6815          | 1.01971      | .10423                                  | .001  |      | .10416   | -.59    |
| 96019  | 16.134          | 222.764          | 17.7535          | #A9492       | .10430                                  | .001  |      | .10435   | -1.25   |
| 96018  | 15.132          | 222.079          | 17.8133          | .77920       | .10500                                  | .001  |      | .10515   | -1.10   |
| 96017  | 16.131          | 221.318          | 17.8775          | .67077       | .10489                                  | .001  |      | .10515   | -1.78   |
| 96016  | 27.498          | 223.569          | 19.0227          | 1.15028      | .11949                                  | .001  |      | .11942   | -1.19   |
| 96015  | 27.500          | 222.742          | 19.0764          | 1.01732      | .11999                                  | .001  |      | .12005   | -1.25   |
| 96014  | 27.497          | 222.155          | 19.1135          | .89359       | .12014                                  | .001  |      | .12028   | -1.45   |
| 96013  | 27.490          | 221.511          | 19.1551          | .77698       | .12016                                  | .001  |      | .12040   | -1.81   |
| 96012  | 38.872          | 223.137          | 19.9522          | 1.15051      | .13303                                  | .001  |      | .13303   | .51     |
| 96011  | 38.870          | 222.510          | 19.9865          | 1.01813      | .13344                                  | .001  |      | .13353   | .51     |
| 96010  | 38.869          | 221.949          | 20.0226          | .89557       | .13372                                  | .001  |      | .13391   | .62     |
| 96009  | 38.868          | 220.952          | 20.0716          | .77655       | .13318                                  | .001  |      | .13351   | -1.47   |
| 96008  | 50.043          | 223.401          | 20.6226          | 1.29167      | .14412                                  | .001  |      | .14407   | .06     |
| 96007  | 50.043          | 222.849          | 20.6495          | 1.15161      | .14462                                  | .001  |      | .14466   | .19     |
| 96006  | 50.035          | 222.140          | 20.6837          | 1.01892      | .14474                                  | .001  |      | .14489   | -.02    |
| 96005  | 50.033          | 221.573          | 20.7112          | .89373       | .14447                                  | .001  |      | .14471   | -.45    |
| 96003  | 60.675          | 224.001          | 21.1306          | 1.43355      | .15480                                  | .001  |      | .15465   | 1.54    |
| 96002  | 60.674          | 223.441          | 21.1547          | 1.28705      | .15524                                  | .001  |      | .15518   | 1.61    |
| 95001  | 60.670          | 223.249          | 21.1640          | 1.14756      | .15481                                  | .001  |      | .15479   | 1.26    |
| 95004  | 60.676          | 272.237          | 21.2097          | 1.01516      | .15556                                  | .001  |      | .15570   | 1.34    |

| Run Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Power<br>W/m | Experimental<br>Thermal<br>Conductivity |       | STAT | Adjusted Thermal Conductivity<br>at a Nominal Deviation<br>Temperature of 234.1K from Correlation<br>W/m.K |         |
|---------|-----------------|------------------|------------------|--------------|---|-------|------|--|---------|
|         |                 |                  |                  |              |   | W/m.K |      |  | percent |
| 91040   | .820            | 235.317          | .4449            | .12996       | .02173                                  | .005  |      | .02158   | .63     |
| 91039   | .821            | 234.546          | .4469            | .10765       | .02165                                  | .007  |      | .02159   | .67     |
| 91038   | .821            | 233.871          | .4485            | .09747       | .02164                                  | .003  |      | .02166   | .98     |
| 91037   | .821            | 233.178          | .4501            | .06943       | .02127                                  | .007  |      | .02138   | -.36    |
| 91035   | 1.125           | 234.397          | .5279            | .10774       | .02214                                  | .007  |      | .02212   | .66     |
| 91034   | 1.125           | 233.592          | .6304            | .09752       | .02194                                  | .006  |      | .02199   | .03     |
| 91033   | 1.125           | 233.087          | .6330            | .06943       | .02158                                  | .005  |      | .02170   | -1.33   |
| 91031   | 1.624           | 234.789          | .9449            | .12983       | .02316                                  | .004  |      | .02307   | .60     |
| 91029   | 1.625           | 233.500          | .9532            | .08748       | .02298                                  | .006  |      | .02305   | .39     |
| 91032   | 1.624           | 232.990          | .9556            | .06937       | .02281                                  | .014  |      | .02294   | -.11    |
| 91028   | 1.975           | 235.302          | 1.1834           | .15411       | .02384                                  | .003  |      | .02369   | -.03    |
| 91027   | 1.975           | 234.635          | 1.1895           | .12992       | .02400                                  | .006  |      | .02393   | .90     |
| 91026   | 1.975           | 233.589          | 1.1983           | .10758       | .02399                                  | .030  |      | .02405   | 1.26    |
| 91025   | 1.976           | 233.245          | 1.2021           | .08741       | .02339                                  | .012  |      | .02349   | -1.14   |
| 91023   | 2.445           | 234.844          | 1.5447           | .15395       | .02484                                  | .006  |      | .02474   | -.72    |
| 91022   | 2.446           | 234.585          | 1.5483           | .12963       | .02496                                  | .004  |      | .02490   | -.16    |
| 91021   | 2.447           | 234.040          | 1.5568           | .10748       | .02471                                  | .004  |      | .02471   | -1.02   |
| 91024   | 2.444           | 233.411          | 1.5627           | .08737       | .02483                                  | .005  |      | .02491   | -.31    |

| Qu Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | power<br>W/m | Experimental<br>Thermal<br>Conductivity |       | STAT | Adjusted Thermal Conductivity<br>at a Nominal Deviation<br>Temperature of 242.3K from Correlation<br>W/m.K |         |
|--------|-----------------|------------------|------------------|--------------|---|-------|------|--|---------|
|        |                 |                  |                  |              |   | W/m.K |      |  | percent |
| 91019  | .975            | 245.324          | .5085            | .13592       | .02209                                  | .002  |      | .02249   | .64     |
| 91018  | .975            | 244.498          | .5106            | .11261       | .02288                                  | .005  |      | .02266   | .50     |
| 91017  | .975            | 243.922          | .5121            | .09151       | .02265                                  | .005  |      | .02249   | -.24    |
| 91020  | .975            | 243.138          | .5141            | .07274       | .02259                                  | .009  |      | .02251   | -.24    |
| 91016  | 1.944           | 245.554          | 1.0378           | .16131       | .02426                                  | .003  |      | .02396   | -.51    |
| 91015  | 1.868           | 244.471          | 1.0450           | .13574       | .02449                                  | .024  |      | .02431   | .75     |
| 91014  | 1.869           | 243.958          | 1.0487           | .11244       | .02404                                  | .005  |      | .02390   | -.98    |
| 91013  | 1.970           | 243.573          | 1.0516           | .09140       | .02392                                  | .003  |      | .02383   | -1.35   |
| 91012  | 2.585           | 245.003          | 1.5316           | .16103       | .02564                                  | .004  |      | .02545   | -.93    |
| 91011  | 2.587           | 244.419          | 1.5384           | .13568       | .02563                                  | .007  |      | .02549   | -.89    |
| 91010  | 2.587           | 243.626          | 1.5475           | .11247       | .02539                                  | .007  |      | .02531   | -1.75   |

|       |        |         |         |         |        |      |        |       |
|-------|--------|---------|---------|---------|--------|------|--------|-------|
| 91009 | 2.587  | 243.168 | 1.5534  | .09148  | .02564 | .007 | .02559 | -.72  |
| 91007 | 3.288  | 244.470 | 2.0956  | .16080  | .02737 | .003 | .02729 | -1.58 |
| 91006 | 3.299  | 243.949 | 2.1066  | .13554  | .02736 | .005 | .02731 | -1.58 |
| 91005 | 3.290  | 243.349 | 2.1191  | .11227  | .02669 | .004 | .02666 | -4.33 |
| 91008 | 3.287  | 242.877 | 2.1264  | .09131  | .02716 | .005 | .02714 | -2.57 |
| 91004 | 3.981  | 244.006 | 2.6651  | .16053  | .02994 | .004 | .02995 | -.29  |
| 91003 | 3.985  | 243.571 | 2.6828  | .13544  | .03000 | .007 | .03001 | -.33  |
| 91001 | 3.988  | 242.761 | 2.7127  | .09134  | .03014 | .004 | .03015 | -.31  |
| 97052 | 7.176  | 239.847 | 11.2614 | .35496  | .07007 | .015 | .06855 | -4.22 |
| 97055 | 7.175  | 239.544 | 11.3356 | .31721  | .07136 | .018 | .06984 | -2.49 |
| 97050 | 7.177  | 239.280 | 11.4782 | .28073  | .07509 | .017 | .07369 | 2.50  |
| 97054 | 7.175  | 239.173 | 11.5141 | .24763  | .07563 | .025 | .07426 | 3.15  |
| 97056 | 7.174  | 239.943 | 11.5982 | .19683  | .07872 | .031 | .07742 | 6.90  |
| 97051 | 7.175  | 238.909 | 11.6145 | .21578  | .07731 | .028 | .07602 | 5.15  |
| 97053 | 7.177  | 238.677 | 11.5978 | .15934  | .08056 | .040 | .07934 | 8.91  |
| 97027 | 7.543  | 240.502 | 11.9895 | .44002  | .07396 | .009 | .07310 | .62   |
| 97026 | 7.643  | 239.959 | 12.0599 | .35658  | .07528 | .012 | .07418 | 1.59  |
| 97025 | 7.644  | 239.804 | 12.1091 | .28325  | .07605 | .017 | .07488 | 2.37  |
| 97024 | 7.643  | 239.714 | 12.1344 | .31862  | .07560 | .014 | .07444 | 1.72  |
| 97049 | 8.966  | 243.561 | 12.6646 | .45895  | .07377 | .004 | .07415 | -.38  |
| 97048 | 8.967  | 242.562 | 12.8875 | .73957  | .07438 | .004 | .07448 | -.77  |
| 97047 | 8.967  | 241.936 | 13.0456 | .63037  | .07493 | .005 | .07485 | -.92  |
| 97046 | 8.967  | 241.219 | 13.1988 | .52965  | .07523 | .007 | .07497 | -1.41 |
| 97045 | 8.967  | 240.626 | 13.3231 | .43824  | .07566 | .008 | .07527 | -1.58 |
| 97044 | 8.967  | 240.000 | 13.4521 | .35505  | .07627 | .010 | .07575 | -1.55 |
| 97043 | 10.888 | 243.598 | 14.0178 | .85944  | .07903 | .004 | .07916 | -.11  |
| 97042 | 10.888 | 242.685 | 14.1597 | .74045  | .07943 | .004 | .07947 | -.56  |
| 97041 | 10.888 | 241.954 | 14.2717 | .53088  | .08003 | .005 | .08000 | -.56  |
| 97040 | 10.887 | 241.299 | 14.3709 | .53026  | .09008 | .007 | .08000 | -1.21 |
| 97039 | 10.887 | 240.675 | 14.4644 | .43848  | .08059 | .009 | .08045 | -1.24 |
| 97038 | 10.887 | 240.084 | 14.5521 | .35521  | .08094 | .012 | .08077 | -1.44 |
| 97037 | 12.893 | 243.633 | 14.8749 | .85966  | .08342 | .005 | .08343 | -.43  |
| 97035 | 12.898 | 242.905 | 14.9654 | .74147  | .08412 | .005 | .08412 | -.27  |
| 97035 | 12.898 | 242.165 | 15.0569 | .63178  | .08424 | .009 | .08424 | -.81  |
| 97034 | 12.897 | 241.604 | 15.1255 | .53087  | .08465 | .007 | .08455 | -.85  |
| 97033 | 12.995 | 241.021 | 15.1960 | .43913  | .08489 | .008 | .08489 | -1.11 |
| 97032 | 14.755 | 243.915 | 15.4284 | .85572  | .08841 | .003 | .08835 | 1.06  |
| 97031 | 14.755 | 243.371 | 15.4873 | .73868  | .08868 | .005 | .08864 | .91   |
| 97030 | 14.754 | 242.784 | 15.5506 | .53069  | .08929 | .001 | .08927 | 1.10  |
| 97023 | 14.961 | 243.117 | 15.5710 | .85965  | .08722 | .005 | .08719 | -1.43 |
| 97029 | 14.754 | 242.370 | 15.5951 | .53164  | .09015 | .001 | .09015 | 1.70  |
| 97022 | 14.961 | 242.482 | 15.6385 | .74120  | .08784 | .005 | .08783 | -1.25 |
| 97021 | 14.960 | 241.844 | 15.7034 | .53147  | .08817 | .006 | .08819 | -1.39 |
| 97024 | 14.963 | 241.437 | 15.7494 | .53389  | .08910 | .009 | .08914 | -.70  |
| 97020 | 23.365 | 243.359 | 17.1706 | .97851  | .10133 | .001 | .10120 | -1.09 |
| 97019 | 23.365 | 242.500 | 17.2347 | .85172  | .10142 | .001 | .10139 | -1.54 |
| 97018 | 23.364 | 241.817 | 17.2855 | .73411  | .10154 | .001 | .10159 | -1.85 |
| 97017 | 23.361 | 241.184 | 17.3321 | .62517  | .10175 | .001 | .10189 | -2.04 |
| 97015 | 31.724 | 243.641 | 19.1638 | 1.11219 | .11181 | .001 | .11162 | -1.33 |
| 97015 | 31.722 | 243.020 | 18.2021 | .97702  | .11217 | .001 | .11207 | -1.33 |
| 97014 | 31.719 | 242.131 | 19.2567 | .95081  | .11225 | .001 | .11227 | -1.72 |
| 97013 | 31.718 | 241.414 | 19.3009 | .73337  | .11241 | .001 | .11253 | -1.95 |
| 97012 | 43.479 | 243.241 | 19.2039 | 1.11354 | .12514 | .031 | .12499 | -.95  |
| 97011 | 43.477 | 242.535 | 19.2406 | .97861  | .12512 | .001 | .12508 | -1.27 |
| 97010 | 43.474 | 241.912 | 19.2730 | .95196  | .12597 | .001 | .12602 | -.86  |
| 97009 | 43.471 | 241.288 | 19.3053 | .73366  | .12433 | .009 | .12448 | -2.46 |
| 97008 | 55.419 | 243.639 | 19.9628 | 1.25884 | .13681 | .001 | .13659 | -.21  |
| 97007 | 55.417 | 242.780 | 20.0026 | 1.11395 | .13663 | .001 | .13655 | -.47  |
| 97006 | 55.417 | 241.996 | 20.0389 | .97732  | .13678 | .001 | .13682 | -.87  |
| 97005 | 55.413 | 241.379 | 20.0673 | .95109  | .13737 | .001 | .13751 | -.67  |
| 97002 | 67.094 | 243.239 | 20.5924 | 1.26078 | .14728 | .001 | .14712 | .39   |
| 97001 | 67.093 | 242.622 | 20.6184 | 1.11613 | .14738 | .001 | .14732 | .24   |
| 97004 | 67.097 | 241.893 | 20.5496 | .98156  | .14810 | .001 | .14816 | .47   |
| 97003 | 67.097 | 241.478 | 20.6673 | .95541  | .14866 | .001 | .14879 | .70   |

| Run Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Power<br>W/m | Experimental<br>Thermal<br>Conductivity<br>W/m.K | STAT | Adjusted Thermal Conductivity<br>at a Nominal<br>Temperature of 253.8K from Correlation<br>percent |                      |
|---------|-----------------|------------------|------------------|--------------|--|------|--|----------------------|
|         |                 |                  |                  |              |  |      | Temperature of 253.8K from Correlation<br>W/m.K  | Deviation<br>percent |
| 89174   | .912            | 255.040          | .4524            | .14174       | .02381   | .003 | .02366   | .14                  |
| 89173   | .912            | 254.444          | .4538            | .11744       | .02365   | .003 | .02358   | -.21                 |
| 89172   | .913            | 253.593          | .4558            | .09543       | .02358   | .002 | .02360   | -.15                 |
| 89171   | .914            | 252.864          | .4577            | .07570       | .02345   | .004 | .02356   | -.37                 |
| 89170   | 1.902           | 255.304          | 1.3016           | .16821       | .02516   | .002 | .02499   | -.51                 |
| 89169   | 1.902           | 254.553          | 1.0058           | .14148       | .02494   | .002 | .02486   | -1.11                |
| 89168   | 1.902           | 253.797          | 1.0100           | .11724       | .02495   | .003 | .02495   | -.77                 |
| 89167   | 1.903           | 253.279          | 1.0126           | .09527       | .02469   | .007 | .02474   | -1.68                |
| 89166   | 2.773           | 255.292          | 1.5552           | .19702       | .02681   | .015 | .02666   | -.30                 |
| 89165   | 2.778           | 254.710          | 1.5613           | .15811       | .02673   | .002 | .02664   | -.44                 |
| 89164   | 2.778           | 252.913          | 1.5698           | .14160       | .02665   | .002 | .02664   | -.53                 |
| 89163   | 2.779           | 253.471          | 1.5750           | .11723       | .02645   | .003 | .02549   | -1.19                |
| 89161   | 3.436           | 255.130          | 2.0288           | .19688       | .02842   | .003 | .02830   | .22                  |
| 89162   | 3.437           | 254.405          | 2.0411           | .16800       | .02829   | .003 | .02824   | -.15                 |
| 89159   | 3.439           | 253.782          | 2.0521           | .14149       | .02837   | .002 | .02837   | .20                  |
| 89160   | 3.436           | 253.302          | 2.0582           | .11747       | .02826   | .004 | .02830   | -.10                 |

|       |        |         |        |        |        |      |        |       |
|-------|--------|---------|--------|--------|--------|------|--------|-------|
| 89158 | 3.936  | 255.575 | 2.4181 | 22741  | 02951  | 0.02 | 0.2936 | -6.68 |
| 89157 | 3.948  | 254.129 | 2.4345 | 1.9633 | 0.2955 | .002 | 0.2947 | -5.53 |
| 89156 | 3.939  | 253.131 | 2.4194 | 1.9479 | 0.2955 | .002 | 0.2952 | -5.54 |
| 89155 | 4.039  | 253.129 | 2.4194 | 1.9479 | 0.2955 | .002 | 0.2947 | -5.53 |
| 89154 | 4.495  | 254.480 | 2.4958 | 2.4169 | 0.2955 | .002 | 0.2952 | -5.64 |
| 89153 | 4.497  | 254.445 | 2.4958 | 2.2773 | 0.2955 | .013 | 0.3030 | -6.03 |
| 89152 | 4.490  | 254.027 | 2.4958 | 2.2773 | 0.2955 | .017 | 0.3049 | -6.66 |
| 89151 | 4.501  | 253.512 | 2.1163 | 1.6226 | 0.3060 | .021 | 0.3062 | -3.47 |
| 89150 | 4.025  | 254.905 | 3.4710 | 2.6045 | 0.3257 | .011 | 0.3252 | -2.21 |
| 89149 | 4.025  | 254.704 | 3.4555 | 2.2267 | 0.3357 | .014 | 0.3213 | -3.78 |
| 89148 | 4.028  | 254.363 | 3.4555 | 2.2267 | 0.3357 | .019 | 0.3213 | -3.4  |
| 89147 | 5.404  | 254.704 | 3.4254 | 3.1959 | 0.3357 | .022 | 0.3350 | -1.32 |
| 89146 | 5.403  | 254.704 | 3.4254 | 3.0361 | 0.3355 | .018 | 0.3355 | -0.09 |
| 89145 | 5.402  | 254.704 | 3.4254 | 2.9518 | 0.3355 | .016 | 0.3355 | -0.46 |
| 89144 | 5.404  | 254.214 | 3.1959 | 2.6059 | 0.3455 | .018 | 0.3433 | -1.81 |
| 89143 | 6.362  | 254.183 | 3.355  | 2.9623 | 0.4293 | .014 | 0.6296 | -1.39 |
| 89142 | 6.097  | 252.944 | 5.0540 | 1.9545 | 0.4925 | .030 | 0.6905 | -28   |
| 89141 | 6.879  | 253.039 | 6.4778 | 2.2711 | 0.4158 | .026 | 0.6153 | -1.71 |
| 89140 | 7.076  | 253.538 | 6.7820 | 2.2711 | 0.4158 | .026 | 0.6153 | -1.66 |
| 89139 | 7.097  | 253.747 | 6.7449 | 2.2711 | 0.4158 | .026 | 0.6153 | -1.66 |
| 89138 | 7.077  | 253.747 | 6.7449 | 2.2711 | 0.4158 | .026 | 0.6153 | -1.66 |
| 89137 | 7.097  | 254.293 | 6.6887 | 2.2856 | 0.4131 | .026 | 0.6120 | -0.02 |
| 89136 | 7.098  | 253.025 | 6.8867 | 2.2856 | 0.4131 | .026 | 0.6120 | -0.02 |
| 89135 | 7.380  | 253.538 | 7.3928 | 2.2624 | 0.4205 | .027 | 0.5556 | -1.52 |
| 89134 | 7.543  | 253.538 | 7.3928 | 2.2624 | 0.4205 | .027 | 0.5556 | -1.52 |
| 89133 | 7.381  | 252.955 | 7.9467 | 2.2624 | 0.4205 | .027 | 0.5556 | -1.52 |
| 89132 | 7.381  | 252.955 | 7.9467 | 2.2624 | 0.4205 | .027 | 0.5556 | -1.52 |
| 89131 | 7.381  | 253.025 | 7.9467 | 2.2624 | 0.4205 | .027 | 0.5556 | -1.52 |
| 89130 | 7.752  | 253.376 | 8.1958 | 2.6059 | 0.4530 | .021 | 0.5727 | -1.17 |
| 89129 | 7.752  | 252.987 | 8.2827 | 2.6048 | 0.4526 | .021 | 0.5727 | -1.17 |
| 89128 | 7.752  | 252.987 | 8.2827 | 2.6048 | 0.4526 | .021 | 0.5727 | -1.17 |
| 89127 | 7.752  | 252.987 | 8.2827 | 2.6048 | 0.4526 | .021 | 0.5727 | -1.17 |
| 89126 | 7.752  | 253.376 | 8.1958 | 2.6059 | 0.4530 | .021 | 0.5730 | -1.17 |
| 89125 | 7.752  | 252.987 | 8.2827 | 2.6048 | 0.4526 | .021 | 0.5727 | -1.17 |
| 89124 | 7.752  | 252.987 | 8.2827 | 2.6048 | 0.4526 | .021 | 0.5727 | -1.17 |
| 89123 | 7.752  | 252.987 | 8.2827 | 2.6048 | 0.4526 | .021 | 0.5727 | -1.17 |
| 89122 | 7.076  | 254.025 | 9.1958 | 2.9518 | 0.5053 | .018 | 0.5037 | .50   |
| 89121 | 7.076  | 254.025 | 9.1958 | 2.9518 | 0.5053 | .018 | 0.5037 | .50   |
| 89120 | 7.381  | 253.538 | 8.7823 | 1.9535 | 0.5058 | .017 | 0.5061 | .02   |
| 89119 | 7.381  | 253.538 | 8.7823 | 1.9535 | 0.5058 | .017 | 0.5061 | .02   |
| 89118 | 7.098  | 253.214 | 6.8867 | 2.2856 | 0.5131 | .026 | 0.5120 | -0.02 |
| 89117 | 7.098  | 253.214 | 6.8867 | 2.2856 | 0.5131 | .026 | 0.5120 | -0.02 |
| 89116 | 7.098  | 253.214 | 6.8867 | 2.2856 | 0.5131 | .026 | 0.5120 | -0.02 |
| 89115 | 7.380  | 253.025 | 9.1958 | 2.9518 | 0.5053 | .018 | 0.5037 | .50   |
| 89114 | 7.380  | 253.025 | 9.1958 | 2.9518 | 0.5053 | .018 | 0.5037 | .50   |
| 89113 | 7.380  | 253.025 | 9.1958 | 2.9518 | 0.5053 | .018 | 0.5037 | .50   |
| 89112 | 7.381  | 252.955 | 7.9467 | 2.2624 | 0.4205 | .027 | 0.5556 | -1.52 |
| 89111 | 7.381  | 252.955 | 7.9467 | 2.2624 | 0.4205 | .027 | 0.5556 | -1.52 |
| 89110 | 7.381  | 252.955 | 7.9467 | 2.2624 | 0.4205 | .027 | 0.5556 | -1.52 |
| 89109 | 7.381  | 252.955 | 7.9467 | 2.2624 | 0.4205 | .027 | 0.5556 | -1.52 |
| 89108 | 7.380  | 253.538 | 7.3928 | 2.2624 | 0.4205 | .027 | 0.5556 | -1.52 |
| 89107 | 7.380  | 253.538 | 7.3928 | 2.2624 | 0.4205 | .027 | 0.5556 | -1.52 |
| 89106 | 7.380  | 253.538 | 7.3928 | 2.2624 | 0.4205 | .027 | 0.5556 | -1.52 |
| 89105 | 7.752  | 252.987 | 8.2827 | 2.6048 | 0.4526 | .021 | 0.5727 | -1.17 |
| 89104 | 7.752  | 252.987 | 8.2827 | 2.6048 | 0.4526 | .021 | 0.5727 | -1.17 |
| 89103 | 7.752  | 252.987 | 8.2827 | 2.6048 | 0.4526 | .021 | 0.5727 | -1.17 |
| 89102 | 8.129  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89101 | 8.129  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89100 | 8.129  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89099 | 8.129  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89098 | 8.129  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89097 | 8.129  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89096 | 8.129  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89095 | 8.129  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89094 | 8.129  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89093 | 8.129  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89092 | 8.129  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89091 | 8.129  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89090 | 8.129  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89089 | 8.129  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89088 | 8.129  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89087 | 8.129  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89086 | 8.129  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89085 | 8.129  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89084 | 8.129  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89083 | 8.129  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89082 | 8.129  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89081 | 8.129  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89080 | 8.129  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89079 | 9.789  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89078 | 9.789  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89077 | 9.789  | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89076 | 10.303 | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89075 | 10.303 | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |
| 89074 | 10.303 | 252.164 | 8.0195 | 2.9648 | 0.5206 | .031 | 0.6120 | -0.02 |

|       |         |         |         |         |        |      |        |      |
|-------|---------|---------|---------|---------|--------|------|--------|------|
| 89072 | 10.861  | 253.979 | 12.2493 | .46198  | .07066 | .001 | .07057 | -.86 |
| 89071 | 10. Abl | 253.295 | 12.3697 | .37470  | .07128 | .001 | .07125 | -.64 |
| 89070 | 10.461  | 252.806 | 12.4567 | .29672  | .07168 | .002 | .07162 | -.56 |
| 89069 | 11.628  | 254.615 | 12.4934 | .55750  | .07236 | .001 | .07239 | -.72 |
| 89068 | 11.628  | 253.997 | 12.7928 | .46155  | .07301 | .001 | .07302 | -.38 |
| 89067 | 11.627  | 253.361 | 12.8933 | .37435  | .07342 | .001 | .07341 | -.40 |
| 89066 | 11.627  | 252.670 | 13.0030 | .29557  | .07382 | .002 | .07379 | -.49 |
| 89065 | 12.351  | 254.637 | 13.1283 | .55807  | .07449 | .001 | .07450 | -.26 |
| 89064 | 12.353  | 253.961 | 13.2271 | .46150  | .07509 | .001 | .07509 | -.04 |
| 89063 | 12.350  | 253.345 | 13.3172 | .37412  | .07552 | .001 | .07552 | -.01 |
| 89062 | 12.349  | 252.679 | 13.4137 | .29656  | .07591 | .002 | .07591 | -.08 |
| 89061 | 13.518  | 254.747 | 13.6966 | .55715  | .07783 | .001 | .07790 | .59  |
| 89060 | 13.517  | 254.041 | 13.7882 | .46294  | .07850 | .001 | .07849 | .86  |
| 89059 | 13.517  | 253.329 | 13.8807 | .37398  | .07867 | .001 | .07869 | .49  |
| 89058 | 13.516  | 252.984 | 13.9374 | .29540  | .07938 | .002 | .07941 | 1.02 |
| 89057 | 14.624  | 254.999 | 14.1216 | .55763  | .08092 | .001 | .08086 | 1.54 |
| 89056 | 14.624  | 254.664 | 14.2005 | .55731  | .08072 | .001 | .08067 | .75  |
| 89055 | 14.674  | 254.269 | 14.2083 | .46121  | .08100 | .001 | .08093 | 1.07 |
| 89054 | 14.624  | 253.590 | 14.2886 | .37428  | .08165 | .001 | .08166 | 1.33 |
| 89052 | 14.729  | 253.724 | 14.3108 | .45050  | .08094 | .001 | .08094 | .29  |
| 89051 | 14.728  | 253.489 | 14.3382 | .37400  | .08135 | .001 | .08137 | .61  |
| 89050 | 14.624  | 253.160 | 14.3391 | .29652  | .08225 | .002 | .08229 | 1.71 |
| 89049 | 14.373  | 254.323 | 14.7856 | .55740  | .08383 | .001 | .08379 | .13  |
| 89048 | 16.372  | 253.521 | 14.8693 | .46129  | .08389 | .001 | .08391 | -.39 |
| 89047 | 16.371  | 252.994 | 14.9239 | .37450  | .08442 | .001 | .08449 | -.14 |
| 89046 | 16.349  | 252.471 | 14.9778 | .29542  | .08429 | .002 | .08440 | -.68 |
| 89045 | 18.317  | 255.057 | 15.2419 | .66318  | .08711 | .001 | .08699 | .16  |
| 89044 | 18.316  | 254.120 | 15.3310 | .55778  | .08728 | .001 | .08725 | -.30 |
| 89043 | 18.313  | 253.493 | 15.3891 | .46157  | .08763 | .001 | .08766 | -.32 |
| 89042 | 18.313  | 252.912 | 15.4434 | .37447  | .08759 | .002 | .08768 | -.77 |
| 89041 | 20.564  | 255.121 | 15.7476 | .66253  | .09196 | .001 | .09181 | 1.17 |
| 89040 | 20.564  | 253.997 | 15.8433 | .5726   | .09137 | .001 | .09135 | -.19 |
| 89039 | 20.563  | 253.367 | 15.9967 | .46086  | .09170 | .001 | .09175 | -.23 |
| 89038 | 20.564  | 252.848 | 15.9409 | .37443  | .09210 | .001 | .09221 | -.13 |
| 89037 | 23.433  | 254.535 | 16.3331 | .65279  | .09556 | .001 | .09547 | -.28 |
| 89036 | 23.431  | 253.854 | 16.3843 | .55728  | .09576 | .001 | .09575 | -.47 |
| 89034 | 23.429  | 253.293 | 16.4276 | .46122  | .09605 | .002 | .09611 | -.50 |
| 89035 | 23.431  | 252.788 | 16.4659 | .37424  | .09653 | .002 | .09666 | -.31 |
| 89033 | 26.796  | 254.592 | 16.8516 | .66212  | .10096 | .001 | .10085 | .25  |
| 89032 | 26.796  | 254.034 | 16.8905 | .55752  | .10128 | .001 | .10125 | .26  |
| 89030 | 24.793  | 253.264 | 16.9438 | .46073  | .10045 | .001 | .10052 | -.99 |
| 89031 | 26.795  | 252.809 | 16.9754 | .41634  | .10075 | .002 | .10089 | -.94 |
| 89029 | 30.635  | 255.136 | 17.3192 | .83834  | .10509 | .001 | .10490 | -.43 |
| 89028 | 30.635  | 254.779 | 17.3420 | .77653  | .10513 | .001 | .10499 | -.57 |
| 89027 | 30.635  | 254.155 | 17.3917 | .66211  | .10537 | .001 | .10532 | -.66 |
| 89026 | 30.623  | 253.237 | 17.4402 | .55360  | .10552 | .001 | .10560 | -.98 |
| 89025 | 35.331  | 255.685 | 17.8098 | .90028  | .11117 | .001 | .11089 | .17  |
| 89024 | 35.328  | 254.671 | 17.8689 | .77600  | .11108 | .001 | .11095 | -.38 |
| 89023 | 35.328  | 253.921 | 17.9128 | .56247  | .11127 | .001 | .11125 | -.55 |
| 89022 | 35.325  | 253.687 | 17.9261 | .55580  | .11143 | .001 | .11145 | -.51 |
| 89018 | 37.252  | 255.239 | 18.0271 | .89914  | .11324 | .001 | .11304 | -.13 |
| 89019 | 37.257  | 254.510 | 18.0589 | .77617  | .11416 | .001 | .11405 | .33  |
| 89020 | 37.257  | 254.059 | 18.0945 | .66211  | .11410 | .001 | .11406 | .08  |
| 89021 | 37.251  | 253.447 | 18.1287 | .55655  | .11433 | .001 | .11438 | .01  |
| 89015 | 47.077  | 255.293 | 18.8555 | 1.03193 | .12315 | .001 | .12291 | -.37 |
| 89014 | 47.088  | 254.642 | 18.8888 | .89931  | .12365 | .001 | .12352 | -.23 |
| 89013 | 47.077  | 254.157 | 18.9122 | .77638  | .12364 | .001 | .12358 | -.42 |
| 89015 | 47.078  | 253.636 | 18.9383 | .66163  | .12428 | .001 | .12431 | -.11 |
| 89017 | 47.083  | 253.092 | 18.9658 | .55579  | .12447 | .001 | .12458 | -.18 |
| 89012 | 51.054  | 256.050 | 19.1031 | 1.17241 | .12735 | .001 | .12699 | .29  |
| 89011 | 51.051  | 255.298 | 19.1389 | 1.02997 | .12759 | .001 | .12735 | .19  |
| 89010 | 51.053  | 254.643 | 19.1705 | .89763  | .12795 | .001 | .12782 | .23  |
| 89009 | 51.050  | 253.800 | 19.2106 | .77080  | .12746 | .001 | .12746 | -.48 |
| 89008 | 62.937  | 256.007 | 19.8332 | 1.17647 | .13905 | .001 | .13869 | 1.33 |
| 89007 | 62.936  | 255.185 | 19.8686 | 1.03317 | .13926 | .001 | .13903 | 1.21 |
| 89006 | 62.935  | 254.807 | 19.8849 | .90224  | .13975 | .001 | .13958 | 1.43 |
| 89005 | 62.933  | 253.530 | 19.9403 | .77146  | .13853 | .001 | .13857 | .12  |
| 89004 | 68.250  | 256.361 | 20.0973 | 1.32584 | .14295 | .001 | .14252 | 1.24 |
| 89003 | 68.251  | 255.551 | 20.1310 | 1.17298 | .14292 | .001 | .14263 | .95  |
| 89002 | 68.252  | 254.349 | 20.1812 | .89364  | .14361 | .001 | .14352 | 1.04 |
| 89001 | 68.255  | 253.250 | 20.2272 | .65978  | .14340 | .001 | .14349 | .53  |

| Run Pt. | Pressure MPa | Temperature K | Centrifit mol/L | Power W/m | Experimental Thermal Conductivity W/m.K | STAT | Adjusted Thermal Conductivity at a Nominal Temperature of 274.6K from Correlation |                   |  |
|---------|--------------|---------------|-----------------|-----------|---|------|---|-------------------|--|
|         |              |               |                 |           |   |      | W/m.K   | Deviation percent |  |
| 88155   | .312         | 274.741       | .1384           | .12753    | .02591                                  | .002 | .02589  | 1.67              |  |
| 88154   | .312         | 274.127       | .1387           | .10389    | .02606                                  | .003 | .02612  | 2.53              |  |
| 88153   | .312         | 272.971       | .1393           | .08212    | .02573                                  | .005 | .02594  | 1.86              |  |
| 88156   | .312         | 272.669       | .1395           | .06358    | .02573                                  | .006 | .02598  | 2.01              |  |
| 88151   | .933         | 275.087       | .4243           | .15430    | .02646                                  | .002 | .02639  | .87               |  |
| 88150   | .933         | 274.292       | .4259           | .12761    | .02636                                  | .003 | .02640  | .87               |  |
| 88149   | .933         | 273.594       | .4271           | .10363    | .02598                                  | .004 | .02611  | -.23              |  |
| 88152   | .933         | 273.085       | .4278           | .08258    | .02612                                  | .003 | .02631  | .55               |  |
| 88148   | 2.144        | 275.967       | 1.0277          | .21237    | .02805                                  | .002 | .02787  | .59               |  |

|       |        |         |         |        |        |      |        |       |
|-------|--------|---------|---------|--------|--------|------|--------|-------|
| 88147 | 2.144  | 275.067 | 1.0322  | .18116 | .02785 | .001 | .02778 | .25   |
| 88146 | 2.145  | 274.304 | 1.0363  | .15251 | .02774 | .002 | .02777 | .17   |
| 88145 | 2.145  | 273.531 | 1.0403  | .12624 | .02762 | .003 | .02775 | .06   |
| 88144 | 3.075  | 275.521 | 1.5479  | .21237 | .02899 | .001 | .02887 | .82   |
| 88143 | 3.075  | 274.652 | 1.5558  | .18126 | .02925 | .002 | .02924 | .37   |
| 88142 | 3.075  | 274.029 | 1.5614  | .15253 | .02929 | .002 | .02936 | .72   |
| 88141 | 3.075  | 273.260 | 1.5686  | .12632 | .02912 | .003 | .02928 | .40   |
| 88140 | 3.762  | 276.232 | 1.9574  | .24514 | .03020 | .001 | .03000 | .93   |
| 88139 | 3.763  | 275.297 | 1.9593  | .21255 | .03023 | .001 | .03014 | .56   |
| 88138 | 3.763  | 274.507 | 1.9798  | .18121 | .03058 | .001 | .03059 | .81   |
| 88137 | 3.764  | 273.681 | 1.9909  | .15249 | .03017 | .003 | .03028 | .32   |
| 88136 | 4.618  | 275.467 | 2.5385  | .24602 | .03241 | .001 | .03231 | .82   |
| 88135 | 4.520  | 274.851 | 2.5512  | .21251 | .03181 | .002 | .03178 | .96   |
| 88134 | 4.621  | 274.189 | 2.5651  | .18139 | .03088 | .002 | .03092 | .90   |
| 88133 | 4.622  | 273.542 | 2.5785  | .15262 | .03210 | .002 | .03221 | .14   |
| 88132 | 5.115  | 276.145 | 2.8842  | .28317 | .03268 | .012 | .03251 | -2.03 |
| 88131 | 5.117  | 275.477 | 2.9015  | .24685 | .03123 | .005 | .03113 | -6.72 |
| 88130 | 5.121  | 274.363 | 2.9307  | .21300 | .03266 | .015 | .03268 | -1.96 |
| 88129 | 5.124  | 273.749 | 2.9483  | .18129 | .03310 | .003 | .03319 | -58   |
| 88128 | 5.753  | 275.995 | 3.3841  | .28532 | .03531 | .011 | .03517 | .76   |
| 88127 | 5.754  | 275.016 | 3.3876  | .24923 | .03457 | .015 | .03443 | -1.36 |
| 88126 | 5.756  | 275.435 | 3.4038  | .21600 | .03429 | .019 | .03420 | -2.22 |
| 88125 | 5.758  | 275.184 | 3.4135  | .18502 | .03499 | .025 | .03493 | -20   |
| 88124 | 6.344  | 274.827 | 3.9308  | .28223 | .03620 | .011 | .03618 | -2.07 |
| 88123 | 6.345  | 274.180 | 3.9594  | .24594 | .03632 | .013 | .03635 | -1.87 |
| 88122 | 6.348  | 273.538 | 3.9892  | .21235 | .03618 | .017 | .03627 | -2.43 |
| 88121 | 5.350  | 273.097 | 4.0107  | .18112 | .03596 | .021 | .03608 | -3.19 |
| 88120 | 6.851  | 275.075 | 4.3903  | .32073 | .03865 | .010 | .03861 | -36   |
| 88119 | 6.851  | 274.846 | 4.4023  | .28210 | .03859 | .003 | .03857 | -59   |
| 88118 | 6.852  | 273.885 | 4.4528  | .24596 | .03864 | .014 | .03869 | -81   |
| 88117 | 6.852  | 273.321 | 4.4833  | .21215 | .03886 | .018 | .03895 | -46   |
| 88116 | 7.339  | 275.709 | 4.8346  | .32224 | .04134 | .003 | .04127 | 1.60  |
| 88115 | 7.339  | 274.999 | 4.8780  | .28350 | .04126 | .002 | .04123 | 1.07  |
| 88114 | 7.340  | 274.787 | 4.8918  | .24795 | .04148 | .002 | .04147 | 1.48  |
| 88113 | 7.340  | 273.574 | 4.9689  | .21244 | .04114 | .002 | .04120 | .03   |
| 88112 | 7.731  | 275.733 | 5.2352  | .34296 | .04263 | .002 | .04257 | .51   |
| 88111 | 7.732  | 275.109 | 5.2792  | .32191 | .04305 | .002 | .04302 | 1.11  |
| 88109 | 7.733  | 274.775 | 5.3041  | .24523 | .04238 | .004 | .04237 | -67   |
| 88110 | 7.733  | 274.385 | 5.3319  | .28292 | .04301 | .002 | .04302 | .56   |
| 88108 | 8.179  | 276.125 | 5.6821  | .36719 | .04568 | .002 | .04562 | 2.77  |
| 88107 | 8.180  | 275.805 | 5.7982  | .32588 | .04582 | .301 | .04577 | 2.84  |
| 88106 | 8.181  | 275.196 | 5.7579  | .28655 | .04574 | .002 | .04572 | 2.23  |
| 88105 | 8.181  | 275.102 | 5.7656  | .25120 | .04632 | .002 | .04630 | 3.38  |
| 88104 | 8.572  | 274.949 | 6.2166  | .36284 | .04696 | .002 | .04695 | .31   |
| 88103 | 8.572  | 274.447 | 6.2640  | .32178 | .04708 | .002 | .04708 | .12   |
| 88101 | 8.573  | 273.757 | 6.3306  | .28209 | .04677 | .002 | .04678 | -1.17 |
| 88102 | 8.572  | 273.497 | 6.3554  | .24672 | .04694 | .003 | .04696 | -1.05 |
| 88100 | 9.093  | 274.942 | 6.8124  | .36374 | .04974 | .002 | .04974 | .37   |
| 88099 | 9.094  | 274.207 | 6.8922  | .32198 | .04952 | .015 | .04952 | -80   |
| 88098 | 9.094  | 273.720 | 6.9452  | .28299 | .04999 | .001 | .04999 | -35   |
| 88097 | 9.094  | 273.134 | 7.0131  | .24628 | .04985 | .301 | .04985 | -1.25 |
| 88095 | 9.457  | 275.958 | 7.1146  | .41108 | .05154 | .010 | .05154 | 1.17  |
| 88094 | 9.457  | 274.607 | 7.2673  | .35306 | .05109 | .012 | .05109 | -1.05 |
| 88093 | 9.457  | 274.190 | 7.3162  | .28565 | .05232 | .002 | .05232 | .90   |
| 88093 | 9.458  | 273.989 | 7.3405  | .32129 | .05142 | .002 | .05142 | -1.05 |
| 88092 | 9.880  | 276.436 | 7.5281  | .49985 | .05328 | .013 | .05329 | .94   |
| 88091 | 9.880  | 276.231 | 7.5520  | .45139 | .05388 | .001 | .05389 | 1.84  |
| 88090 | 9.879  | 275.785 | 7.6043  | .40607 | .05402 | .002 | .05403 | 1.67  |
| 88089 | 9.879  | 275.141 | 7.6810  | .32186 | .05469 | .001 | .05470 | 2.25  |
| 88088 | 10.376 | 275.324 | 8.2033  | .49756 | .05463 | .008 | .05454 | -1.95 |
| 88087 | 10.376 | 274.763 | 8.2751  | .44900 | .05489 | .010 | .05489 | -2.04 |
| 88086 | 10.376 | 274.322 | 8.3345  | .49317 | .05517 | .011 | .05517 | -1.96 |
| 88085 | 10.377 | 273.331 | 8.4689  | .31826 | .05524 | .002 | .05521 | -2.89 |
| 88083 | 10.778 | 275.105 | 8.6561  | .49746 | .05653 | .009 | .05654 | -1.82 |
| 88084 | 10.778 | 274.974 | 8.6732  | .45092 | .05699 | .010 | .05700 | -1.12 |
| 88082 | 10.778 | 274.178 | 8.7815  | .40331 | .05689 | .012 | .05688 | -2.08 |
| 88081 | 10.779 | 273.287 | 8.9057  | .31884 | .05767 | .003 | .05704 | -2.66 |
| 88080 | 11.249 | 275.952 | 9.0144  | .55012 | .05835 | .008 | .05837 | -1.05 |
| 88079 | 11.250 | 275.348 | 9.0960  | .49870 | .05860 | .009 | .05861 | -1.17 |
| 88078 | 11.250 | 274.449 | 9.2102  | .40451 | .05900 | .002 | .05900 | -1.32 |
| 88077 | 11.250 | 273.313 | 9.3785  | .31936 | .05899 | .002 | .05897 | -2.40 |
| 88076 | 11.795 | 275.069 | 9.5221  | .55135 | .06066 | .001 | .06068 | -41   |
| 88075 | 11.795 | 275.234 | 9.6216  | .49920 | .06080 | .001 | .06081 | -81   |
| 88074 | 11.795 | 274.427 | 9.7322  | .40480 | .06116 | .002 | .06116 | -90   |
| 88073 | 11.795 | 273.410 | 9.8749  | .31945 | .06108 | .002 | .06107 | -1.92 |
| 88072 | 12.404 | 275.795 | 10.0677 | .55047 | .06253 | .001 | .06253 | -67   |
| 88071 | 12.404 | 274.366 | 10.1252 | .49996 | .06318 | .002 | .06318 | .03   |
| 88070 | 12.404 | 274.480 | 10.2451 | .40568 | .06315 | .002 | .06315 | -72   |
| 88069 | 12.404 | 273.295 | 10.4207 | .31959 | .06308 | .002 | .06308 | -1.85 |
| 88068 | 13.030 | 275.990 | 10.5275 | .60370 | .06428 | .002 | .06427 | -58   |
| 88067 | 13.030 | 275.015 | 10.6552 | .49990 | .06434 | .001 | .06434 | -1.21 |
| 88066 | 13.020 | 274.195 | 10.7637 | .40457 | .06487 | .002 | .06487 | -09   |
| 88065 | 13.030 | 273.225 | 10.8934 | .31985 | .06507 | .003 | .06509 | -1.40 |
| 88064 | 13.810 | 275.855 | 11.0852 | .60430 | .06673 | .001 | .06670 | -03   |
| 88063 | 13.811 | 274.668 | 11.2355 | .49971 | .06702 | .001 | .06702 | -42   |
| 88062 | 13.809 | 274.014 | 11.3172 | .40523 | .06742 | .301 | .06743 | -26   |

|       |        |         |         |        |        |      |        |       |
|-------|--------|---------|---------|--------|--------|------|--------|-------|
| 88061 | 13.810 | 273.197 | 11.4218 | .32003 | .06722 | .002 | .06726 | -1.13 |
| 88060 | 14.572 | 275.874 | 11.5481 | .60441 | .06874 | .001 | .06869 | .25   |
| 88059 | 14.572 | 274.905 | 11.6551 | .49965 | .06908 | .002 | .06907 | .11   |
| 88058 | 14.572 | 273.791 | 11.7997 | .40513 | .06912 | .001 | .06915 | -.56  |
| 88057 | 14.570 | 273.163 | 11.8750 | .32025 | .06924 | .003 | .06930 | -.79  |
| 88056 | 15.666 | 275.776 | 12.1400 | .60590 | .07159 | .001 | .07152 | .77   |
| 88055 | 15.665 | 274.834 | 12.2450 | .50114 | .07192 | .001 | .07190 | .65   |
| 88054 | 15.665 | 274.027 | 12.3371 | .40629 | .07224 | .001 | .07227 | .59   |
| 88053 | 15.665 | 273.203 | 12.4301 | .32090 | .07216 | .002 | .07224 | -.03  |
| 88052 | 16.760 | 275.343 | 12.5778 | .60400 | .07477 | .002 | .07465 | 2.28  |
| 88051 | 16.761 | 275.550 | 12.6616 | .49919 | .07540 | .001 | .07533 | 2.64  |
| 88050 | 16.761 | 275.064 | 12.7131 | .40497 | .07623 | .002 | .07619 | 3.42  |
| 88049 | 16.763 | 274.692 | 12.7533 | .32136 | .07643 | .003 | .07642 | 3.45  |
| 88048 | 18.132 | 275.673 | 13.1831 | .60491 | .07713 | .001 | .07703 | 1.41  |
| 88047 | 18.138 | 274.805 | 13.2704 | .50083 | .07720 | .002 | .07718 | .99   |
| 88046 | 18.133 | 274.458 | 12.3028 | .40725 | .07762 | .002 | .07783 | 1.59  |
| 88045 | 18.134 | 272.962 | 13.4504 | .31937 | .07703 | .003 | .07717 | -.29  |
| 88044 | 19.704 | 275.472 | 13.7233 | .60429 | .07995 | .001 | .07986 | 1.13  |
| 88043 | 19.702 | 274.686 | 13.7943 | .50022 | .08033 | .001 | .08032 | 1.18  |
| 88042 | 19.700 | 273.963 | 13.8595 | .40623 | .08087 | .002 | .08093 | 1.44  |
| 88041 | 19.698 | 273.346 | 13.9151 | .32121 | .08067 | .003 | .08080 | .86   |
| 88039 | 20.585 | 275.431 | 13.9856 | .60458 | .08176 | .001 | .08167 | 1.39  |
| 88038 | 20.583 | 274.683 | 14.0504 | .49942 | .08197 | .001 | .08196 | 1.25  |
| 88037 | 20.590 | 273.771 | 14.1324 | .40593 | .08170 | .002 | .08179 | .41   |
| 88040 | 20.582 | 273.489 | 14.1549 | .32182 | .08277 | .002 | .08299 | 1.56  |
| 88035 | 23.447 | 274.504 | 14.7782 | .60286 | .08601 | .001 | .08602 | .23   |
| 88034 | 23.450 | 273.735 | 14.8392 | .49846 | .08589 | .001 | .08599 | -.31  |
| 88033 | 23.446 | 273.052 | 14.8921 | .40400 | .08604 | .001 | .08623 | -.48  |
| 88032 | 26.707 | 275.038 | 15.3942 | .71726 | .09051 | .001 | .09045 | -.05  |
| 88031 | 26.708 | 274.324 | 15.4452 | .60258 | .09085 | .001 | .09088 | -.02  |
| 88030 | 26.707 | 273.563 | 15.4989 | .49841 | .09092 | .001 | .09106 | -.31  |
| 88029 | 26.705 | 272.803 | 15.5526 | .40374 | .09089 | .002 | .09113 | -.71  |
| 88028 | 30.617 | 275.883 | 15.9844 | .84354 | .09584 | .001 | .09565 | .20   |
| 88027 | 30.515 | 274.944 | 15.0417 | .71901 | .09619 | .001 | .09613 | .17   |
| 88026 | 30.615 | 274.313 | 16.0851 | .60481 | .09655 | .001 | .09659 | .24   |
| 88025 | 30.614 | 273.232 | 16.1545 | .49754 | .09580 | .001 | .09599 | -1.02 |
| 88024 | 35.153 | 275.359 | 16.6358 | .83999 | .10128 | .001 | .10116 | -.33  |
| 88023 | 35.151 | 274.688 | 16.6740 | .71599 | .10166 | .002 | .10164 | -.23  |
| 88022 | 35.146 | 273.911 | 16.7198 | .60150 | .10176 | .002 | .10186 | -.45  |
| 88021 | 35.145 | 273.204 | 16.7513 | .49690 | .10169 | .001 | .10193 | -.82  |
| 88020 | 40.663 | 276.066 | 17.2197 | .97644 | .10857 | .004 | .10833 | .84   |
| 88019 | 40.663 | 275.307 | 17.2603 | .84266 | .10783 | .001 | .10771 | -.14  |
| 88018 | 40.656 | 274.394 | 17.3091 | .71765 | .10821 | .001 | .10824 | -.13  |
| 88017 | 40.649 | 273.769 | 17.3414 | .60369 | .10844 | .001 | .10856 | -.15  |
| 88016 | 46.995 | 275.700 | 17.8364 | .97333 | .11411 | .001 | .11393 | -.27  |
| 88015 | 46.995 | 274.794 | 17.8810 | .83947 | .11451 | .001 | .11447 | -.24  |
| 88014 | 46.996 | 274.185 | 17.9110 | .71515 | .11453 | .001 | .11459 | -.44  |
| 88013 | 46.995 | 273.162 | 17.0614 | .60007 | .11454 | .001 | .11477 | -.80  |
| 88012 | 54.481 | 275.551 | 18.4348 | .97564 | .12198 | .001 | .12182 | .35   |
| 88011 | 54.489 | 274.980 | 19.4613 | .84284 | .12237 | .001 | .12230 | .48   |
| 88010 | 54.489 | 274.315 | 18.4915 | .71795 | .12237 | .001 | .12241 | .26   |
| 88009 | 54.492 | 273.655 | 18.5213 | .60321 | .12221 | .002 | .12236 | -.09  |
| 88008 | 62.785 | 275.481 | 18.9090 | .97892 | .13009 | .006 | .12993 | 1.08  |
| 88007 | 52.788 | 274.489 | 19.0332 | .84283 | .12947 | .001 | .12948 | .29   |
| 88006 | 62.790 | 273.886 | 19.0588 | .71768 | .12801 | .005 | .12812 | -1.03 |
| 88005 | 62.800 | 273.257 | 19.0851 | .60269 | .12915 | .009 | .12937 | -.34  |
| 88004 | 67.302 | 275.359 | 19.2620 | .97940 | .13360 | .003 | .13346 | .94   |
| 88003 | 67.304 | 274.614 | 19.2930 | .84408 | .13165 | .013 | .13164 | -.75  |
| 88002 | 67.309 | 273.955 | 19.3231 | .71837 | .13347 | .001 | .13358 | .40   |
| 88001 | 67.317 | 273.070 | 19.3570 | .60235 | .13304 | .013 | .13329 | -.17  |

| Run Pt. | Pressure MPa | Temperature K | Density mol/L | Power W/m | Experimental Thermal Conductivity W/m.K | STAT | Adjusted Thermal Conductivity at a Nominal Temperature of 296.4% from Correlation |                   |
|---------|--------------|---------------|---------------|-----------|---|------|---|-------------------|
|         |              |               |               |           |   |      | W/m.K   | Deviation percent |
| 87157   | .453         | 297.424       | .1858         | .15610    | .02933                                  | .003 | .02918  | 2.05              |
| 87156   | .453         | 295.594       | .1864         | .13766    | .02901                                  | .005 | .02898  | 1.37              |
| 87155   | .453         | 295.744       | .1871         | .11187    | .02914                                  | .005 | .02923  | 2.21              |
| 87154   | .453         | 295.042       | .1876         | .08879    | .02875                                  | .006 | .02894  | 1.23              |
| 87153   | 1.075        | 293.191       | .4489         | .19798    | .02999                                  | .005 | .02973  | 1.73              |
| 87152   | 1.075        | 297.498       | .4501         | .15698    | .02986                                  | .003 | .02970  | 1.62              |
| 87151   | 1.075        | 296.298       | .4521         | .13342    | .02961                                  | .005 | .02962  | 1.24              |
| 87150   | 1.075        | 295.588       | .4533         | .11263    | .02946                                  | .007 | .02957  | 1.16              |
| 87149   | 2.355        | 298.033       | 1.0327        | .23179    | .03111                                  | .003 | .03088  | .70               |
| 87148   | 2.365        | 297.147       | 1.0367        | .19813    | .03092                                  | .003 | .03081  | .45               |
| 87147   | 2.365        | 295.350       | 1.0404        | .16688    | .03095                                  | .003 | .03096  | .88               |
| 87146   | 2.365        | 295.681       | 1.0435        | .13823    | .03066                                  | .003 | .03076  | .22               |
| 87145   | 3.303        | 297.564       | 1.4954        | .23209    | .03210                                  | .002 | .03194  | .27               |
| 87144   | 3.303        | 296.837       | 1.5008        | .19809    | .03208                                  | .009 | .03202  | .47               |
| 87143   | 3.303        | 296.081       | 1.5064        | .16690    | .03194                                  | .002 | .03193  | .32               |
| 87142   | 3.303        | 295.574       | 1.5102        | .13848    | .03189                                  | .003 | .03200  | .35               |
| 87141   | 4.251        | 297.544       | 1.9957        | .23171    | .03372                                  | .002 | .03356  | 1.10              |
| 87140   | 4.251        | 296.545       | 2.0067        | .19814    | .03332                                  | .002 | .03330  | .22               |
| 87139   | 4.251        | 295.009       | 2.0127        | .16690    | .03337                                  | .002 | .03342  | .54               |
| 87138   | 4.251        | 295.433       | 2.0203        | .13840    | .03343                                  | .003 | .03357  | .92               |

|       |        |         |         |        |        |      |        |       |
|-------|--------|---------|---------|--------|--------|------|--------|-------|
| 87137 | 5.000  | 297.179 | 2.4750  | .23201 | .03502 | .002 | .03492 | 1.05  |
| 87136 | 5.000  | 296.415 | 2.4875  | .19910 | .03494 | .003 | .03494 | 1.01  |
| 87134 | 5.089  | 295.110 | 2.4917  | .15644 | .03459 | .003 | .03463 | .09   |
| 87135 | 5.049  | 295.311 | 2.5041  | .13938 | .03481 | .003 | .03495 | .01   |
| 87133 | 5.912  | 297.780 | 2.9625  | .26781 | .03643 | .002 | .03625 | .70   |
| 87132 | 5.912  | 297.215 | 2.9737  | .23150 | .03642 | .001 | .03632 | .77   |
| 87131 | 5.012  | 295.615 | 2.9958  | .19777 | .03440 | .002 | .03637 | .82   |
| 87130 | 5.912  | 296.252 | 2.9932  | .16703 | .03445 | .002 | .03647 | 1.02  |
| 87129 | 5.912  | 295.473 | 3.0091  | .13845 | .03618 | .005 | .03630 | .42   |
| 87128 | 6.589  | 297.670 | 2.3977  | .26851 | .03770 | .002 | .03752 | .57   |
| 87127 | 6.589  | 295.755 | 3.4204  | .23185 | .03766 | .001 | .03752 | .46   |
| 87126 | 6.589  | 296.330 | 3.4311  | .19804 | .03746 | .002 | .03747 | -.03  |
| 87125 | 6.589  | 295.766 | 3.4455  | .16705 | .03764 | .002 | .03771 | .50   |
| 87124 | 7.138  | 297.174 | 3.7794  | .24815 | .03900 | .003 | .03891 | .71   |
| 87123 | 7.138  | 295.634 | 3.7955  | .23147 | .03893 | .002 | .03890 | .55   |
| 87122 | 7.138  | 296.037 | 3.8133  | .19759 | .03891 | .003 | .03895 | .52   |
| 87121 | 7.138  | 295.701 | 3.9235  | .15625 | .03904 | .003 | .03912 | .66   |
| 87120 | 7.934  | 297.512 | 4.2569  | .30752 | .04070 | .001 | .04058 | .71   |
| 87119 | 7.834  | 296.921 | 4.2781  | .26819 | .04076 | .001 | .04070 | .62   |
| 87118 | 7.834  | 295.300 | 4.3007  | .23157 | .04064 | .002 | .04065 | .50   |
| 87117 | 7.834  | 295.624 | 4.3256  | .19759 | .04063 | .002 | .04071 | .43   |
| 87116 | 8.470  | 297.313 | 4.7295  | .30747 | .04276 | .004 | .04267 | 1.52  |
| 87115 | 8.470  | 296.566 | 4.7571  | .25816 | .04247 | .003 | .04244 | .76   |
| 87114 | 8.470  | 296.179 | 4.7781  | .23162 | .04227 | .003 | .04229 | .21   |
| 87113 | 8.470  | 295.660 | 4.8009  | .19759 | .04244 | .004 | .04251 | .53   |
| 87112 | 9.185  | 297.222 | 5.2767  | .30748 | .04456 | .002 | .04449 | .84   |
| 87111 | 9.185  | 295.604 | 5.3080  | .26818 | .04448 | .003 | .04446 | .50   |
| 87110 | 9.185  | 295.061 | 5.3360  | .23184 | .04509 | .003 | .04512 | 1.71  |
| 87109 | 9.186  | 295.377 | 5.3718  | .19770 | .04446 | .002 | .04455 | .14   |
| 87108 | 9.821  | 298.273 | 5.7098  | .39365 | .04652 | .002 | .04638 | 1.17  |
| 87107 | 9.821  | 297.601 | 5.7479  | .34922 | .04651 | .001 | .04641 | .91   |
| 87106 | 9.821  | 296.367 | 5.8100  | .26780 | .04643 | .002 | .04643 | .34   |
| 87105 | 9.822  | 295.503 | 5.8711  | .19758 | .04634 | .002 | .04541 | -.17  |
| 87104 | 10.408 | 298.110 | 6.1736  | .39342 | .04822 | .001 | .04809 | .77   |
| 87103 | 10.409 | 297.240 | 6.2286  | .34903 | .04816 | .001 | .04810 | .21   |
| 87102 | 10.409 | 296.323 | 6.2879  | .26795 | .04823 | .002 | .04823 | .09   |
| 87101 | 10.408 | 295.338 | 6.3535  | .19807 | .04826 | .002 | .04833 | -.27  |
| 87100 | 10.980 | 298.348 | 6.4608  | .44024 | .04990 | .001 | .04977 | .57   |
| 87099 | 10.980 | 296.835 | 6.7056  | .34898 | .04995 | .001 | .04992 | -.00  |
| 87098 | 10.980 | 296.108 | 6.7576  | .26804 | .05006 | .002 | .05008 | -.13  |
| 87097 | 10.980 | 295.159 | 6.9270  | .19755 | .04991 | .004 | .04998 | -.89  |
| 87096 | 11.462 | 298.793 | 6.9395  | .46069 | .05206 | .001 | .05191 | 1.95  |
| 87095 | 11.462 | 297.040 | 7.0679  | .34818 | .05163 | .002 | .05159 | .31   |
| 87094 | 11.461 | 295.206 | 7.1297  | .26773 | .05175 | .002 | .05175 | .14   |
| 87093 | 11.461 | 295.797 | 7.1613  | .19795 | .05186 | .002 | .05189 | .14   |
| 87092 | 12.197 | 295.591 | 7.5132  | .43969 | .05379 | .002 | .05368 | .74   |
| 87091 | 12.197 | 297.684 | 7.5777  | .34907 | .05462 | .002 | .05455 | 1.84  |
| 87090 | 12.197 | 295.509 | 7.6565  | .25787 | .05450 | .003 | .05449 | 1.06  |
| 87089 | 12.197 | 295.013 | 7.7978  | .19767 | .05413 | .003 | .05419 | -.49  |
| 87087 | 12.903 | 297.814 | 8.0845  | .44055 | .05576 | .002 | .05559 | .10   |
| 87086 | 12.903 | 296.967 | 8.1565  | .34879 | .05607 | .002 | .05604 | .20   |
| 87085 | 12.903 | 296.121 | 8.2297  | .26824 | .05624 | .002 | .05625 | .04   |
| 87088 | 12.904 | 295.173 | 8.3128  | .19772 | .05633 | .003 | .05638 | -.33  |
| 87084 | 13.563 | 297.466 | 8.5776  | .48921 | .05740 | .004 | .05735 | -.50  |
| 87083 | 13.563 | 296.782 | 8.6381  | .43900 | .05771 | .002 | .05769 | -.32  |
| 87082 | 13.564 | 295.908 | 8.7170  | .34761 | .05800 | .002 | .05802 | -.30  |
| 87081 | 13.563 | 294.915 | 8.8079  | .26653 | .05736 | .007 | .05742 | -1.98 |
| 87080 | 14.216 | 297.345 | 9.0244  | .48974 | .05942 | .002 | .05938 | -.08  |
| 87079 | 14.214 | 296.829 | 9.0702  | .43923 | .05953 | .003 | .05951 | -.16  |
| 87078 | 14.215 | 295.723 | 9.1721  | .34735 | .05916 | .003 | .05919 | -1.39 |
| 87077 | 14.215 | 294.812 | 9.2579  | .26635 | .05965 | .002 | .05972 | -1.06 |
| 87076 | 14.966 | 297.584 | 9.4744  | .54140 | .06103 | .002 | .06097 | -.40  |
| 87075 | 14.964 | 296.642 | 9.5595  | .43917 | .06135 | .002 | .06135 | -.34  |
| 87074 | 14.964 | 295.773 | 9.5402  | .34773 | .06159 | .002 | .06162 | -.42  |
| 87073 | 14.955 | 294.674 | 9.7442  | .25621 | .06127 | .002 | .06125 | -1.53 |
| 87072 | 15.977 | 297.375 | 10.0778 | .56144 | .06393 | .002 | .06388 | .38   |
| 87071 | 15.976 | 295.383 | 10.1683 | .43890 | .06360 | .002 | .06360 | -.62  |
| 87070 | 15.977 | 295.509 | 10.2499 | .34752 | .06377 | .002 | .06382 | -.60  |
| 87069 | 15.977 | 294.481 | 10.3465 | .26645 | .06410 | .004 | .06421 | -.80  |
| 87068 | 16.862 | 297.193 | 10.5596 | .56134 | .06577 | .002 | .06572 | .19   |
| 87067 | 16.852 | 296.208 | 10.6486 | .43902 | .06554 | .003 | .06555 | -.63  |
| 87066 | 16.863 | 295.397 | 10.7234 | .34753 | .06594 | .003 | .06600 | -.41  |
| 87065 | 16.862 | 294.567 | 10.801P | .26661 | .06587 | .004 | .06599 | -.93  |
| 87064 | 17.828 | 297.132 | 11.0273 | .54232 | .06725 | .004 | .06720 | -.54  |
| 87063 | 17.829 | 296.600 | 11.1279 | .43953 | .06820 | .003 | .06823 | .35   |
| 87062 | 17.826 | 295.656 | 11.1577 | .34862 | .06812 | .003 | .06817 | .08   |
| 87061 | 17.826 | 294.560 | 11.2565 | .26686 | .06818 | .002 | .06831 | -.35  |
| 87060 | 19.150 | 295.785 | 11.6217 | .54100 | .07056 | .002 | .07053 | .49   |
| 87059 | 19.150 | 295.865 | 11.7006 | .43868 | .07049 | .001 | .07053 | -.02  |
| 87058 | 19.150 | 295.137 | 11.7634 | .34712 | .07028 | .003 | .07039 | -.64  |
| 87057 | 19.150 | 294.329 | 11.9328 | .26640 | .07079 | .004 | .07097 | -.28  |
| 87055 | 20.495 | 296.722 | 12.1330 | .54131 | .07314 | .002 | .07311 | .70   |
| 87054 | 20.496 | 295.868 | 12.2033 | .43886 | .07291 | .002 | .07296 | .02   |
| 87053 | 20.494 | 294.920 | 12.2811 | .34693 | .07300 | .003 | .07314 | -.26  |
| 87056 | 20.495 | 294.591 | 12.3093 | .26739 | .07383 | .006 | .07400 | .71   |
| 87052 | 22.082 | 297.432 | 12.5945 | .65499 | .07555 | .001 | .07543 | .65   |

|       |        |         |         |         |        |      |        |      |
|-------|--------|---------|---------|---------|--------|------|--------|------|
| 87051 | 22.053 | 294.653 | 12.6534 | .54164  | .07584 | .001 | .07591 | .67  |
| 87050 | 22.081 | 295.834 | 12.7269 | .43943  | .07572 | .002 | .07578 | .18  |
| 87049 | 22.081 | 294.932 | 12.7980 | .34699  | .07564 | .002 | .07580 | -.30 |
| 87048 | 23.826 | 297.297 | 13.1204 | .55384  | .07815 | .001 | .07905 | .28  |
| 87047 | 23.825 | 295.404 | 13.1864 | .54072  | .07845 | .002 | .07945 | .31  |
| 87046 | 23.825 | 295.606 | 13.2459 | .43862  | .07860 | .003 | .07869 | .18  |
| 87045 | 23.825 | 294.817 | 13.3053 | .34685  | .07869 | .002 | .07388 | -.03 |
| 87044 | 25.827 | 297.094 | 13.5438 | .65358  | .08118 | .001 | .08109 | .17  |
| 87043 | 25.827 | 295.239 | 13.7039 | .54079  | .08138 | .001 | .08140 | .08  |
| 87042 | 25.828 | 295.365 | 13.7658 | .43829  | .08156 | .002 | .08169 | -.05 |
| 87041 | 25.826 | 294.716 | 13.8112 | .34695  | .08148 | .002 | .08169 | -.40 |
| 87040 | 27.922 | 297.075 | 14.1118 | .54578  | .08440 | .001 | .08431 | .37  |
| 87039 | 27.922 | 296.236 | 14.1676 | .54169  | .08460 | .001 | .08462 | .29  |
| 87038 | 27.920 | 295.343 | 14.2256 | .43884  | .08464 | .001 | .08478 | .00  |
| 87037 | 27.918 | 294.623 | 14.2748 | .34743  | .08482 | .002 | .08506 | -.07 |
| 87036 | 30.898 | 296.947 | 14.6945 | .65537  | .08650 | .001 | .08942 | .32  |
| 87035 | 30.897 | 295.185 | 14.7415 | .54238  | .08855 | .001 | .08888 | .44  |
| 87034 | 30.895 | 295.499 | 14.7843 | .43995  | .08899 | .002 | .08903 | .25  |
| 87033 | 30.897 | 294.701 | 14.8344 | .34724  | .08842 | .002 | .08366 | -.59 |
| 87032 | 33.731 | 297.800 | 15.1175 | .70322  | .09228 | .001 | .09207 | .74  |
| 87031 | 33.732 | 296.899 | 15.1706 | .55626  | .09224 | .001 | .09215 | .38  |
| 87030 | 33.732 | 296.055 | 15.2200 | .54235  | .09222 | .001 | .09227 | .06  |
| 87029 | 33.730 | 295.407 | 15.2579 | .43997  | .09238 | .002 | .09253 | .01  |
| 87028 | 37.896 | 297.911 | 15.7136 | .84379  | .09660 | .001 | .09545 | .10  |
| 87026 | 37.900 | 296.286 | 15.8027 | .65475  | .09664 | .010 | .09666 | -.50 |
| 87025 | 37.901 | 295.979 | 15.8196 | .54216  | .09666 | .001 | .09672 | -.58 |
| 87024 | 42.138 | 297.696 | 16.2492 | .84373  | .10143 | .001 | .10122 | .01  |
| 87023 | 42.137 | 297.491 | 16.2595 | .77861  | .10144 | .001 | .10126 | -.04 |
| 87022 | 42.137 | 296.370 | 16.3168 | .55442  | .10123 | .001 | .10123 | -.60 |
| 87021 | 42.137 | 295.694 | 16.3518 | .54142  | .10138 | .001 | .10149 | -.67 |
| 87020 | 47.208 | 297.695 | 16.7826 | .84349  | .10711 | .001 | .10689 | .39  |
| 87019 | 47.206 | 297.353 | 16.8048 | .77803  | .10742 | .001 | .10726 | .58  |
| 87018 | 47.207 | 295.198 | 16.8600 | .65459  | .10645 | .001 | .10548 | -.68 |
| 87017 | 47.209 | 295.566 | 16.8905 | .54181  | .10675 | .001 | .10689 | -.59 |
| 87013 | 52.775 | 297.401 | 17.3128 | .91177  | .11121 | .001 | .11104 | -.85 |
| 87014 | 52.779 | 296.984 | 17.3317 | .77794  | .11220 | .001 | .11210 | -.08 |
| 87015 | 52.778 | 296.291 | 17.3629 | .65423  | .11239 | .001 | .11241 | -.11 |
| 87015 | 52.780 | 295.547 | 17.3965 | .54176  | .11259 | .001 | .11273 | -.15 |
| 87009 | 59.630 | 298.032 | 17.8277 | 1.05725 | .11786 | .001 | .11758 | -.17 |
| 87010 | 59.634 | 297.282 | 17.9595 | .91234  | .11803 | .001 | .11788 | -.23 |
| 87011 | 59.537 | 296.157 | 17.8901 | .77838  | .11841 | .001 | .11838 | -.10 |
| 87012 | 59.640 | 296.134 | 17.9082 | .65379  | .11878 | .001 | .11882 | .09  |
| 87005 | 57.047 | 297.599 | 18.3511 | 1.05574 | .12450 | .001 | .12429 | .19  |
| 87007 | 67.056 | 297.193 | 18.3676 | .91119  | .12482 | .001 | .12468 | .33  |
| 87006 | 67.052 | 295.653 | 18.3899 | .77827  | .12521 | .001 | .12516 | .51  |
| 87001 | 67.556 | 296.993 | 18.4134 | 1.04485 | .12437 | .001 | .12426 | -.46 |
| 87008 | 67.059 | 295.934 | 18.4179 | .65466  | .12537 | .001 | .12545 | .45  |
| 87002 | 67.554 | 296.407 | 18.4365 | .90219  | .12472 | .001 | .12472 | -.33 |
| 87003 | 67.650 | 295.827 | 18.4591 | .77050  | .12527 | .001 | .12537 | -.03 |
| 87004 | 67.648 | 295.718 | 18.4832 | .64824  | .12527 | .001 | .12547 | -.19 |

| Run Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Power<br>W/m | Experimental<br>Thermal<br>Conductivity<br>W/m.K | STAT | Adjusted Thermal Conductivity<br>at a Nominal<br>Temperature of 324.2K from Correlation<br>W/m.K |                      | Deviation<br>percent |
|---------|-----------------|------------------|------------------|--------------|--|------|--|----------------------|----------------------|
|         |                 |                  |                  |              |  |      | Temperature of 324.2K from Correlation<br>W/m.K  | Deviation<br>percent |                      |
| 90152   | 1.426           | 325.562          | .5447            | .19728       | .03376   | .002 | .03356   | -.05                 |                      |
| 90151   | 1.426           | 324.661          | .5460            | .16631       | .03356   | .002 | .03345   | -.34                 |                      |
| 90150   | 1.426           | 324.308          | .5471            | .13794       | .03342   | .003 | .03341   | -.51                 |                      |
| 90149   | 1.426           | 323.401          | .5489            | .11197       | .03341   | .004 | .03354   | -.13                 |                      |
| 90148   | 2.632           | 325.265          | 1.0361           | .19723       | .03461   | .002 | .03445   | -.88                 |                      |
| 90147   | 2.632           | 324.564          | 1.0390           | .16616       | .03460   | .002 | .03455   | -.61                 |                      |
| 90145   | 2.532           | 324.094          | 1.0413           | .13794       | .03442   | .003 | .03444   | -.95                 |                      |
| 90145   | 2.633           | 323.420          | 1.0440           | .11207       | .03445   | .005 | .03457   | -.58                 |                      |
| 90144   | 3.697           | 325.783          | 1.4914           | .23139       | .03584   | .001 | .03561   | -.76                 |                      |
| 90143   | 3.697           | 325.191          | 1.4951           | .19758       | .03595   | .002 | .03581   | -.23                 |                      |
| 90142   | 3.697           | 324.369          | 1.5003           | .16531       | .03564   | .002 | .03562   | -.79                 |                      |
| 90141   | 3.697           | 323.719          | 1.5044           | .13779       | .03546   | .003 | .03554   | -1.05                |                      |
| 90139   | 4.848           | 324.734          | 2.0226           | .19754       | .03711   | .003 | .03704   | -.52                 |                      |
| 90137   | 4.848           | 324.423          | 2.0255           | .15629       | .03672   | 0.0E | .03669   | -1.48                |                      |
| 90140   | 4.948           | 323.763          | 2.0319           | .13822       | .03681   | .003 | .03688   | -1.00                |                      |
| 90138   | 4.848           | 323.622          | 2.0331           | .13804       | .03672   | .004 | .03681   | -1.20                |                      |
| 90136   | 5.876           | 325.807          | 2.5034           | .25787       | .03856   | .001 | .03933   | -.43                 |                      |
| 90135   | 5.876           | 325.197          | 2.5111           | .23138       | .03849   | .001 | .03835   | -.43                 |                      |
| 90134   | 5.876           | 324.507          | 2.5199           | .19752       | .03824   | .002 | .03820   | -.89                 |                      |
| 90133   | 5.876           | 323.820          | 2.5287           | .15619       | .03818   | .003 | .03824   | -.84                 |                      |
| 90132   | 6.801           | 325.649          | 2.9673           | .26792       | .03979   | .002 | .03959   | -.46                 |                      |
| 90131   | 6.801           | 325.002          | 2.9782           | .23140       | .03999   | .003 | .03988   | .21                  |                      |
| 90130   | 6.801           | 324.481          | 2.9867           | .19751       | .03951   | .002 | .03958   | -.62                 |                      |
| 90129   | 6.801           | 323.813          | 2.9976           | .16641       | .03962   | .003 | .03968   | -.44                 |                      |
| 90128   | 7.759           | 324.880          | 3.4811           | .23163       | .04113   | .002 | .04104   | -.49                 |                      |
| 90127   | 7.758           | 324.183          | 3.4949           | .19766       | .04133   | .007 | .04134   | .13                  |                      |
| 90126   | 7.757           | 323.574          | 3.5071           | .16650       | .04127   | .305 | .04136   | .10                  |                      |
| 90125   | 7.757           | 323.360          | 3.5115           | .13793       | .04091   | .004 | .04103   | -.73                 |                      |
| 90124   | 8.669           | 325.135          | 3.9678           | .23208       | .04293   | .002 | .04281   | .25                  |                      |
| 90123   | 8.669           | 324.249          | 3.9897           | .19825       | .04293   | .003 | .04293   | .36                  |                      |

|       |         |         |         |        |        |      |        |       |
|-------|---------|---------|---------|--------|--------|------|--------|-------|
| 90122 | 8.659   | 323.092 | 3.0961  | .16737 | .04280 | .009 | .04283 | .00   |
| 90121 | 8.660   | 323.160 | 4.0160  | .13909 | .04245 | .003 | .04259 | -.62  |
| 90120 | 9.425   | 325.600 | 4.3735  | .30752 | .04435 | .032 | .04410 | .65   |
| 90119 | 9.425   | 325.045 | 4.3894  | .26812 | .04414 | .004 | .04404 | .02   |
| 90118 | 9.425   | 324.413 | 4.4072  | .23150 | .04416 | .003 | .04414 | .12   |
| 90117 | 9.425   | 324.384 | 4.4081  | .19760 | .04397 | .003 | .04395 | -.31  |
| 90116 | 9.425   | 324.034 | 4.4566  | .23080 | .04433 | .002 | .04436 | .25   |
| 90115 | 9.425   | 323.944 | 4.4721  | .19598 | .04429 | .006 | .04438 | .19   |
| 90114 | 9.425   | 323.041 | 4.4873  | .16598 | .04411 | .003 | .04426 | -.19  |
| 90113 | 9.425   | 322.605 | 4.5003  | .13760 | .04395 | .003 | .04416 | -.50  |
| 90112 | 10.420  | 324.709 | 4.5678  | .26793 | .04621 | .003 | .04515 | .50   |
| 90111 | 10.420  | 324.355 | 4.9798  | .23148 | .04614 | .002 | .04613 | .35   |
| 90110 | 10.420  | 323.717 | 5.0022  | .19761 | .04601 | .002 | .04607 | .07   |
| 90109 | 10.420  | 322.977 | 5.0280  | .16690 | .04577 | .004 | .04592 | -.46  |
| 90108 | 11.241  | 324.579 | 5.4387  | .26791 | .04762 | .003 | .04770 | .51   |
| 90107 | 11.241  | 323.817 | 5.4682  | .23102 | .04752 | .005 | .04757 | -.16  |
| 90106 | 11.241  | 323.341 | 5.4871  | .19730 | .04773 | .003 | .04783 | .25   |
| 90105 | 11.241  | 322.965 | 5.5025  | .16519 | .04748 | .004 | .04762 | -.29  |
| 90104 | 12.081  | 324.126 | 5.9415  | .25761 | .04935 | .003 | .04936 | .09   |
| 90103 | 12.081  | 323.636 | 5.9628  | .23104 | .04941 | .002 | .04947 | .14   |
| 90102 | 12.081  | 323.352 | 5.9753  | .19721 | .04931 | .006 | .04940 | -.09  |
| 90101 | 12.081  | 323.047 | 5.9866  | .16629 | .04926 | .003 | .04939 | -.29  |
| 90049 | 12.981  | 323.997 | 6.4625  | .26737 | .05141 | .002 | .05143 | .39   |
| 90098 | 12.981  | 323.456 | 6.4818  | .23099 | .05105 | .003 | .05113 | -.46  |
| 90097 | 12.981  | 323.135 | 6.5045  | .19724 | .05123 | .002 | .05134 | -.11  |
| 90100 | 12.981  | 322.760 | 6.5322  | .16644 | .05145 | .003 | .05159 | .26   |
| 90096 | 13.899  | 324.202 | 6.9694  | .26793 | .05302 | .002 | .05302 | -.18  |
| 90095 | 13.890  | 323.514 | 6.9942  | .23130 | .05326 | .003 | .05332 | .15   |
| 90093 | 13.890  | 323.137 | 7.0195  | .19743 | .05272 | .003 | .05282 | -.47  |
| 90094 | 13.890  | 322.805 | 7.0372  | .16444 | .05312 | .003 | .05323 | -.28  |
| 90092 | 16.743  | 324.634 | 7.6168  | .30709 | .05539 | .003 | .05537 | .93   |
| 90061 | 16.743  | 323.910 | 7.6458  | .25803 | .05481 | .003 | .05494 | -.24  |
| 90000 | 16.743  | 323.553 | 7.64658 | .23130 | .05509 | .004 | .05514 | .15   |
| 90049 | 16.743  | 322.958 | 7.4996  | .19742 | .05510 | .002 | .05521 | .05   |
| 90088 | 15.693  | 324.225 | 7.9242  | .30697 | .05675 | .003 | .05675 | -.15  |
| 90087 | 15.693  | 323.794 | 7.9495  | .25767 | .05680 | .003 | .05686 | -.18  |
| 90086 | 15.693  | 323.304 | 7.9785  | .23132 | .05655 | .002 | .05669 | .75   |
| 90085 | 15.692  | 322.949 | 7.9993  | .19733 | .05691 | .003 | .05701 | -.21  |
| 90084 | 15.518  | 324.685 | 8.3190  | .34921 | .05801 | .002 | .05877 | .64   |
| 90093 | 15.518  | 324.286 | 8.3432  | .30509 | .05832 | .003 | .05832 | -.31  |
| 90082 | 15.518  | 323.698 | 8.3786  | .26780 | .05847 | .004 | .05851 | .21   |
| 90081 | 15.517  | 323.173 | 8.4104  | .23131 | .05827 | .003 | .05838 | -.70  |
| 90080 | 17.4708 | 324.732 | 8.8848  | .34902 | .06101 | .002 | .06097 | .48   |
| 90076 | 17.649  | 324.183 | 8.8921  | .30801 | .06073 | .002 | .06073 | .05   |
| 90079 | 17.707  | 324.398 | 8.9061  | .30805 | .06103 | .002 | .06102 | .42   |
| 90073 | 17.849  | 323.472 | 8.9243  | .25873 | .06033 | .007 | .06038 | -.76  |
| 90077 | 17.706  | 324.059 | 8.9261  | .23271 | .06122 | .004 | .06123 | .64   |
| 90078 | 17.707  | 326.019 | 8.9291  | .25904 | .06120 | .002 | .06130 | .72   |
| 90074 | 17.440  | 323.395 | 8.9422  | .23202 | .06073 | .005 | .06080 | -.18  |
| 90073 | 17.440  | 322.866 | 8.9761  | .19809 | .06080 | .005 | .06090 | -.06  |
| 90072 | 18.819  | 324.495 | 9.3966  | .34999 | .06291 | .002 | .06289 | .17   |
| 90071 | 18.819  | 324.020 | 9.4274  | .30761 | .06275 | .003 | .06277 | -.23  |
| 90070 | 18.820  | 323.539 | 9.4394  | .26847 | .06304 | .003 | .06310 | .09   |
| 90069 | 18.820  | 323.186 | 9.4812  | .23180 | .06297 | .002 | .06306 | -.13  |
| 90068 | 19.979  | 324.638 | 9.8619  | .39472 | .06500 | .001 | .06497 | .33   |
| 90067 | 19.959  | 324.287 | 9.8846  | .34987 | .06498 | .002 | .06498 | .19   |
| 90084 | 19.959  | 323.697 | 9.9227  | .30747 | .06473 | .003 | .06478 | -.36  |
| 90065 | 19.950  | 323.271 | 9.9508  | .26824 | .06530 | .005 | .06538 | .36   |
| 90066 | 21.274  | 324.677 | 10.3653 | .19473 | .06692 | .004 | .06598 | -.11  |
| 90064 | 21.274  | 324.104 | 10.4022 | .35051 | .06708 | .002 | .06705 | -.04  |
| 90062 | 21.275  | 323.718 | 10.4275 | .30787 | .06703 | .003 | .06708 | -.23  |
| 90061 | 21.275  | 323.301 | 10.4510 | .25842 | .06691 | .002 | .06702 | -.51  |
| 90060 | 22.773  | 324.412 | 10.9946 | .39457 | .06956 | .003 | .06956 | .24   |
| 90059 | 22.773  | 323.466 | 10.9308 | .34961 | .06936 | .001 | .06960 | -.21  |
| 90058 | 22.734  | 323.195 | 10.9730 | .31752 | .06938 | .003 | .06948 | -.37  |
| 90057 | 22.734  | 323.019 | 10.9943 | .26809 | .05927 | .003 | .06930 | -.77  |
| 90055 | 24.025  | 324.704 | 11.2917 | .44215 | .07110 | .003 | .07103 | -.31  |
| 90055 | 24.026  | 324.317 | 11.3154 | .39440 | .07132 | .002 | .0713L | -.11  |
| 90054 | 24.025  | 323.992 | 11.3359 | .34992 | .07139 | .003 | .07142 | -.11  |
| 90053 | 24.025  | 323.388 | 11.3761 | .33768 | .07137 | .003 | .07146 | -.31  |
| 90052 | 26.059  | 325.211 | 11.8443 | .47195 | .07412 | .002 | .07400 | -.10  |
| 90051 | 26.059  | 324.534 | 11.9855 | .64165 | .07469 | .004 | .07449 | .47   |
| 90050 | 26.058  | 323.803 | 11.9360 | .34984 | .07430 | .003 | .07435 | -.27  |
| 90049 | 26.058  | 321.517 | 11.9538 | .30783 | .07391 | .003 | .07399 | -.18  |
| 90049 | 27.727  | 324.800 | 12.3093 | .49242 | .07681 | .003 | .07676 | .22   |
| 90047 | 27.729  | 324.519 | 12.3245 | .44207 | .07646 | .003 | .07643 | -.32  |
| 90046 | 27.725  | 323.727 | 12.3724 | .36951 | .07651 | .003 | .07657 | -.45  |
| 90045 | 27.723  | 323.262 | 12.4613 | .30722 | .07666 | .004 | .07618 | -1.19 |
| 90046 | 30.220  | 325.371 | 12.8623 | .54529 | .07972 | .002 | .07957 | -.25  |
| 90042 | 30.230  | 324.829 | 12.8931 | .49202 | .07818 | .003 | .07810 | .19   |
| 90042 | 30.240  | 324.217 | 12.9279 | .44161 | .07905 | .002 | .07965 | -.66  |
| 90041 | 30.240  | 323.704 | 12.9573 | .34999 | .07968 | .002 | .07997 | -.44  |
| 90040 | 32.609  | 325.604 | 13.3455 | .60007 | .08292 | .002 | .08276 | -.01  |
| 90036 | 32.609  | 325.460 | 13.3812 | .50007 | .08291 | .001 | .08276 | -.3L  |
| 90030 | 32.600  | 324.508 | 13.3949 | .54328 | .08277 | .002 | .08223 | -1.04 |
| 90035 | 32.609  | 325.198 | 13.3957 | .54459 | .08297 | .001 | .08283 | -.31  |

|       |        |         |         |        |        |      |        |       |
|-------|--------|---------|---------|--------|--------|------|--------|-------|
| 32038 | 32.610 | 323.729 | 33.6347 | .44045 | .08267 | .304 | .08293 | -.49  |
| 90034 | 32.609 | 323.236 | 33.4481 | .44119 | .08292 | .302 | .08292 | -.62  |
| 90037 | 32.608 | 323.473 | 33.451P | .34912 | .08305 | .005 | .08316 | -.36  |
| 90023 | 32.610 | 323.521 | 33.4879 | .34938 | .08293 | .004 | .08303 | -.79  |
| 90022 | 32.643 | 325.134 | 33.7424 | .44661 | .08522 | .001 | .08509 | -.36  |
| 90031 | 32.649 | 324.187 | 33.7929 | .44126 | .08499 | .002 | .08500 | -.87  |
| 90030 | 32.671 | 323.943 | 33.8043 | .39467 | .08576 | .002 | .08540 | -.50  |
| 90029 | 32.668 | 323.452 | 33.8221 | .34053 | .08513 | .002 | .08525 | -.89  |
| 90028 | 32.649 | 325.670 | 34.3375 | .63871 | .08894 | .002 | .08872 | -1.01 |
| 90027 | 32.667 | 325.117 | 34.3657 | .56528 | .08966 | .001 | .08952 | -.34  |
| 90026 | 32.662 | 323.970 | 34.6236 | .44131 | .08932 | .002 | .08936 | -1.01 |
| 90025 | 32.641 | 323.315 | 34.4564 | .34917 | .08918 | .003 | .08932 | -1.33 |
| 90024 | 32.511 | 325.205 | 34.7523 | .78212 | .09215 | .001 | .09184 | -1.03 |
| 90023 | 32.516 | 325.124 | 34.7940 | .65775 | .09247 | .001 | .09229 | -.89  |
| 90022 | 32.514 | 324.644 | 34.8375 | .54426 | .09251 | .001 | .09248 | -1.06 |
| 90021 | 32.514 | 323.943 | 34.8619 | .44165 | .09277 | .002 | .09282 | -.90  |
| 90019 | 32.504 | 325.004 | 35.3325 | .78173 | .09699 | .001 | .09470 | -.87  |
| 90017 | 32.504 | 325.212 | 35.3608 | .55588 | .09682 | .001 | .09568 | -1.23 |
| 90019 | 32.503 | 324.544 | 35.3992 | .54463 | .09726 | .002 | .09721 | -.92  |
| 90020 | 32.503 | 324.009 | 35.4236 | .64256 | .09731 | .002 | .09735 | -1.00 |
| 90014 | 32.625 | 325.828 | 35.8539 | .73164 | .10131 | .001 | .10106 | -1.09 |
| 90013 | 32.625 | 324.912 | 35.8934 | .65685 | .10128 | .002 | .10117 | -1.32 |
| 90015 | 32.626 | 321.757 | 35.9002 | .54536 | .10168 | .001 | .10159 | -.96  |
| 90014 | 32.626 | 324.228 | 35.9233 | .44349 | .10208 | .002 | .10208 | -.68  |
| 90010 | 32.708 | 325.807 | 36.3570 | .78102 | .10578 | .001 | .10551 | -1.32 |
| 90009 | 32.799 | 324.901 | 36.3944 | .65647 | .10582 | .001 | .10570 | -1.48 |
| 90011 | 32.798 | 324.497 | 36.4111 | .54466 | .10617 | .001 | .10612 | -1.23 |
| 90012 | 32.798 | 324.013 | 36.4310 | .44291 | .10666 | .001 | .10570 | -.87  |
| 90006 | 31.793 | 325.767 | 36.8676 | .78236 | .11130 | .001 | .11103 | -.93  |
| 90005 | 31.762 | 325.233 | 36.8983 | .65858 | .11126 | .001 | .11108 | -1.07 |
| 90007 | 31.780 | 324.844 | 36.9026 | .54534 | .11171 | .001 | .11160 | -.74  |
| 90008 | 31.779 | 324.127 | 36.9314 | .44335 | .11196 | .002 | .11198 | -.67  |
| 90003 | 31.750 | 326.812 | 37.2469 | .92002 | .11613 | .001 | .11567 | -.39  |
| 90002 | 31.751 | 325.959 | 37.2788 | .78324 | .11632 | .001 | .11601 | -.39  |
| 90001 | 31.749 | 325.764 | 37.2859 | .64026 | .11564 | .001 | .11636 | -.15  |
| 90004 | 31.752 | 324.723 | 37.3252 | .54666 | .11628 | .002 | .11619 | -.67  |

3. Results for a 50/50 Mixture of Methane-Ethane.

A total of 932 points are given in table 2. The actual mole fraction of methane in the mixture is 0.50217 with the balance ethane. The computer programs developed for the thermal conductivity surface of this mixture are shown below. The equation of state used for this mixture is given in [14].

```
FUNCTION TC5050(RHO,T)
C COEF. FROM TC021 28 MAR 85
DIMENSION A(3),B(5)
DATA A/ .9271600E-02,-.3606085E-04, .3047760E-06/
DATA B/ .2281903E-02, .1157403E-06, .4184580E-05,
1 .9001806E-08, .1243893E-07/
TCZERO=A(1)+A(2)*T+A(3)*T**2
EXCESS=(B(1)+B(2)*T)*RHO+(B(3)+B(4)*T)*RHO**3+B(5)*RHO**5
TC5050=TCZERO+EXCESS+CR5050(RHO,T)
RETURN
END

FUNCTION CR5050(RHO,TEMP)
C COEF. FROM TC021 AND MINIMS 28 MAR 85
DIMENSION C(6)
DATA (TC=262.919),(RHOC=8.68)
DATA C/ .2953032E+00,-.2425000E+03, .3256997E-01,-.9394503E-04,
1 -.2243679E+00, .2357194E+00/
T=TEMP
DEN=RHO
IF(T.LT.TC) T=TC
IF(T.LT.371.129) 60 TO 4
5 CR5050=0.
RETURN
4 CONTINUE
AMPL=C(1)/(T+C(2))+C(3)+C(4)*T
DELRHO=DEN-RHOC
X1=C(5)*DELRHO
IF(DEN.GT.RHOC) X1=C(6)*DELRHO
CR5050=AMPL*EXP(-X1**2)
RETURN
END
```

Table 2. The Thermal Conductivity of a 50150 Methane-Ethane Mix

| Run Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Power<br>W/m | Experimental<br>Thermal<br>Conductivity |      | STAT | Adjusted Thermal Conductivity<br>at a Nominal<br>Temperature of 152.9K from Corelation<br>W/m.K |                      | Deviation<br>percent |
|---------|-----------------|------------------|------------------|--------------|---|------|------|---|----------------------|----------------------|
|         |                 |                  |                  |              | W/m.K                                   | STAT |      | Temperature of 152.9K from Corelation<br>W/m.K  | Deviation<br>percent |                      |
| 103032  | 3.642           | 153.894          | 21.4375          | 1.37078      | .17034                                  | .001 |      | .17019  | -.64                 |                      |
| 103031  | 3.641           | 153.444          | 21.4635          | 1.24918      | .17027                                  | .001 |      | .17018  | -1.00                |                      |
| 103030  | 3.639           | 153.122          | 21.4819          | 1.13774      | .17094                                  | .001 |      | .17090  | -.83                 |                      |
| 103029  | 3.635           | 152.407          | 21.5229          | 1.02158      | .16922                                  | .001 |      | .16929  | -2.35                |                      |
| 103028  | 8.838           | 153.908          | 21.6545          | 1.37175      | .17616                                  | .001 |      | .17600  | -.21                 |                      |
| 103027  | 8.835           | 153.426          | 21.5807          | 1.25164      | .17625                                  | .001 |      | .17615  | -.47                 |                      |
| 103026  | 8.835           | 152.959          | 21.7056          | 1.13537      | .17584                                  | .001 |      | .17582  | -1.03                |                      |
| 103025  | 8.830           | 152.335          | 21.7400          | 1.02253      | .17451                                  | .001 |      | .17459  | -2.19                |                      |
| 103024  | 15.056          | 153.875          | 21.8912          | 1.37485      | .18258                                  | .001 |      | .18242  | .18                  |                      |
| 103023  | 15.051          | 153.340          | 21.9187          | 1.25248      | .18235                                  | .001 |      | .18227  | -.27                 |                      |
| 103022  | 15.051          | 152.778          | 21.9476          | 1.13303      | .18138                                  | .001 |      | .18139  | -1.15                |                      |
| 103021  | 15.044          | 152.169          | 21.9787          | 1.02125      | .17999                                  | .001 |      | .18010  | -2.31                |                      |
| 103020  | 21.514          | 153.575          | 22.1256          | 1.37094      | .18783                                  | .001 |      | .18772  | -.12                 |                      |
| 103019  | 21.503          | 153.481          | 22.1298          | 1.25302      | .18821                                  | .001 |      | .18811  | .03                  |                      |
| 103018  | 21.492          | 152.661          | 22.1596          | 1.14063      | .18742                                  | .001 |      | .18745  | -.86                 |                      |
| 103017  | 21.491          | 152.058          | 22.1991          | 1.03311      | .18595                                  | .001 |      | .18608  | -2.01                |                      |
| 103015  | 28.799          | 153.522          | 22.3506          | 1.37167      | .19342                                  | .001 |      | .19331  | -.22                 |                      |
| 103015  | 28.795          | 152.942          | 22.3775          | 1.25266      | .19307                                  | .001 |      | .19306  | -.72                 |                      |
| 103014  | 28.785          | 152.621          | 22.3922          | 1.13968      | .19272                                  | .001 |      | .19276  | -1.08                |                      |
| 103013  | 28.780          | 151.927          | 22.4243          | 1.03233      | .19175                                  | .001 |      | .19190  | -1.97                |                      |
| 103012  | 36.590          | 153.189          | 22.5796          | 1.35797      | .19855                                  | .001 |      | .19849  | -.67                 |                      |
| 103011  | 36.592          | 152.869          | 22.5939          | 1.24172      | .19894                                  | .001 |      | .19894  | -.64                 |                      |
| 103010  | 36.587          | 152.451          | 22.6124          | 1.12787      | .19885                                  | .001 |      | .19892  | -.90                 |                      |
| 103009  | 36.591          | 151.752          | 22.5436          | 1.01530      | .19736                                  | .001 |      | .19754  | -2.03                |                      |
| 103008  | 43.937          | 153.206          | 22.7619          | 1.36204      | .20516                                  | .001 |      | .20510  | .15                  |                      |
| 103007  | 43.937          | 152.932          | 22.7736          | 1.24731      | .20603                                  | .001 |      | .20602  | .43                  |                      |
| 103006  | 43.934          | 152.635          | 22.7862          | 1.13621      | .20652                                  | .001 |      | .20656  | .52                  |                      |
| 103005  | 43.930          | 151.753          | 22.8235          | 1.02977      | .20451                                  | .001 |      | .20469  | -.89                 |                      |
| 103004  | 50.660          | 153.341          | 22.9106          | 1.36514      | .21037                                  | .001 |      | .21029  | .64                  |                      |
| 103003  | 50.673          | 152.703          | 22.9373          | 1.24704      | .21058                                  | .001 |      | .21061  | .43                  |                      |
| 103002  | 50.664          | 152.509          | 22.9451          | 1.13528      | .21093                                  | .001 |      | .21099  | .50                  |                      |
| 103001  | 50.660          | 151.467          | 22.9893          | 1.03095      | .20908                                  | .001 |      | .20931  | -.98                 |                      |

| Run Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Power<br>W/m | Experimental<br>Thermal<br>Conductivity |       | STAT | Adjusted Thermal Conductivity<br>at a Nominal<br>Temperature of 177.1K from Corelation<br>W/m.K |                      | Deviation<br>percent |
|---------|-----------------|------------------|------------------|--------------|---|-------|------|---|----------------------|----------------------|
|         |                 |                  |                  |              | W/m.K                                   | STAT  |      | Temperature of 177.1K from Corelation<br>W/m.K  | Deviation<br>percent |                      |
| 104028  | 3.535           | 177.772          | 19.9524          | 1.23290      | .14318                                  | .001  |      | .14308  | -.52                 |                      |
| 104027  | 3.633           | 177.336          | 19.9911          | 1.11136      | .14377                                  | .001  |      | .14374  | -.44                 |                      |
| 104026  | 3.631           | 176.842          | 20.0235          | .99599       | .14425                                  | .001  |      | .14429  | -.49                 |                      |
| 104025  | 3.627           | 176.442          | 20.0496          | .88726       | .14469                                  | .001  |      | .14479  | -.49                 |                      |
| 104024  | 12.547          | 177.542          | 20.4946          | 1.23321      | .15410                                  | .001  |      | .15403  | -.21                 |                      |
| 104023  | 12.521          | 177.039          | 20.5223          | 1.11153      | .15447                                  | .001  |      | .15448  | -.29                 |                      |
| 104022  | 12.504          | 176.745          | 20.5384          | .99693       | .15471                                  | .001  |      | .15476  | -.32                 |                      |
| 104021  | 12.482          | 175.842          | 20.5891          | .88682       | .15534                                  | .001  |      | .15553  | -.50                 |                      |
| 104020  | 21.832          | 177.961          | 20.9095          | 1.36099      | .16364                                  | .001  |      | .16331  | .10                  |                      |
| 104019  | 21.833          | 177.355          | 20.9409          | 1.23371      | .16400                                  | .001  |      | .16396  | .08                  |                      |
| 104018  | 21.834          | 176.749          | 20.9723          | 1.11164      | .16424                                  | .001  |      | .16432  | -.12                 |                      |
| 104017  | 21.830          | 176.392          | 20.9906          | .99494       | .16398                                  | .001  |      | .16409  | -.50                 |                      |
| 104015  | 31.047          | 178.082          | 21.2691          | 1.48929      | .17203                                  | 0.000 |      | .17187  | .41                  |                      |
| 104016  | 31.043          | 177.613          | 21.2912          | 1.35836      | .17290                                  | 0.000 |      | .17282  | .67                  |                      |
| 104014  | 31.042          | 176.997          | 21.3204          | 1.22807      | .17267                                  | .001  |      | .17269  | -.20                 |                      |
| 104013  | 31.029          | 176.532          | 21.3420          | 1.10342      | .17183                                  | .001  |      | .17192  | -.53                 |                      |
| 104012  | 40.142          | 177.875          | 21.5890          | 1.49279      | .18057                                  | .001  |      | .18044  | 1.00                 |                      |
| 104010  | 40.123          | 177.687          | 21.5968          | 1.24014      | .18262                                  | .002  |      | .18252  | 2.03                 |                      |
| 104011  | 40.132          | 177.525          | 21.6042          | 1.35796      | .18047                                  | .001  |      | .18040  | -.77                 |                      |
| 104009  | 40.094          | 176.374          | 21.6537          | 1.10414      | .17987                                  | .001  |      | .17999  | -.11                 |                      |
| 104008  | 49.285          | 177.584          | 21.8745          | 1.49146      | .18763                                  | .001  |      | .18755  | 1.04                 |                      |
| 104007  | 49.276          | 177.261          | 21.8876          | 1.35668      | .18773                                  | 0.000 |      | .18770  | .95                  |                      |
| 104006  | 49.262          | 176.651          | 21.9125          | 1.22823      | .18774                                  | .001  |      | .18782  | .68                  |                      |
| 104005  | 49.249          | 176.293          | 21.9270          | 1.10707      | .18794                                  | .001  |      | .18808  | .62                  |                      |
| 104003  | 58.653          | 177.687          | 22.1185          | 1.48452      | .19730                                  | .001  |      | .19720  | 2.76                 |                      |
| 104002  | 58.664          | 177.379          | 22.1309          | 1.35319      | .19714                                  | 0.000 |      | .19709  | 2.55                 |                      |
| 104004  | 58.629          | 176.682          | 22.1573          | 1.10411      | .19901                                  | .001  |      | .19908  | 3.18                 |                      |
| 104001  | 58.660          | 176.588          | 22.1618          | 1.22479      | .19468                                  | 0.000 |      | .19477  | .98                  |                      |

| Run Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Power<br>W/m | Experimental<br>Thermal<br>Conductivity |      | STAT | Adjusted Thermal Conductivity<br>at a Nominal<br>Temperature of 202.3K from Corelation<br>W/m.K |                      | Deviation<br>percent |
|---------|-----------------|------------------|------------------|--------------|---|------|------|---|----------------------|----------------------|
|         |                 |                  |                  |              | W/m.K                                   | STAT |      | Temperature of 202.3K from Corelation<br>W/m.K  | Deviation<br>percent |                      |
| 105033  | 3.705           | 203.231          | 18.0939          | 1.03576      | .11664                                  | .001 |      | .11651  | .41                  |                      |
| 105031  | 3.703           | 203.075          | 18.1056          | 1.03562      | .11654                                  | .001 |      | .11643  | .19                  |                      |
| 105032  | 3.704           | 202.704          | 18.1375          | .91736       | .11727                                  | .001 |      | .11722  | .47                  |                      |
| 105030  | 3.702           | 201.925          | 18.2014          | .80511       | .11772                                  | .001 |      | .11778  | .13                  |                      |
| 105029  | 3.700           | 201.550          | 18.2319          | .70242       | .11848                                  | .001 |      | .11859  | .43                  |                      |

| 105028   | 7.258           | 202.983          | 18.4969          | 1.03600      | .12258                | .001  | .12249   | .41                  |  |  |
|----------|-----------------|------------------|------------------|--------------|-----------------------|-------|--|----------------------|--|--|
| 105027   | 7.257           | 202.523          | 18.5205          | .91845       | .12303                | .001  | .12300   | .40                  |  |  |
| 105025   | 7.255           | 201.863          | 18.5688          | .F0643       | .12366                | .001  | .12373   | .37                  |  |  |
| 105025   | 7.254           | 201.501          | 18.5951          | .70321       | .12432                | .001  | .12444   | .61                  |  |  |
| 105024   | 14.176          | 203.261          | 19.0448          | 1.16225      | .13126                | .001  | .13112   | .04                  |  |  |
| 105023   | 14.175          | 202.761          | 19.0763          | 1.0350       | .13178                | .001  | .13172   | .09                  |  |  |
| 105022   | 14.170          | 202.155          | 19.1139          | .91735       | .13220                | .001  | .13223   | -.01                 |  |  |
| 105021   | 14.167          | 201.659          | 19.1447          | .80659       | .13318                | .001  | .13328   | .38                  |  |  |
| 105020   | 23.401          | 202.973          | 19.4583          | 1.16131      | .14234                | .001  | .14224   | .21                  |  |  |
| 105019   | 23.396          | 202.282          | 19.6956          | 1.03407      | .14263                | .001  | .14264   | .00                  |  |  |
| 105018   | 23.394          | 201.783          | 19.7225          | .91578       | .14306                | .001  | .14315   | .00                  |  |  |
| 105017   | 23.392          | 201.227          | 19.7527          | .80444       | .14336                | .001  | .14354   | -.12                 |  |  |
| 105016   | 32.243          | 203.209          | 20.1072          | 1.29418      | .15C75                | .001  | .15061   | .05                  |  |  |
| 105015   | 32.234          | 202.598          | 20.1367          | 1.16013      | .15177                | .001  | .15173   | .40                  |  |  |
| 105014   | 32.228          | 202.089          | 20.1513          | 1.0337       | .15159                | .001  | .15162   | .01                  |  |  |
| 105013   | 32.221          | 201.599          | 20.1849          | .91581       | .15207                | .001  | .15219   | .08                  |  |  |
| 105012   | 41.742          | 202.942          | 20.5144          | 1.29408      | .15961                | .001  | .15951   | .44                  |  |  |
| 105011   | 41.236          | 202.418          | 20.5376          | 1.16047      | .16045                | 0.003 | .16044   | .72                  |  |  |
| 105010   | 41.225          | 202.044          | 20.5540          | 1.03411      | .16039                | .001  | .16044   | .51                  |  |  |
| 105009   | 41.218          | 201.373          | 20.5836          | .91502       | .16029                | .001  | .16045   | .12                  |  |  |
| 105008   | 50.240          | 203.153          | 20.8449          | 1.42849      | .16712                | .001  | .16698   | .67                  |  |  |
| 105007   | 50.230          | 202.842          | 20.8575          | 1.29041      | .16761                | .001  | .16752   | .83                  |  |  |
| 105006   | 50.223          | 202.186          | 20.8845          | 1.15658      | .16779                | .001  | .16782   | .65                  |  |  |
| 105005   | 50.217          | 201.911          | 20.8957          | 1.03277      | .16834                | .001  | .16841   | .85                  |  |  |
| 105004   | 58.950          | 203.016          | 21.1392          | 1.42961      | .17482                | .001  | .17470   | 1.30                 |  |  |
| 105003   | 58.950          | 202.466          | 21.1606          | 1.28772      | .17462                | .001  | .17460   | .96                  |  |  |
| 105002   | 58.949          | 202.094          | 21.1750          | 1.15590      | .17457                | .001  | .17461   | .78                  |  |  |
| 105001   | 58.956          | 201.731          | 21.1893          | 1.03138      | .17582                | .001  | .17593   | 1.34                 |  |  |
|          |                 |                  |                  |              |                       |       |  |                      |  |  |
| Pure Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Power<br>W/m | Conductivity<br>W/m.K | STAT  | Adjusted Thermal Conductivity<br>at a Nominal<br>Temperature of 231.6K from Correlation<br>W/m.K | Deviation<br>percent |  |  |
| 102104   | .254            | 232.026          | .1348            | .12842       | .01848                | .001  | .01843   | 1.58                 |  |  |
| 102103   | .254            | 230.961          | .1357            | .10632       | .01835                | .002  | .01841   | 1.47                 |  |  |
| 102102   | .254            | 230.129          | .1362            | .09638       | .01827                | .002  | .01842   | 1.50                 |  |  |
| 102101   | .254            | 229.269          | .1367            | .06854       | .01816                | .003  | .01840   | 1.37                 |  |  |
| 102105   | .254            | 228.553          | .1370            | .05286       | .01801                | .005  | .01832   | .97                  |  |  |
| 102100   | .757            | 232.315          | .4229            | .15251       | .01918                | .001  | .01910   | .73                  |  |  |
| 102099   | .757            | 231.274          | .4256            | .12840       | .01922                | .001  | .01925   | 1.46                 |  |  |
| 102098   | .757            | 230.323          | .4278            | .10627       | .01881                | .002  | .01894   | -.19                 |  |  |
| 102097   | .758            | 229.507          | .4300            | .08639       | .01902                | .002  | .01924   | 1.31                 |  |  |
| 102096   | .758            | 228.925          | .4316            | .06858       | .01877                | .003  | .01905   | .30                  |  |  |
| 102095   | 1.127           | 231.803          | .6500            | .15197       | .01988                | .001  | .01985   | .95                  |  |  |
| 102094   | 1.128           | 230.825          | .5643            | .12792       | .01970                | .002  | .01978   | .50                  |  |  |
| 102093   | 1.129           | 230.064          | .5693            | .10601       | .01945                | .002  | .01961   | -.43                 |  |  |
| 102092   | 1.130           | 229.455          | .6717            | .08618       | .01951                | .003  | .01973   | .15                  |  |  |
| 106032   | 5.906           | 233.130          | 15.4845          | .81903       | .09147                | .001  | .09125   | 2.39                 |  |  |
| 106031   | 5.905           | 232.435          | 15.5716          | .70635       | .09191                | .001  | .09179   | 2.09                 |  |  |
| 106030   | 5.904           | 231.797          | 15.6504          | .60218       | .09250                | .001  | .09247   | 2.01                 |  |  |
| 106029   | 5.902           | 231.229          | 15.7188          | .50657       | .09301                | .001  | .09306   | 1.93                 |  |  |
| 106028   | 11.140          | 232.796          | 16.5053          | .81909       | .10155                | .001  | .10137   | .67                  |  |  |
| 106027   | 11.139          | 232.08*          | 16.6650          | .70628       | .10213                | .001  | .10205   | .65                  |  |  |
| 106026   | 11.136          | 231.554          | 16.7091          | .60241       | .10286                | .001  | .10286   | .93                  |  |  |
| 106025   | 11.136          | 231.097          | 16.7471          | .50681       | .10341                | .001  | .10348   | 1.08                 |  |  |
| 106024   | 16.611          | 233.165          | 17.2892          | .940E4       | .11C13                | .001  | .10988   | .66                  |  |  |
| 106023   | 16.611          | 232.487          | 17.3361          | .81914       | .11031                | .001  | .11017   | .36                  |  |  |
| 106022   | 16.607          | 231.909          | 17.3755          | .70664       | .11068                | .001  | .11063   | .30                  |  |  |
| 106021   | 16.608          | 231.365          | 17.4131          | .60250       | .11101                | .001  | .11104   | .21                  |  |  |
| 106020   | 25.127          | 232.750          | 18.1130          | .94027       | .12111                | .001  | .12092   | .14                  |  |  |
| 106019   | 25.129          | 232.177          | 18.1459          | .81923       | .12149                | .001  | .12139   | .12                  |  |  |
| 106018   | 25.126          | 231.591          | 18.1790          | .70643       | .12188                | .001  | .12188   | .11                  |  |  |
| 106017   | 25.125          | 231.049          | 18.2098          | .50245       | .12218                | .001  | .12226   | .04                  |  |  |
| 106015   | 34.095          | 233.080          | 18.7306          | 1.06799      | .13078                | .001  | .13053   | .05                  |  |  |
| 106016   | 34.095          | 232.471          | 18.7610          | .93926       | .13098                | .001  | .13083   | -.10                 |  |  |
| 106014   | 34.084          | 231.872          | 18.7902          | .81768       | .13146                | .001  | .13141   | -.03                 |  |  |
| 106013   | 34.086          | 231.308          | 18.8184          | .70529       | .13195                | .001  | .13199   | .06                  |  |  |
| 106012   | 42.991          | 232.742          | 19.2563          | 1.06674      | .13980                | .001  | .13960   | .10                  |  |  |
| 106011   | 42.991          | 231.996          | 19.2899          | .93725       | .14007                | .001  | .14000   | -.05                 |  |  |
| 106009   | 42.984          | 231.611          | 19.3068          | .81686       | .14060                | .001  | .14059   | .16                  |  |  |
| 106010   | 42.991          | 231.354          | 19.3187          | .70465       | .14001                | .002  | .14005   | -.38                 |  |  |
| 106008   | 51.850          | 233.092          | 19.5684          | 1.20363      | .14746                | .001  | .14719   | .12                  |  |  |
| 106007   | 51.840          | 232.535          | 19.6910          | 1.06585      | .14803                | .001  | .14786   | .28                  |  |  |
| 106005   | 51.831          | 231.930          | 19.7156          | .93685       | .14840                | .001  | .14834   | .29                  |  |  |
| 106005   | 51.825          | 231.506          | 19.7328          | .81632       | .14853                | .001  | .14854   | .21                  |  |  |
| 106003   | 61.301          | 232.911          | 20.0672          | 1.20412      | .15690                | .001  | .15666   | 1.22                 |  |  |
| 106002   | 61.300          | 232.345          | 20.0880          | 1.06611      | .15619                | .001  | .15605   | .57                  |  |  |
| 106001   | 51.298          | 231.852          | 20.1075          | .93759       | .15654                | .001  | .15649   | .60                  |  |  |
| 106004   | 61.305          | 231.302          | 20.1289          | .81724       | .15694                | .001  | .15699   | .64                  |  |  |

| Run Pt. | Pressure MPa | Temperature K | Density mol/L | Power W/m | Experimental Thermal Conductivity W/m.K | STAT | Adjusted Thermal Conductivity at a Nominal Temperature of 240.3K from Correlation W/m.K | Deviation percent |
|---------|--------------|---------------|---------------|-----------|---|------|---|-------------------|
| 102091  | .321         | 242.939       | .1630         | .15912    | .01986                                  | .001 | .01956  | 2.04              |
| 102090  | .321         | 241.859       | .1640         | .13397    | .01979                                  | .002 | .01962  | 2.31              |
| 102089  | .321         | 240.866       | .1647         | .11098    | .01962                                  | .002 | .01956  | 2.00              |
| 102088  | .321         | 239.863       | .1655         | .09012    | .01966                                  | .003 | .01971  | 2.74              |
| 102087  | .321         | 239.204       | .1660         | .07156    | .01944                                  | .004 | .01956  | 2.00              |
| 102086  | .724         | 242.196       | .3829         | .15897    | .02025                                  | .003 | .02004  | 1.26              |
| 102085  | .724         | 241.208       | .3848         | .13381    | .02017                                  | .002 | .02007  | 1.38              |
| 102084  | .724         | 240.354       | .3865         | .11094    | .02015                                  | .003 | .02015  | 1.72              |
| 102083  | .724         | 239.533       | .3881         | .09015    | .01998                                  | .003 | .02007  | 1.30              |
| 102082  | .725         | 238.821       | .3898         | .07156    | .01991                                  | .003 | .02008  | 1.32              |
| 102081  | .993         | 241.998       | .5391         | .15913    | .02055                                  | .001 | .02036  | .57               |
| 102080  | .995         | 240.998       | .5432         | .13393    | .02051                                  | .001 | .02044  | .36               |
| 102079  | .995         | 240.201       | .5462         | .11099    | .02042                                  | .002 | .02043  | .80               |
| 102078  | .995         | 239.670       | .5483         | .09030    | .02030                                  | .002 | .02037  | .47               |
| 102077  | .997         | 238.658       | .5518         | .07161    | .02033                                  | .003 | .02051  | 1.11              |
| 102074  | 1.440        | 241.644       | .8216         | .15878    | .02134                                  | .001 | .02119  | .41               |
| 102073  | 1.441        | 241.011       | .8256         | .13391    | .02131                                  | .001 | .02123  | .54               |
| 102072  | 1.441        | 240.858       | .8269         | .13334    | .02121                                  | .003 | .02115  | .13               |
| 102071  | 1.443        | 239.899       | .8331         | .11047    | .02123                                  | .002 | .02128  | .63               |
| 102075  | 1.439        | 239.355       | .8334         | .09007    | .02110                                  | .002 | .02121  | .30               |
| 102075  | 1.440        | 238.780       | .8370         | .07152    | .02103                                  | .004 | .02120  | .22               |
| 102070  | 1.446        | 239.446       | .8377         | .09009    | .02150                                  | .003 | .02160  | 2.04              |
| 102068  | 1.729        | 240.787       | 1.0277        | .13401    | .02205                                  | .002 | .02200  | 1.09              |
| 102065  | 1.742        | 240.156       | 1.0423        | .11103    | .02202                                  | .002 | .02204  | 1.05              |
| 102067  | 1.731        | 238.854       | 1.0442        | .07169    | .02204                                  | .006 | .02220  | 1.75              |
| 102066  | 1.736        | 239.211       | 1.0446        | .09008    | .02178                                  | .003 | .02190  | .40               |

| Run Pt. | Pressure MPa | Temperature K | Density mol/L | Power W/m | Experimental Thermal Conductivity W/m.K | STAT | Adjusted Thermal Conductivity at a Nominal Temperature of 250.2K from Correlation W/m.K | Deviation percent |
|---------|--------------|---------------|---------------|-----------|---|------|---|-------------------|
| 102037  | .329         | 251.829       | .1608         | .14018    | .02049                                  | .002 | .02030  | .11               |
| 102038  | .329         | 250.779       | .1615         | .11630    | .02049                                  | .001 | .02042  | .70               |
| 102039  | .329         | 249.929       | .1621         | .09456    | .02018                                  | .004 | .02021  | -.35              |
| 102040  | .329         | 249.098       | .1627         | .07508    | .02012                                  | .004 | .02025  | -.18              |
| 102035  | .980         | 251.055       | .5070         | .13990    | .02169                                  | .002 | .02159  | 1.46              |
| 102035  | .980         | 250.279       | .5090         | .11597    | .02132                                  | .002 | .02131  | .14               |
| 102034  | .980         | 249.488       | .5111         | .09430    | .02117                                  | .002 | .02125  | -.16              |
| 102033  | .981         | 248.790       | .5131         | .07480    | .02135                                  | .005 | .02151  | 1.03              |
| 102031  | 1.459        | 251.301       | .7933         | .15641    | .02215                                  | .002 | .02202  | -.54              |
| 102030  | 1.470        | 250.686       | .7966         | .14010    | .02199                                  | .001 | .02193  | -.49              |
| 102029  | 1.471        | 249.890       | .8010         | .11505    | .02194                                  | .002 | .02198  | -.85              |
| 102032  | 1.469        | 249.208       | .8029         | .09448    | .02181                                  | .002 | .02193  | -1.11             |
| 102027  | 1.945        | 251.064       | 1.1034        | .16504    | .02297                                  | .001 | .02287  | -1.13             |
| 102026  | 1.944        | 250.397       | 1.1082        | .13984    | .02274                                  | .002 | .02272  | -1.88             |
| 102028  | 1.936        | 248.895       | 1.1137        | .09424    | .02275                                  | .003 | .02290  | -1.14             |
| 102025  | 1.955        | 249.684       | 1.1214        | .11602    | .02294                                  | .002 | .02300  | -.81              |
| 102024  | 2.427        | 251.623       | 1.4498        | .19456    | .02446                                  | .002 | .02429  | -.05              |
| 102023  | 2.427        | 250.606       | 1.4618        | .15601    | .02430                                  | .003 | .02425  | -.39              |
| 102022  | 2.426        | 250.142       | 1.4671        | .13987    | .02397                                  | .003 | .02398  | -1.62             |
| 102021  | 2.426        | 249.239       | 1.4782        | .11589    | .02420                                  | .003 | .02440  | -.02              |

| Run Pt. | Pressure MPa | Temperature K | Density mol/L | Power W/m | Experimental Thermal Conductivity W/m.K | STAT | Adjusted Thermal Conductivity at a Nominal Temperature of 260.3K from Correlation W/m.K | Deviation percent |
|---------|--------------|---------------|---------------|-----------|---|------|---|-------------------|
| 102064  | .295         | 261.833       | .1381         | .14591    | .02185                                  | .002 | .02166  | 1.11              |
| 102063  | .295         | 260.894       | .1386         | .12098    | .02181                                  | .003 | .02173  | 1.44              |
| 102062  | .295         | 259.946       | .1393         | .09830    | .02160                                  | .002 | .02164  | 1.01              |
| 102061  | .295         | 259.442       | .1396         | .07813    | .02155                                  | .003 | .02165  | 1.05              |
| 102059  | 1.032        | 260.944       | .5105         | .14599    | .02248                                  | .004 | .02240  | -.41              |
| 102058  | 1.032        | 260.059       | .5129         | .12089    | .02259                                  | .002 | .02261  | .53               |
| 102057  | 1.032        | 259.252       | .5149         | .09827    | .02250                                  | .002 | .02262  | .54               |
| 102060  | 1.031        | 258.692       | .5155         | .07822    | .02252                                  | .003 | .02271  | .92               |
| 102055  | 1.648        | 261.413       | .8538         | .17315    | .02358                                  | .001 | .02344  | -.40              |
| 102054  | 1.649        | 260.356       | .8592         | .14596    | .02340                                  | .002 | .02339  | -.69              |
| 102053  | 1.650        | 259.761       | .8625         | .12094    | .02329                                  | .002 | .02335  | -.89              |
| 102056  | 1.647        | 259.097       | .8645         | .09842    | .02342                                  | .002 | .02356  | -.01              |
| 102052  | 2.243        | 261.838       | 1.2213        | .20294    | .02463                                  | .001 | .02444  | -1.18             |
| 102051  | 2.245        | 260.965       | 1.2301        | .17322    | .02452                                  | .002 | .02443  | -1.31             |
| 102050  | 2.249        | 260.135       | 1.2386        | .14597    | .02441                                  | .002 | .02443  | -1.46             |
| 102049  | 2.254        | 259.454       | 1.2476        | .12094    | .02440                                  | .002 | .02450  | -1.28             |
| 102047  | 2.918        | 261.353       | 1.7074        | .20300    | .02640                                  | .002 | .02627  | -.58              |
| 102046  | 2.921        | 260.383       | 1.7230        | .17333    | .02633                                  | .002 | .02632  | -.71              |
| 102045  | 2.922        | 259.751       | 1.7335        | .14588    | .02605                                  | .002 | .02611  | -1.64             |
| 102048  | 2.914        | 259.238       | 1.7344        | .12101    | .02614                                  | .002 | .02627  | -1.06             |
| 102043  | 3.518        | 261.367       | 2.2144        | .23482    | .02861                                  | .002 | .02847  | .10               |
| 102042  | 3.518        | 260.687       | 2.2304        | .20265    | .02829                                  | .002 | .02824  | -.97              |
| 102041  | 3.518        | 259.991       | 2.2469        | .17317    | .02826                                  | .003 | .02829  | -1.02             |
| 102044  | 3.518        | 259.421       | 2.2604        | .14590    | .02785                                  | .004 | .02795  | -2.45             |

| Run Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Experimental<br>Thermal<br>Conductivity |                       |      | STAT | Adjusted Thermal Conductivity<br>at a Nominal<br>Temperature of 265.1K from Correlation<br>W/m.K | Deviation<br>percent |
|---------|-----------------|------------------|------------------|---|-----------------------|------|------|--|----------------------|
|         |                 |                  |                  | Power<br>W/m                            | Conductivity<br>W/m.K |      |      |  |                      |
| 108030  | .322            | 267.357          | .1477            | .14932                                  | .02248                | .002 |      | .02224   | 1.02                 |
| 108029  | .322            | 266.293          | .1483            | .12372                                  | .02246                | .005 |      | .02233   | 1.45                 |
| 108028  | .322            | 265.485          | .1490            | .10057                                  | .02218                | .002 |      | .02214   | .59                  |
| 108027  | .323            | 264.501          | .1497            | .07982                                  | .02214                | .003 |      | .02220   | .83                  |
| 108025  | .811            | 266.656          | .3840            | .14917                                  | .02301                | .002 |      | .02285   | .76                  |
| 108024  | .811            | 265.855          | .3862            | .12375                                  | .02288                | .002 |      | .02280   | .55                  |
| 108023  | .811            | 265.087          | .3877            | .10063                                  | .02279                | .002 |      | .02280   | .50                  |
| 108026  | .811            | 264.273          | .3888            | .07988                                  | .02260                | .003 |      | .02269   | .02                  |
| 108022  | 1.534           | 267.124          | .7538            | .17718                                  | .02396                | .001 |      | .02376   | -.11                 |
| 108021  | 1.534           | 266.261          | .7576            | .14929                                  | .02390                | .002 |      | .02379   | -.04                 |
| 108020  | 1.535           | 265.426          | .7713            | .12378                                  | .02377                | .002 |      | .02374   | -.29                 |
| 108019  | 1.535           | 264.514          | .7750            | .10058                                  | .02371                | .003 |      | .02375   | -.26                 |
| 108018  | 2.178           | 265.597          | 1.1441           | .17693                                  | .02456                | .003 |      | .02443   | -2.25                |
| 108017  | 2.178           | 265.798          | 1.1497           | .14903                                  | .02472                | .002 |      | .02466   | -1.36                |
| 108016  | 2.178           | 265.215          | 1.1540           | .12376                                  | .02436                | .003 |      | .02435   | -2.70                |
| 108015  | 2.179           | 264.461          | 1.1600           | .10074                                  | .02436                | .003 |      | .02442   | -2.51                |
| 108014  | 2.201           | 265.142          | 1.1694           | .12359                                  | .02473                | .002 |      | .02473   | -1.34                |
| 108012  | 2.934           | 266.471          | 1.6521           | .20719                                  | .02636                | .002 |      | .02626   | -1.70                |
| 108011  | 2.934           | 265.957          | 1.6589           | .17582                                  | .02637                | .002 |      | .02631   | -1.61                |
| 108010  | 2.937           | 265.459          | 1.6573           | .14911                                  | .02615                | .003 |      | .02613   | -2.44                |
| 108009  | 2.942           | 264.520          | 1.6827           | .12362                                  | .02635                | .005 |      | .02639   | -1.62                |
| 108007  | 3.711           | 266.600          | 2.2717           | .23994                                  | .02901                | .002 |      | .02894   | -.50                 |
| 108006  | 3.714           | 265.946          | 2.2886           | .20726                                  | .02865                | .003 |      | .02862   | -.89                 |
| 108005  | 3.715           | 265.377          | 2.3026           | .17696                                  | .02878                | .002 |      | .02877   | -.54                 |
| 108008  | 3.709           | 264.873          | 2.3092           | .14914                                  | .02867                | .003 |      | .02868   | -.96                 |
| 108002  | 4.407           | 266.582          | 2.9619           | .27450                                  | .03232                | .002 |      | .03231   | .50                  |
| 108001  | 4.407           | 265.907          | 2.9893           | .23956                                  | .03236                | .002 |      | .03236   | .24                  |
| 108003  | 4.406           | 265.661          | 2.9977           | .20709                                  | .03217                | .003 |      | .03217   | -.47                 |
| 108004  | 4.405           | 265.024          | 3.0238           | .17689                                  | .03202                | .004 |      | .03202   | -1.35                |
| 107059  | 7.045           | 262.399          | 6.8751           | .14866                                  | .07653                | .054 |      | .07540   | 6.37                 |
| 107057  | 7.046           | 262.315          | 9.9056           | .12335                                  | .07845                | .064 |      | .07733   | 8.62                 |
| 107056  | 7.045           | 262.205          | 9.9440           | .10029                                  | .08237                | .086 |      | .08128   | 12.95                |
| 107054  | 7.257           | 263.496          | 9.9786           | .31205                                  | .07095                | .014 |      | .07010   | -1.03                |
| 107058  | 7.045           | 261.999          | 10.0167          | .07962                                  | .08236                | .146 |      | .08131   | 12.79                |
| 107052  | 7.257           | 263.195          | 10.0787          | .27463                                  | .07239                | .021 |      | .07139   | .49                  |
| 107049  | 7.398           | 254.066          | 10.0869          | .39410                                  | .06967                | .011 |      | .06914   | -2.76                |
| 107045  | 7.391           | 263.720          | 10.1833          | .35161                                  | .07109                | .015 |      | .07039   | -1.21                |
| 107051  | 7.257           | 262.817          | 10.2035          | .23940                                  | .07319                | .026 |      | .07207   | 1.09                 |
| 107050  | 7.257           | 262.786          | 10.2135          | .20679                                  | .07505                | .032 |      | .07394   | 3.56                 |
| 107054  | 7.257           | 262.704          | 10.2397          | .17698                                  | .07553                | .042 |      | .07444   | 4.14                 |
| 107055  | 7.257           | 262.621          | 10.2664          | .14890                                  | .08022                | .055 |      | .07915   | 9.78                 |
| 107044  | 7.392           | 263.398          | 10.2856          | .31183                                  | .07168                | .017 |      | .07083   | -.87                 |
| 107046  | 7.391           | 263.249          | 10.3306          | .27465                                  | .07315                | .019 |      | .07223   | .97                  |
| 107047  | 7.391           | 263.055          | 10.3913          | .23984                                  | .07412                | .025 |      | .07311   | 2.01                 |
| 107049  | 7.391           | 262.817          | 10.4659          | .20686                                  | .07496                | .032 |      | .07391   | 2.89                 |
| 107042  | 7.779           | 264.668          | 10.5939          | .48508                                  | .07066                | .009 |      | .07046   | -2.18                |
| 107041  | 7.779           | 264.374          | 10.6756          | .43423                                  | .07103                | .010 |      | .07071   | -2.02                |
| 107035  | 7.982           | 255.346          | 10.7235          | .58460                                  | .07061                | .006 |      | .07069   | -2.16                |
| 107040  | 7.779           | 264.050          | 10.7649          | .39368                                  | .07233                | .011 |      | .07188   | -.57                 |
| 107038  | 7.981           | 265.063          | 10.7965          | .53458                                  | .07057                | .008 |      | .07054   | -2.55                |
| 107039  | 7.779           | 263.845          | 10.8213          | .35145                                  | .07308                | .015 |      | .07255   | .23                  |
| 107035  | 7.931           | 264.725          | 10.8841          | .49521                                  | .07140                | .009 |      | .07124   | -1.75                |
| 107043  | 7.778           | 263.387          | 10.9456          | .31178                                  | .07225                | .017 |      | .07154   | -1.46                |
| 107034  | 7.981           | 264.156          | 11.0316          | .39388                                  | .07218                | .010 |      | .07181   | -1.28                |
| 107037  | 7.981           | 263.797          | 11.1230          | .35153                                  | .07245                | .015 |      | .07196   | -1.29                |
| 107023  | 8.754           | 266.055          | 11.4965          | .63966                                  | .07204                | .002 |      | .07229   | -1.71                |
| 107032  | 8.754           | 265.634          | 11.5848          | .58783                                  | .07250                | .002 |      | .07263   | -1.46                |
| 107031  | 8.756           | 265.162          | 11.6844          | .53458                                  | .07237                | .002 |      | .07238   | -2.09                |
| 107030  | 8.757           | 264.569          | 11.8065          | .48509                                  | .07260                | .002 |      | .07245   | -2.32                |
| 107029  | 8.757           | 264.556          | 11.8090          | .43822                                  | .07233                | .004 |      | .07218   | -2.72                |
| 107028  | 10.240          | 265.433          | 12.5687          | .59714                                  | .07530                | .002 |      | .07547   | -.82                 |
| 107027  | 10.240          | 266.115          | 12.6173          | .64048                                  | .07520                | .001 |      | .07532   | -1.22                |
| 107026  | 10.240          | 265.653          | 12.6876          | .58448                                  | .07532                | .001 |      | .07538   | -1.44                |
| 107025  | 10.239          | 265.154          | 12.7621          | .48553                                  | .07605                | .001 |      | .07606   | -.87                 |
| 107024  | 12.751          | 267.175          | 13.6121          | .81811                                  | .08069                | .001 |      | .08071   | .43                  |
| 107023  | 12.752          | 266.284          | 13.7125          | .59736                                  | .08069                | .001 |      | .08070   | -.24                 |
| 107022  | 12.750          | 265.545          | 13.7830          | .58671                                  | .08130                | .001 |      | .08130   | .03                  |
| 107021  | 12.761          | 264.808          | 13.8754          | .48530                                  | .08143                | .001 |      | .08143   | -.45                 |
| 107020  | 14.768          | 267.684          | 14.6637          | .94540                                  | .08788                | .001 |      | .08770   | .76                  |
| 107019  | 14.768          | 266.850          | 14.7335          | .81535                                  | .08825                | .001 |      | .08812   | .63                  |
| 107018  | 14.769          | 246.125          | 14.7959          | .69400                                  | .08814                | .001 |      | .08807   | .02                  |
| 107017  | 16.771          | 255.494          | 14.8492          | .58560                                  | .08952                | .001 |      | .08949   | 1.14                 |
| 107016  | 22.927          | 267.293          | 15.7659          | .94637                                  | .09743                | .001 |      | .09716   | .64                  |
| 107015  | 22.825          | 266.555          | 15.7946          | .81668                                  | .09757                | .001 |      | .09739   | .38                  |
| 107014  | 22.830          | 265.028          | 15.8433          | .69642                                  | .09801                | .001 |      | .09792   | .41                  |
| 107013  | 27.929          | 255.155          | 15.8976          | .58596                                  | .09818                | .001 |      | .09818   | .21                  |
| 107012  | 31.587          | 267.539          | 16.7467          | 1.08669                                 | .10845                | .001 |      | .10808   | .38                  |
| 107011  | 31.594          | 244.619          | 16.7709          | .94564                                  | .10842                | .001 |      | .10815   | .06                  |
| 107010  | 31.586          | 265.080          | 16.8253          | .81735                                  | .10897                | .001 |      | .10882   | .17                  |
| 107009  | 31.586          | 265.345          | 16.8637          | .69642                                  | .10941                | .001 |      | .10938   | .24                  |
| 107008  | 44.692          | 266.853          | 17.8265          | 1.08644                                 | .12218                | .001 |      | .12188   | -.24                 |

|        |        |         |         |         |        |      |        |      |
|--------|--------|---------|---------|---------|--------|------|--------|------|
| 107007 | 44.675 | 264.103 | 17.8595 | .94672  | .12265 | .001 | .12248 | -.15 |
| 107006 | 44.680 | 265.475 | 17.8878 | .81704  | .12312 | .001 | .12306 | -.02 |
| 107005 | 44.579 | 264.903 | 17.9133 | .69633  | .12333 | .001 | .12337 | -.07 |
| 107004 | 61.047 | 267.083 | 18.7492 | 1.23518 | .13724 | .001 | .13688 | .13  |
| 107003 | 61.058 | 264.351 | 18.7768 | 1.08609 | .13753 | .001 | .13731 | .10  |
| 107002 | 61.077 | 265.603 | 18.8062 | .94627  | .13762 | .001 | .13753 | -.10 |
| 107001 | 61.059 | 264.977 | 18.8298 | .81626  | .13805 | .001 | .13808 | .01  |

| Run Pt. | Pressure<br>4Pa | Temperature<br>K | Density<br>mol/L | Experimental<br>Thermal<br>Conductivity |        | STAT | Adjusted Thermal Conductivity<br>at a Nominal<br>Temperature of 269.3K from<br>Coreletion |                      |
|---------|-----------------|------------------|------------------|---|--------|------|---|----------------------|
|         |                 |                  |                  | Power<br>W/m                            | W/m.K  |      | W/m.K   | Oeviation<br>percent |
| 98258   | .425            | 272.605          | .1921            | .15236                                  | .02308 | .001 | .02269  | .44                  |
| 98257   | .425            | 271.669          | .1926            | .12614                                  | .02292 | .002 | .02264  | .22                  |
| 98256   | .424            | 270.755          | .1931            | .10260                                  | .02277 | .002 | .02260  | .02                  |
| 98255   | .424            | 269.946          | .1938            | .08151                                  | .02274 | .003 | .02267  | .29                  |
| 98149   | .869            | 271.156          | .4061            | .15138                                  | .02342 | .001 | .02321  | .10                  |
| 98150   | .869            | 270.310          | .4077            | .12553                                  | .02326 | .002 | .02315  | -.19                 |
| 98151   | .869            | 269.464          | .4092            | .10202                                  | .02321 | .002 | .02319  | -.01                 |
| 98152   | .869            | 268.731          | .4105            | .08107                                  | .02303 | .003 | .02309  | -.45                 |
| 98254   | .942            | 272.980          | .4384            | .18030                                  | .02388 | .001 | .02346  | .78                  |
| 98253   | .941            | 272.033          | .4400            | .15188                                  | .02374 | .002 | .02343  | .63                  |
| 98252   | .941            | 271.369          | .4411            | .12584                                  | .02344 | .002 | .02321  | -.34                 |
| 98251   | .941            | 270.411          | .4430            | .10229                                  | .02340 | .002 | .02328  | -.06                 |
| 98250   | 2.010           | 273.090          | 1.0047           | .21138                                  | .02528 | .001 | .02488  | -.23                 |
| 98145   | 1.979           | 270.328          | 1.0073           | .15126                                  | .02459 | .001 | .02448  | -1.88                |
| 98146   | 1.987           | 259.639          | 1.0102           | .12554                                  | .02454 | .002 | .02451  | -1.83                |
| 98249   | 2.011           | 272.162          | 1.0104           | .18053                                  | .02516 | .001 | .02486  | -.38                 |
| 98147   | 1.985           | 269.078          | 1.0125           | .10213                                  | .02455 | .002 | .02457  | -1.58                |
| 98248   | 2.013           | 271.366          | 1.0155           | .15194                                  | .02499 | .002 | .02478  | -.79                 |
| 98148   | 1.984           | 268.431          | 1.0155           | .08107                                  | .02432 | .003 | .02441  | -2.30                |
| 98247   | 2.014           | 270.614          | 1.0205           | .12598                                  | .02507 | .004 | .02493  | -.20                 |
| 98245   | 2.797           | 272.468          | 1.4915           | .21135                                  | .02663 | .002 | .02633  | -.62                 |
| 98245   | 2.798           | 271.695          | 1.4999           | .18037                                  | .02661 | .001 | .02639  | -.51                 |
| 98141   | 2.783           | 270.035          | 1.5070           | .15132                                  | .02615 | .002 | .02608  | -1.77                |
| 98244   | 2.799           | 270.725          | 1.5106           | .15198                                  | .02656 | .002 | .02643  | -.48                 |
| 98142   | 2.780           | 269.292          | 1.5120           | .12549                                  | .02594 | .002 | .02594  | -2.39                |
| 98243   | 2.802           | 270.296          | 1.5168           | .12578                                  | .02629 | .002 | .02620  | -1.44                |
| 98143   | 2.777           | 268.625          | 1.5171           | .10192                                  | .02574 | .002 | .02580  | -3.01                |
| 98144   | 2.775           | 269.214          | 1.5201           | .08100                                  | .02570 | .004 | .02580  | -3.07                |
| 98242   | 3.420           | 271.957          | 1.9435           | .21140                                  | .02816 | .002 | .02794  | -.45                 |
| 98241   | 3.432           | 271.262          | 1.9554           | .18049                                  | .02810 | .002 | .02794  | -.61                 |
| 98240   | 3.424           | 270.588          | 1.9680           | .15192                                  | .02799 | .002 | .02779  | -1.33                |
| 98239   | 3.438           | 270.075          | 1.9794           | .12615                                  | .02781 | .002 | .02775  | -1.63                |
| 98137   | 3.444           | 269.675          | 1.9906           | .15143                                  | .02779 | .002 | .02776  | -1.73                |
| 98138   | 3.444           | 268.996          | 2.0019           | .12553                                  | .02748 | .005 | .02750  | -2.84                |
| 98139   | 3.443           | 268.369          | 2.0115           | .10213                                  | .02760 | .003 | .02767  | -2.36                |
| 98140   | 3.443           | 267.981          | 2.0182           | .08107                                  | .02761 | .004 | .02770  | -2.31                |
| 98132   | 3.972           | 271.269          | 2.3952           | .24225                                  | .03011 | .002 | .02998  | .62                  |
| 98238   | 4.037           | 272.359          | 2.4258           | .24462                                  | .03016 | .002 | .02996  | .13                  |
| 98133   | 3.972           | 269.797          | 2.4300           | .17914                                  | .02994 | .002 | .02991  | -.10                 |
| 98237   | 4.038           | 271.524          | 2.4465           | .21131                                  | .03024 | .003 | .03010  | .32                  |
| 98134   | 3.972           | 258.672          | 2.4578           | .12510                                  | .02964 | .002 | .02967  | -1.27                |
| 98236   | 4.040           | 270.832          | 2.4652           | .18033                                  | .02992 | .003 | .02983  | -.85                 |
| 98135   | 3.972           | 268.123          | 2.4718           | .10170                                  | .02947 | .004 | .02953  | -1.95                |
| 98136   | 3.972           | 267.669          | 2.4836           | .08077                                  | .02962 | .004 | .02970  | -1.53                |
| 98235   | 4.041           | 270.052          | 2.4859           | .15177                                  | .03015 | .003 | .03011  | -.20                 |
| 98234   | 4.478           | 272.358          | 2.8325           | .28182                                  | .03211 | .002 | .03197  | 1.03                 |
| 98233   | 4.470           | 271.721          | 2.8539           | .24590                                  | .03201 | .002 | .03190  | .53                  |
| 98232   | 4.480           | 270.942          | 2.8810           | .21206                                  | .03182 | .003 | .03175  | -.31                 |
| 98231   | 4.482           | 270.312          | 2.9045           | .18092                                  | .03162 | .004 | .03158  | -1.19                |
| 98128   | 4.535           | 270.479          | 2.9550           | .24328                                  | .03341 | .003 | .03337  | 3.55                 |
| 98129   | 4.535           | 269.839          | 2.9785           | .21006                                  | .03362 | .003 | .03360  | 3.90                 |
| 98130   | 4.534           | 269.320          | 2.9981           | .17940                                  | .03354 | .003 | .03354  | 3.46                 |
| 98131   | 4.536           | 268.736          | 3.0207           | .15116                                  | .03369 | .003 | .03370  | 3.62                 |
| 98227   | 4.064           | 272.284          | 3.3509           | .31913                                  | .03400 | .006 | .03474  | 2.01                 |
| 98124   | 4.923           | 270.732          | 3.3770           | .27872                                  | .03565 | .003 | .03563  | 4.09                 |
| 98125   | 4.923           | 270.260          | 3.4003           | .24335                                  | .03573 | .003 | .03572  | 4.01                 |
| 98228   | 4.963           | 270.946          | 3.4144           | .24516                                  | .03427 | .010 | .03425  | -.31                 |
| 98126   | 4.923           | 269.581          | 3.4350           | .21019                                  | .03585 | .003 | .03585  | 3.87                 |
| 98229   | 4.953           | 270.495          | 3.4359           | .21205                                  | .03471 | .003 | .03470  | .67                  |
| 98230   | 4.962           | 270.046          | 3.4586           | .18105                                  | .03463 | .005 | .03463  | .14                  |
| 98127   | 4.923           | 269.091          | 3.4614           | .17932                                  | .03546 | .004 | .03566  | 2.99                 |
| 98120   | 5.083           | 270.494          | 3.5972           | .27682                                  | .03666 | .004 | .03666  | 3.91                 |
| 98121   | 5.083           | 269.052          | 3.6183           | .24343                                  | .03649 | .004 | .03549  | 3.03                 |
| 98122   | 5.083           | 269.323          | 3.6559           | .21008                                  | .03656 | .003 | .03656  | 2.67                 |
| 98123   | 5.083           | 268.979          | 3.6770           | .17948                                  | .03652 | .002 | .03651  | 2.25                 |
| 98223   | 5.264           | 271.128          | 3.7357           | .28049                                  | .03737 | .004 | .03740  | 3.02                 |
| 98224   | 5.263           | 270.724          | 3.8097           | .24511                                  | .03533 | .019 | .03535  | -2.94                |
| 98225   | 5.252           | 270.210          | 3.8423           | .21185                                  | .03672 | .005 | .03674  | .47                  |
| 98226   | 5.261           | 269.839          | 3.8660           | .18103                                  | .03661 | .009 | .03662  | -.19                 |
| 98116   | 5.549           | 270.144          | 4.2749           | .27840                                  | .03975 | .004 | .03980  | 2.07                 |
| 98117   | 5.549           | 269.492          | 4.3336           | .24301                                  | .04034 | .006 | .04035  | 2.58                 |
| 98219   | 5.559           | 270.145          | 4.3367           | .24503                                  | .03971 | .004 | .03976  | 1.09                 |
| 98220   | 5.587           | 269.676          | 4.3790           | .21157                                  | .04030 | .003 | .04033  | 1.86                 |

|       |       |         |        |        |        |      |        |       |
|-------|-------|---------|--------|--------|--------|------|--------|-------|
| 98118 | 5.549 | 268.98? | 4.3817 | .20991 | .02991 | .004 | .03989 | .74   |
| 98119 | 5.549 | 268.555 | 4.6239 | .17941 | .03983 | .004 | .03977 | -.17  |
| 98221 | 5.587 | 269.178 | 4.4259 | .18072 | .04007 | .004 | .04006 | .53   |
| 98222 | 5.586 | 268.937 | 4.6492 | .15246 | .04042 | .005 | .04039 | 1.06  |
| 98112 | 5.808 | 269.744 | 4.7455 | .27816 | .04094 | .004 | .04098 | -2.06 |
| 98113 | 5.808 | 269.032 | 4.8406 | .24283 | .04169 | .005 | .04166 | -1.66 |
| 98114 | 5.808 | 268.498 | 4.9084 | .20980 | .04174 | .002 | .04164 | -2.71 |
| 98218 | 5.873 | 269.482 | 4.9090 | .21159 | .04301 | .003 | .04303 | .60   |
| 98115 | 5.808 | 268.194 | 4.9487 | .17927 | .04199 | .005 | .04195 | -2.81 |
| 98217 | 5.873 | 269.052 | 4.9652 | .18071 | .04303 | .006 | .04300 | -.29  |
| 98216 | 5.874 | 268.579 | 5.0296 | .15219 | .04342 | .005 | .04332 | -.48  |
| 98215 | 5.874 | 268.311 | 5.0678 | .12618 | .04402 | .004 | .04388 | .25   |
| 98110 | 5.994 | 269.742 | 5.0917 | .31612 | .04330 | .003 | .04336 | -1.30 |
| 98109 | 5.984 | 269.255 | 5.1598 | .27805 | .04323 | .003 | .04322 | -2.61 |
| 98211 | 6.042 | 269.124 | 5.3009 | .21124 | .04462 | .006 | .04459 | -1.49 |
| 98111 | 5.984 | 268.136 | 5.329* | .17925 | .04413 | .003 | .04393 | -3.42 |
| 98212 | 6.042 | 268.795 | 5.3514 | .18065 | .04403 | .006 | .04485 | -1.63 |
| 98213 | 6.042 | 268.530 | 5.3930 | .15221 | .04612 | .003 | .04599 | .31   |
| 98214 | 6.041 | 268.311 | 5.4282 | .12630 | .04581 | .005 | .04564 | -.96  |
| 98210 | 6.233 | 268.481 | 5.8034 | .18067 | .04855 | .004 | .04842 | -.20  |
| 98209 | 6.234 | 268.474 | 5.8448 | .15219 | .04934 | .003 | .04916 | .76   |
| 98103 | 6.232 | 268.222 | 5.8891 | .20979 | .04707 | .004 | .04683 | -4.80 |
| 98208 | 5.234 | 268.062 | 5.9261 | .12622 | .05021 | .005 | .04993 | 1.21  |
| 98104 | 6.232 | 267.902 | 5.9525 | .17919 | .04752 | .004 | .04719 | -4.87 |
| 98207 | 6.234 | 267.845 | 5.9711 | .10275 | .05053 | .005 | .05019 | 1.14  |
| 98105 | 6.232 | 267.660 | 6.0027 | .15108 | .04770 | .006 | .04731 | -5.32 |
| 98106 | 6.232 | 267.437 | 6.0500 | .12428 | .04949 | .005 | .04903 | -2.25 |
| 98206 | 6.435 | 268.599 | 5.3099 | .19090 | .05104 | .009 | .05086 | -1.90 |
| 98099 | 6.396 | 268.015 | 4.3425 | .20995 | .05054 | .006 | .05019 | -3.67 |
| 98205 | 6.435 | 268.343 | 5.3670 | .15245 | .05313 | .004 | .05289 | 1.32  |
| 98204 | 6.435 | 267.994 | 6.4473 | .12612 | .05396 | .009 | .05360 | 1.64  |
| 98100 | 6.396 | 267.547 | 6.4515 | .17926 | .05317 | .003 | .05067 | -4.09 |
| 98101 | 6.396 | 267.500 | 6.4619 | .15109 | .05176 | .004 | .05124 | -3.06 |
| 98093 | 6.436 | 267.821 | 6.4899 | .10262 | .05379 | .011 | .05317 | .36   |
| 98102 | 6.396 | 267.249 | 5.5229 | .12534 | .05257 | .004 | .05196 | -2.39 |
| 98095 | 6.493 | 268.284 | 5.5273 | .24224 | .05237 | .005 | .05208 | -2.20 |
| 98094 | 6.493 | 268.182 | 6.5520 | .20943 | .05237 | .004 | .05205 | -2.57 |
| 98202 | 6.583 | 268.745 | 6.6480 | .21114 | .05466 | .004 | .05450 | .92   |
| 98096 | 6.493 | 267.676 | 6.6750 | .17874 | .05366 | .004 | .05317 | -1.89 |
| 98201 | 6.583 | 268.533 | 6.5987 | .18052 | .05502 | .004 | .05479 | .86   |
| 98097 | 6.493 | 267.422 | 6.7390 | .15051 | .05416 | .004 | .05357 | -1.87 |
| 98200 | 6.583 | 268.219 | 6.7758 | .15203 | .05516 | .009 | .05483 | .64   |
| 98098 | 6.493 | 267.233 | 6.7874 | .12484 | .05190 | .005 | .05524 | .65   |
| 98109 | 6.583 | 268.057 | 6.8172 | .12626 | .05679 | .006 | .05640 | 2.37  |
| 98198 | 6.799 | 268.805 | 7.1829 | .21150 | .05830 | .004 | .05814 | 1.44  |
| 98197 | 6.799 | 268.430 | 7.2818 | .18059 | .05869 | .004 | .05840 | .87   |
| 98196 | 6.800 | 268.171 | 7.3525 | .15221 | .05984 | .005 | .05945 | 1.93  |
| 98194 | 6.979 | 268.578 | 7.6984 | .21131 | .06118 | .003 | .06092 | 1.11  |
| 98193 | 6.979 | 268.540 | 7.7990 | .18064 | .06142 | .004 | .06115 | 1.38  |
| 98089 | 6.889 | 267.591 | 7.7450 | .20994 | .06044 | .004 | .05979 | -1.17 |
| 98192 | 6.979 | 268.278 | 7.7824 | .15217 | .06242 | .005 | .06204 | 2.17  |
| 98191 | 6.979 | 268.142 | 7.8219 | .12627 | .06389 | .005 | .06346 | 4.02  |
| 98090 | 6.888 | 267.297 | 7.8338 | .17912 | .06165 | .003 | .06087 | -.16  |
| 98091 | 6.887 | 267.114 | 7.8863 | .15109 | .06320 | .005 | .06234 | 1.78  |
| 98187 | 7.157 | 269.240 | 7.9473 | .15182 | .06483 | .008 | .06481 | 5.02  |
| 98092 | 6.887 | 266.858 | 7.9613 | .12518 | .06385 | .005 | .06287 | 1.98  |
| 98189 | 7.156 | 269.117 | 7.9833 | .21013 | .06385 | .004 | .06378 | 3.70  |
| 98C93 | 6.887 | 266.744 | 7.9959 | .10198 | .06611 | .007 | .06508 | 5.03  |
| 98188 | 7.157 | 269.036 | 8.0067 | .17966 | .06483 | .005 | .06473 | 4.44  |
| 98085 | 7.017 | 267.673 | 8.0524 | .21028 | .06278 | .005 | .06215 | .09   |
| 98086 | 7.017 | 267.315 | 8.1587 | .17935 | .06258 | .004 | .06179 | -1.33 |
| 98190 | 7.156 | 268.389 | 8.1895 | .12527 | .06450 | .012 | .06424 | 2.30  |
| 98087 | 7.017 | 267.060 | 8.2364 | .15116 | .06432 | .004 | .06341 | .67   |
| 98088 | 7.017 | 266.848 | 8.3014 | .12538 | .06563 | .004 | .06463 | 2.06  |
| 98081 | 7.145 | 267.509 | 8.4219 | .20976 | .06437 | .005 | .06365 | -.30  |
| 98082 | 7.145 | 267.213 | 8.5118 | .17910 | .06504 | .005 | .06419 | -.08  |
| 98185 | 7.352 | 268.734 | 8.5494 | .24483 | .06223 | .007 | .06201 | -3.86 |
| 98083 | 7.145 | 267.072 | 8.5540 | .15025 | .06635 | .003 | .06546 | 1.54  |
| 98084 | 7.145 | 266.921 | 8.6005 | .12519 | .06731 | .007 | .06533 | 2.57  |
| 98183 | 7.353 | 268.356 | 8.6514 | .18098 | .06362 | .008 | .06325 | -2.58 |
| 98076 | 7.310 | 267.998 | 8.6699 | .27801 | .06509 | .005 | .06458 | -.53  |
| 98184 | 7.312 | 268.302 | 8.6763 | .21154 | .06410 | .006 | .06380 | -1.80 |
| 98077 | 7.310 | 267.730 | 8.7498 | .24279 | .06549 | .005 | .06487 | -.59  |
| 98186 | 7.351 | 267.990 | 8.7650 | .15240 | .06649 | .005 | .06498 | 1.01  |
| 98078 | 7.310 | 267.460 | 8.8479 | .20942 | .06591 | .004 | .06515 | -.76  |
| 98079 | 7.310 | 267.192 | 8.9140 | .17919 | .06762 | .003 | .06675 | 1.30  |
| 98080 | 7.309 | 267.105 | 8.9358 | .15101 | .06798 | .004 | .06709 | 1.64  |
| 98182 | 7.709 | 268.905 | 9.2609 | .29055 | .06597 | .004 | .06582 | -1.98 |
| 98181 | 7.708 | 268.617 | 9.3427 | .26473 | .06658 | .003 | .06633 | -1.61 |
| 98180 | 7.709 | 268.412 | 9.4023 | .21130 | .06608 | .005 | .06575 | -2.79 |
| 98076 | 7.729 | 268.491 | 9.4187 | .35620 | .07096 | .014 | .07046 | 4.26  |
| 98071 | 7.729 | 268.245 | 9.4880 | .31623 | .07038 | .008 | .06297 | 3.04  |
| 98179 | 7.709 | 268.687 | 9.494* | .18020 | .06825 | .004 | .06790 | -.10  |
| 98178 | 7.050 | 269.679 | 9.5080 | .35946 | .06895 | .009 | .06908 | 1.64  |
| 98072 | 7.729 | 268.050 | 9.5429 | .27839 | .07034 | .005 | .06988 | 2.67  |
| 98177 | 7.951 | 269.445 | 9.5719 | .31809 | .06880 | .008 | .06873 | .92   |

|       |        |         |         |         |        |      |        |       |
|-------|--------|---------|---------|---------|--------|------|--------|-------|
| 98073 | 7.728  | 267.753 | 9.4289  | .424288 | .06999 | .005 | .05941 | 1.66  |
| 98043 | 7.944  | 269.209 | 9.4599  | .44412  | .07212 | .012 | .07209 | 5.19  |
| 98074 | 7.727  | 257.500 | 9.5945  | .20997  | .06961 | .004 | .06895 | .71   |
| 98176 | 7.452  | 248.972 | 9.7012  | .27997  | .06713 | .007 | .06702 | -2.14 |
| 98075 | 7.727  | 267.235 | 9.7743  | .17906  | .07047 | .004 | .05971 | 1.50  |
| 98175 | 7.052  | 268.679 | 9.7813  | .24441  | .06933 | .005 | .06912 | .63   |
| 98046 | 7.954  | 268.657 | 9.8052  | .35530  | .07019 | .035 | .06947 | 1.75  |
| 98067 | 7.964  | 268.279 | 9.9098  | .31529  | .07064 | .007 | .07029 | 1.81  |
| 98174 | 8.330  | 270.307 | 9.9902  | .44813  | .07117 | .009 | .07148 | 3.19  |
| 98049 | 7.964  | 257.974 | 9.9909  | .27433  | .06494 | .004 | .06953 | .39   |
| 98173 | 8.331  | 269.985 | 10.0505 | .40233  | .04956 | .006 | .06975 | .51   |
| 98069 | 7.964  | 267.716 | 10.2605 | .24279  | .07020 | .004 | .06966 | .36   |
| 98051 | 8.248  | 269.165 | 10.1394 | .44433  | .06996 | .007 | .06992 | .47   |
| 98172 | 8.332  | 269.542 | 10.1718 | .35904  | .06718 | .008 | .06723 | -3.41 |
| 98171 | 8.332  | 269.276 | 10.2370 | .31934  | .06564 | .004 | .06963 | -.26  |
| 98042 | 8.248  | 269.772 | 10.2379 | .33995  | .06998 | .005 | .06982 | -.00  |
| 98064 | 8.249  | 268.304 | 10.3568 | .31644  | .07018 | .003 | .06987 | -.20  |
| 98169 | 8.719  | 270.665 | 10.4437 | .44491  | .07025 | .005 | .07362 | .48   |
| 98268 | 8.720  | 270.375 | 10.5107 | .46769  | .07056 | .005 | .07045 | .59   |
| 98057 | 8.671  | 269.685 | 10.6042 | .40206  | .07044 | .035 | .07054 | -.12  |
| 98267 | 8.723  | 269.717 | 10.6585 | .40063  | .06967 | .004 | .06918 | -2.26 |
| 98170 | 8.719  | 269.699 | 10.6611 | .35850  | .06901 | .007 | .06911 | -2.37 |
| 98058 | 8.671  | 269.052 | 10.7477 | .33995  | .07012 | .004 | .07005 | -1.20 |
| 98157 | 9.137  | 271.394 | 10.7850 | .52969  | .07042 | .017 | .07090 | -.15  |
| 98059 | 9.671  | 268.288 | 10.9198 | .31643  | .07055 | .002 | .07029 | -1.43 |
| 98166 | 9.137  | 270.568 | 10.9561 | .49578  | .07024 | .004 | .07354 | -1.18 |
| 98060 | 8.671  | 268.109 | 10.9598 | .27866  | .07083 | .003 | .07053 | -1.21 |
| 98168 | 9.135  | 270.267 | 11.0154 | .44042  | .07019 | .003 | .07040 | -1.56 |
| 98165 | 9.139  | 269.786 | 11.1174 | .40243  | .07081 | .009 | .07091 | -1.13 |
| 98053 | 9.142  | 269.610 | 11.1561 | .49198  | .07100 | .004 | .07107 | -1.04 |
| 98164 | 9.762  | 272.421 | 11.2094 | .70962  | .06972 | .009 | .07028 | -2.33 |
| 98054 | 9.144  | 268.903 | 11.3009 | .33989  | .07119 | .003 | .07111 | -1.42 |
| 99163 | 9.762  | 271.489 | 11.3792 | .59648  | .07086 | .010 | .07124 | -1.44 |
| 98055 | 9.144  | 268.320 | 11.4175 | .31608  | .07157 | .002 | .07137 | -1.42 |
| 98056 | 9.144  | 268.097 | 11.4513 | .27811  | .07156 | .002 | .07132 | -1.63 |
| 98049 | 9.723  | 269.641 | 11.4788 | .49198  | .07309 | .002 | .07314 | .19   |
| 98161 | 9.763  | 269.762 | 11.6096 | .33947  | .07065 | .008 | .07372 | -3.26 |
| 98160 | 10.526 | 272.799 | 11.7549 | .71177  | .07444 | .005 | .07488 | 2.25  |
| 98050 | 9.721  | 269.049 | 11.7824 | .39941  | .07283 | .002 | .07279 | -.65  |
| 98159 | 10.529 | 272.449 | 11.8758 | .59960  | .07504 | .005 | .07527 | 2.47  |
| 98051 | 9.721  | 268.406 | 11.8955 | .31518  | .07250 | .002 | .07237 | -1.65 |
| 98052 | 9.722  | 268.145 | 11.9413 | .27824  | .07333 | .005 | .07316 | -.72  |
| 98158 | 10.527 | 271.045 | 12.0133 | .49585  | .07399 | .002 | .07418 | .33   |
| 98045 | 10.430 | 270.388 | 12.0719 | .59504  | .07399 | .002 | .07411 | .08   |
| 98157 | 10.530 | 270.099 | 12.1824 | .40182  | .07497 | .002 | .07505 | .96   |
| 98046 | 10.430 | 269.639 | 12.1995 | .49251  | .07409 | .002 | .07413 | -.37  |
| 98047 | 10.430 | 268.022 | 12.3012 | .39964  | .07424 | .002 | .07420 | -.74  |
| 98156 | 11.500 | 272.912 | 12.3434 | .71159  | .07631 | .008 | .07656 | 2.19  |
| 98048 | 10.430 | 268.194 | 12.4126 | .31668  | .07409 | .002 | .07399 | -1.52 |
| 98041 | 11.208 | 270.209 | 12.5611 | .59475  | .07565 | .001 | .07571 | .11   |
| 98154 | 11.502 | 271.133 | 12.5880 | .49682  | .07477 | .002 | .07487 | -1.13 |
| 98042 | 11.207 | 269.290 | 12.6083 | .49203  | .07598 | .001 | .07598 | -.15  |
| 98153 | 11.505 | 270.198 | 12.7158 | .40209  | .07610 | .002 | .07515 | -.07  |
| 98043 | 11.208 | 268.455 | 12.8334 | .39940  | .07515 | .001 | .07510 | -.57  |
| 98044 | 11.209 | 267.957 | 12.8718 | .31590  | .07624 | .001 | .07617 | -.84  |
| 98037 | 12.719 | 270.250 | 13.2483 | .59472  | .07882 | .001 | .07882 | .45   |
| 98038 | 12.719 | 269.417 | 13.3408 | .49231  | .07945 | .001 | .07945 | .64   |
| 98039 | 12.719 | 268.809 | 13.4111 | .30948  | .07926 | .002 | .07926 | -.04  |
| 98040 | 12.722 | 268.212 | 13.4806 | .31646  | .07936 | .002 | .07937 | -.36  |
| 98033 | 13.702 | 270.134 | 13.6374 | .59485  | .08108 | .001 | .08104 | .66   |
| 98034 | 13.779 | 269.367 | 13.7171 | .49230  | .08101 | .001 | .08101 | .06   |
| 98035 | 13.777 | 268.799 | 13.7765 | .39975  | .08130 | .002 | .08132 | .02   |
| 98036 | 13.777 | 268.098 | 13.8495 | .31634  | .08168 | .002 | .08172 | -.02  |
| 98032 | 16.108 | 270.735 | 14.2426 | .70747  | .08575 | .001 | .08565 | 1.61  |
| 98029 | 16.110 | 270.014 | 14.3077 | .59470  | .08550 | .001 | .08545 | .85   |
| 98030 | 16.108 | 269.229 | 14.3775 | .49227  | .08570 | .001 | .08571 | .57   |
| 98031 | 16.108 | 268.587 | 14.4347 | .39940  | .08572 | .001 | .08577 | .17   |
| 98025 | 18.009 | 270.488 | 14.6951 | .70657  | .08817 | .001 | .08806 | .52   |
| 98026 | 18.013 | 269.823 | 14.7497 | .59513  | .08871 | .001 | .08866 | .71   |
| 98027 | 18.014 | 269.135 | 14.8054 | .49267  | .08874 | .001 | .08875 | .31   |
| 98028 | 18.011 | 268.497 | 14.8561 | .39993  | .08927 | .001 | .08935 | .51   |
| 98021 | 21.576 | 270.428 | 15.3448 | .70733  | .09407 | .001 | .09393 | .81   |
| 98022 | 21.578 | 269.590 | 15.4037 | .59515  | .09418 | .001 | .09414 | .46   |
| 98023 | 21.576 | 268.922 | 15.4499 | .49233  | .09479 | .001 | .09484 | .72   |
| 98024 | 21.573 | 268.442 | 15.4827 | .39968  | .09449 | .001 | .09460 | .13   |
| 98017 | 25.603 | 270.788 | 15.8952 | .82822  | .09919 | .001 | .09898 | .38   |
| 98018 | 25.602 | 270.075 | 15.9391 | .70643  | .09954 | .001 | .09944 | .37   |
| 98019 | 25.602 | 269.456 | 15.9774 | .59464  | .09935 | .001 | .09933 | -.15  |
| 98020 | 25.602 | 268.829 | 16.0161 | .49224  | .10007 | .002 | .10014 | .25   |
| 98013 | 31.011 | 270.500 | 16.5286 | .82814  | .10582 | .001 | .10563 | -.04  |
| 98014 | 31.007 | 269.757 | 16.5689 | .70665  | .10394 | .001 | .10587 | -.27  |
| 98015 | 31.007 | 269.071 | 16.6064 | .59416  | .10602 | .002 | .10605 | -.52  |
| 98016 | 31.007 | 268.541 | 16.6353 | .49234  | .10683 | .001 | .10695 | -.01  |
| 98012 | 35.236 | 270.058 | 16.9108 | .75930  | .11076 | .001 | .11050 | .12   |
| 98009 | 35.220 | 270.304 | 16.9388 | .82746  | .11080 | .001 | .11054 | -.08  |
| 98010 | 35.232 | 269.645 | 16.9725 | .70569  | .11113 | .002 | .11107 | -.07  |

|       |        |         |         |        |        |      |        |      |
|-------|--------|---------|---------|--------|--------|------|--------|------|
| 98011 | 35.233 | 269.011 | 17.0048 | .59374 | .11104 | .002 | .11109 | -.43 |
| 98007 | 41.269 | 270.160 | 17.4350 | .83004 | .11710 | .001 | .11595 | -.31 |
| 98006 | 41.249 | 269.409 | 17.4700 | .70715 | .11718 | .001 | .11716 | -.55 |
| 98008 | 41.273 | 268.391 | 17.5176 | .49327 | .11784 | .001 | .11800 | -.40 |
| 98004 | 46.990 | 270.657 | 17.8108 | .95910 | .12295 | .001 | .12272 | .04  |
| 98001 | 46.975 | 270.115 | 17.8341 | .82805 | .12241 | .001 | .12227 | -.61 |
| 98002 | 46.970 | 269.591 | 17.8566 | .70545 | .12331 | .001 | .12326 | -.07 |
| 98003 | 46.975 | 269.825 | 17.8902 | .59365 | .12416 | .002 | .12424 | .32  |

| Run Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Dower<br>W/a | Experimental<br>Thermal<br>Conductivity<br>W/m.K | STAT | Adjusted Therrel Conductivity<br>at a Nominal<br>Temperature of 290.5K troa<br>W/m.K |       |  |
|---------|-----------------|------------------|------------------|--------------|--|------|--|-------|--|
|         |                 |                  |                  |              |  |      | Correlation<br>percent   |       |  |
| 101144  | .498            | 291.209          | .2103            | .16359       | .02584   | .002 | .02574   | 1.68  |  |
| 101147  | .498            | 290.315          | .2110            | .13559       | .02553   | .002 | .02555   | .94   |  |
| 101142  | .498            | 269.483          | .2120            | .11030       | .02537   | .002 | .02550   | .75   |  |
| 101141  | .499            | 288.880          | .2126            | .08764       | .02511   | .004 | .02532   | .24   |  |
| 101140  | 1.212           | 291.514          | .5295            | .19394       | .02661   | .001 | .02647   | 1.24  |  |
| 101139  | 1.212           | 290.499          | .5319            | .16343       | .02627   | .002 | .02626   | .45   |  |
| 101138  | 1.213           | 289.689          | .5340            | .13545       | .02622   | .002 | .02632   | .64   |  |
| 131137  | 1.213           | 288.892          | .5358            | .11012       | .02617   | .003 | .02638   | .83   |  |
| 101136  | 2.181           | 290.863          | 1.0062           | .19390       | .02749   | .001 | .02744   | .00   |  |
| 101135  | 2.182           | 290.020          | 1.0105           | .16336       | .02733   | .002 | .02739   | -.23  |  |
| 101134  | 2.182           | 289.231          | 1.0144           | .13540       | .02734   | .002 | .02750   | .14   |  |
| 101133  | 2.182           | 288.562          | 1.0182           | .11013       | .02741   | .003 | .02765   | .66   |  |
| 101171  | 3.101           | 291.248          | 1.5365           | .22708       | .02901   | .001 | .02891   | .11   |  |
| 101130  | 3.102           | 290.361          | 1.5150           | .19391       | .02897   | .002 | .02898   | .27   |  |
| 101129  | 3.104           | 289.650          | 1.5221           | .16332       | .02863   | .002 | .02873   | -.68  |  |
| 101132  | 3.100           | 289.078          | 1.5246           | .13555       | .02881   | .002 | .02898   | .16   |  |
| 101128  | 3.727           | 291.670          | 1.8795           | .26204       | .03019   | .002 | .03004   | .07   |  |
| 101127  | 3.728           | 290.789          | 1.8904           | .22638       | .03029   | .001 | .03025   | .64   |  |
| 101126  | 3.729           | 290.064          | 1.8998           | .19311       | .02965   | .002 | .02970   | -1.31 |  |
| 101125  | 3.729           | 289.092          | 1.9125           | .16271       | .02959   | .002 | .02975   | -1.26 |  |
| 101124  | 4.403           | 292.143          | 2.3164           | .30025       | .03166   | .002 | .03147   | .06   |  |
| 131123  | 4.405           | 291.543          | 2.3284           | .26230       | .03188   | .002 | .03176   | .84   |  |
| 101122  | 4.410           | 290.539          | 2.3494           | .22655       | .03174   | .002 | .03173   | .54   |  |
| 101121  | 4.416           | 289.830          | 2.3661           | .19345       | .03162   | .302 | .03169   | .23   |  |
| 101120  | 5.075           | 291.471          | 2.8212           | .30029       | .03315   | .003 | .03305   | -.56  |  |
| 101119  | 5.076           | 290.919          | 2.8353           | .26230       | .03371   | .002 | .03366   | 1.13  |  |
| 191118  | 5.077           | 290.165          | 2.8546           | .22662       | .03338   | .002 | .03341   | .17   |  |
| 101117  | 5.078           | 289.178          | 2.8607           | .19316       | .03323   | .002 | .03336   | -.28  |  |
| 101116  | 5.754           | 290.951          | 3.3957           | .30011       | .03599   | .003 | .03595   | 1.38  |  |
| 101115  | 5.755           | 290.239          | 3.4213           | .26203       | .03776   | .002 | .03578   | .63   |  |
| 101114  | 5.758           | 289.714          | 3.4431           | .22650       | .03555   | .002 | .03561   | -.08  |  |
| 101113  | 5.762           | 289.353          | 3.4502           | .19343       | .03554   | .003 | .03563   | -.22  |  |
| 101112  | 6.255           | 290.719          | 3.8661           | .30260       | .03758   | .006 | .03756   | .35   |  |
| 101111  | 6.254           | 290.102          | 3.4953           | .26218       | .03545   | .007 | .03648   | -2.96 |  |
| 101110  | 6.258           | 289.291          | 3.9359           | .22659       | .03678   | .005 | .03686   | -2.37 |  |
| 101109  | 6.251           | 288.815          | 3.961 b          | .19346       | .03777   | .002 | .03788   | .08   |  |
| 101107  | 6.739           | 290.843          | 4.3479           | .34178       | .04108   | .004 | .04106   | 3.54  |  |
| 101106  | 6.739           | 290.235          | 4.3834           | .30073       | .04063   | .004 | .04064   | 2.15  |  |
| 101105  | 6.740           | 289.650          | 4.4192           | .26219       | .04009   | .004 | .04013   | .48   |  |
| 101118  | 6.738           | 289.237          | 4.4415           | .22686       | .04041   | .002 | .04047   | 1.06  |  |
| 101104  | 7.114           | 291.780          | 4.6927           | .43240       | .04259   | .005 | .04253   | 3.02  |  |
| 101103  | 7.114           | 291.340          | 4.7216           | .38608       | .04214   | .007 | .04210   | 1.70  |  |
| 101101  | 7.114           | 290.269          | 4.7952           | .34208       | .04178   | .006 | .04179   | .10   |  |
| 161102  | 7.114           | 289.910          | 4.8204           | .30130       | .04253   | .002 | .04255   | 1.60  |  |
| 191099  | 7.453           | 292.050          | 5.0513           | .42971       | .04504   | .003 | .04499   | 4.38  |  |
| 101097  | 7.453           | 291.558          | 5.0891           | .34238       | .04547   | .004 | .04544   | 4.90  |  |
| 101098  | 7.453           | 291.642          | 5.0980           | .38379       | .04404   | .006 | .04401   | 1.72  |  |
| 101100  | 7.453           | 290.242          | 5.1929           | .29924       | .04448   | .003 | .04448   | 1.68  |  |
| 101096  | 7.841           | 291.475          | 5.5550           | .47931       | .04763   | .007 | .04762   | 4.24  |  |
| 101095  | 7.841           | 290.833          | 5.6140           | .43075       | .04722   | .006 | .04722   | 2.77  |  |
| 191994  | 7.842           | 290.233          | 5.6709           | .38474       | .04691   | .003 | .04691   | 1.50  |  |
| 101393  | 7.842           | 289.436          | 5.7491           | .34054       | .04656   | .003 | .04656   | -.13  |  |
| 101092  | 8.209           | 291.571          | 5.9988           | .53078       | .04898   | .005 | .04899   | 2.16  |  |
| 101091  | 8.210           | 290.988          | 6.0598           | .47952       | .04823   | .005 | .04824   | -.04  |  |
| 101090  | 8.210           | 290.379          | 6.1246           | .43070       | .04846   | .003 | .04846   | -.28  |  |
| 101089  | 8.211           | 289.783          | 6.1901           | .38427       | .04840   | .003 | .04839   | -1.15 |  |
| 101088  | 8.609           | 291.249          | 6.5369           | .53164       | .05158   | .006 | .05160   | 1.61  |  |
| 101087  | 8.609           | 290.709          | 6.6003           | .47956       | .05062   | .005 | .05063   | -.94  |  |
| 101086  | 8.610           | 290.105          | 6.6741           | .43104       | .05129   | .003 | .05129   | -.42  |  |
| 101085  | 8.610           | 289.620          | 6.7343           | .38403       | .05082   | .003 | .05079   | -2.01 |  |
| 101084  | 9.046           | 290.918          | 7.1312           | .53212       | .05400   | .006 | .05402   | .31   |  |
| 101083  | 9.046           | 290.382          | 7.2014           | .47989       | .05327   | .005 | .05327   | -1.78 |  |
| 101082  | 9.047           | 289.771          | 7.2847           | .43057       | .05261   | .005 | .05257   | -3.93 |  |
| 101081  | 9.047           | 290.354          | 7.3420           | .38447       | .05336   | .003 | .05329   | -3.05 |  |
| 101080  | 9.383           | 290.784          | 7.5696           | .53131       | .05608   | .005 | .05610   | .09   |  |
| 131374  | 9.384           | 290.311          | 7.6358           | .48038       | .05628   | .004 | .05627   | -.18  |  |
| 101078  | 9.383           | 289.659          | 7.7272           | .43130       | .05551   | .003 | .05546   | -2.45 |  |
| 101076  | 9.736           | 291.123          | 7.9471           | .58323       | .05703   | .007 | .05708   | -1.36 |  |
| 101075  | 9.735           | 290.589          | 8.0224           | .52866       | .05726   | .004 | .05727   | -1.63 |  |
| 101074  | 9.736           | 290.114          | 8.0903           | .47688       | .05752   | .006 | .05750   | -1.78 |  |
| 101073  | 9.736           | 289.610          | 8.1641           | .42826       | .05746   | .004 | .05740   | -2.54 |  |
| 101072  | 10.162          | 291.123          | 8.4310           | .58294       | .06024   | .008 | .06029   | .41   |  |

|        |        |         |         |         |        |      |        |       |
|--------|--------|---------|---------|---------|--------|------|--------|-------|
| 101071 | 10.162 | 290.590 | 8.5080  | .52886  | .06053 | .005 | .06054 | .27   |
| 101070 | 10.163 | 289.979 | 8.5982  | .47716  | .05953 | .004 | .05949 | -2.13 |
| 101069 | 10.163 | 289.502 | 8.6690  | .42849  | .05962 | .005 | .05955 | -2.55 |
| 101068 | 10.585 | 291.601 | 8.9120  | .64001  | .06183 | .009 | .06191 | -2.25 |
| 101067 | 10.685 | 290.743 | 9.0347  | .58230  | .06159 | .005 | .06161 | -1.53 |
| 101066 | 10.685 | 290.393 | 9.0856  | .52872  | .06123 | .005 | .06123 | -2.50 |
| 101065 | 10.685 | 289.684 | 9.1893  | .47709  | .06165 | .002 | .06159 | -2.54 |
| 101064 | 11.292 | 291.394 | 9.5140  | .44085  | .06461 | .006 | .06467 | .46   |
| 101063 | 11.292 | 291.206 | 9.5401  | .58466  | .06316 | .011 | .06321 | -1.99 |
| 101062 | 11.292 | 290.479 | 9.6421  | .53010  | .06355 | .004 | .06355 | -2.02 |
| 101061 | 11.293 | 289.827 | 9.7351  | .47832  | .06339 | .004 | .06335 | -2.86 |
| 101060 | 11.928 | 291.177 | 10.0702 | .64110  | .06528 | .004 | .06531 | -1.56 |
| 101058 | 11.927 | 289.940 | 10.2354 | .52889  | .06514 | .002 | .06512 | -2.74 |
| 101057 | 11.927 | 289.680 | 10.2717 | .47722  | .06558 | .002 | .06555 | -2.25 |
| 101056 | 12.615 | 291.416 | 10.5361 | .44124  | .06721 | .004 | .06724 | -1.02 |
| 101055 | 12.620 | 290.813 | 10.6152 | .58461  | .06735 | .003 | .06736 | -1.23 |
| 101054 | 12.620 | 290.247 | 10.6873 | .53002  | .06801 | .004 | .06800 | -53   |
| 101051 | 13.440 | 290.893 | 11.1111 | .58568  | .07050 | .034 | .07050 | .84   |
| 101047 | 14.318 | 292.271 | 11.4227 | .64143  | .07077 | .010 | .07075 | -42   |
| 101045 | 14.321 | 291.455 | 11.5131 | .53104  | .06994 | .011 | .06992 | -2.09 |
| 101048 | 14.311 | 290.571 | 11.6074 | .47806  | .07000 | .004 | .07000 | -2.50 |
| 101044 | 15.637 | 292.082 | 12.0383 | .69859  | .07563 | .003 | .07556 | 2.72  |
| 101043 | 15.639 | 291.535 | 12.0940 | .64078  | .07515 | .002 | .07511 | 1.82  |
| 101042 | 15.640 | 291.321 | 12.1158 | .58529  | .07563 | .002 | .07559 | 2.32  |
| 101041 | 15.540 | 291.174 | 12.1305 | .53230  | .07549 | .002 | .07546 | 2.05  |
| 101040 | 17.138 | 291.821 | 12.6170 | .76395  | .07528 | .002 | .07519 | -1.34 |
| 101039 | 17.138 | 291.171 | 12.6762 | .70268  | .07711 | .002 | .07706 | .74   |
| 101038 | 17.137 | 290.640 | 12.7244 | .64197  | .07707 | .001 | .07706 | .41   |
| 101037 | 17.137 | 290.253 | 12.7596 | .58550  | .07667 | .002 | .07668 | -31   |
| 101036 | 17.137 | 289.789 | 12.8018 | .53126  | .07646 | .002 | .07651 | -83   |
| 101035 | 17.138 | 289.221 | 12.8538 | .47933  | .07684 | .001 | .07693 | -54   |
| 101034 | 17.177 | 288.875 | 12.8847 | .43051  | .07654 | .002 | .07706 | -69   |
| 101033 | 18.567 | 291.389 | 13.1226 | .75402  | .07976 | .002 | .07958 | .95   |
| 101032 | 18.567 | 291.073 | 13.1492 | .70171  | .07836 | .002 | .07830 | -99   |
| 101031 | 18.667 | 290.401 | 13.2054 | .64186  | .07969 | .001 | .07959 | .36   |
| 101030 | 18.666 | 289.959 | 13.2420 | .58421  | .08004 | .002 | .08009 | .58   |
| 101029 | 20.959 | 291.316 | 13.7062 | .76441  | .08274 | .001 | .08264 | .07   |
| 101028 | 20.961 | 290.851 | 13.7423 | .70221  | .08288 | .001 | .08284 | .01   |
| 101027 | 20.962 | 290.212 | 13.7904 | .64162  | .08270 | .001 | .08273 | -52   |
| 101026 | 20.962 | 289.621 | 13.8349 | .58459  | .08320 | .001 | .08330 | -21   |
| 101024 | 23.498 | 291.052 | 14.2500 | .76305  | .08645 | .001 | .08637 | -18   |
| 101023 | 23.505 | 290.102 | 14.3159 | .64196  | .08633 | .001 | .08638 | -77   |
| 101022 | 23.508 | 289.558 | 14.3536 | .58421  | .08511 | .002 | .08523 | -2.48 |
| 101021 | 26.555 | 291.393 | 14.7513 | .83011  | .09114 | .001 | .09101 | .3t   |
| 101020 | 26.559 | 290.838 | 14.7862 | .76413  | .09057 | .003 | .09051 | -49   |
| 101019 | 26.559 | 289.842 | 14.8479 | .64175  | .09097 | .003 | .09106 | -49   |
| 101017 | 30.192 | 291.764 | 15.2492 | .89573  | .09269 | .005 | .09249 | -2.96 |
| 101016 | 30.192 | 291.054 | 15.2894 | .62888  | .09515 | .002 | .09506 | -59   |
| 101015 | 30.193 | 290.524 | 15.3196 | .75328  | .09583 | .002 | .09582 | -10   |
| 101012 | 34.658 | 291.072 | 15.8183 | .89444  | .10093 | .003 | .10083 | -21   |
| 101013 | 34.661 | 290.486 | 15.8489 | .82803  | .09965 | .001 | .09964 | -1.73 |
| 101011 | 34.663 | 290.344 | 15.8565 | .76258  | .09807 | .003 | .09809 | -3.43 |
| 101010 | 34.564 | 289.186 | 15.9164 | .64091  | .09880 | .003 | .09901 | -3.13 |
| 101009 | 39.728 | 291.885 | 16.2844 | 1.03719 | .10186 | .005 | .10161 | -4.60 |
| 101008 | 39.727 | 290.879 | 16.3322 | .89553  | .10458 | .002 | .10451 | -2.24 |
| 101007 | 39.724 | 289.967 | 16.3753 | .76262  | .10294 | .002 | .10302 | -4.20 |
| 101006 | 39.725 | 289.348 | 16.4049 | .64117  | .10119 | .003 | .10138 | -6.24 |
| 101005 | 39.721 | 288.564 | 15.4419 | .52925  | .10244 | .005 | .10279 | -5.22 |
| 101004 | 46.778 | 291.556 | 16.8874 | 1.03659 | .11055 | .005 | .11035 | -3.05 |
| 101003 | 46.774 | 290.635 | 15.9272 | .89719  | .11380 | .001 | .11377 | -41   |
| 101002 | 46.770 | 289.795 | 16.2534 | .76477  | .11456 | .001 | .11468 | -02   |
| 101001 | 46.767 | 289.081 | 16.9942 | .64302  | .11404 | .001 | .11429 | -72   |

| Run Pt. | Pressure MPa | Temperature K | Density mol/L | Power W/m | Thermal Conductivity W/m.K | STAT | Adjusted Thermal Conductivity at a Nominal Temperature of 310.9K from Correlation |                   |
|---------|--------------|---------------|---------------|-----------|----------------------------|------|---|-------------------|
|         |              |               |               |           |                            |      | W/m.K   | Deviation percent |
| 99137   | .478         | 312.807       | .1870         | .20392    | .02870                     | .001 | .02842  | .91               |
| 99136   | .478         | 311.850       | .1874         | .17180    | .02756                     | .002 | .02842  | .91               |
| 99135   | .479         | 310.863       | .1886         | .14254    | .02831                     | .002 | .02832  | .55               |
| 99134   | .479         | 310.025       | .1891         | .11587    | .02808                     | .002 | .02821  | .17               |
| 99133   | .479         | 309.233       | .1898         | .09204    | .02811                     | .003 | .02835  | .59               |
| 99132   | 1.344        | 312.023       | .5444         | .20395    | .02956                     | .001 | .02940  | 1.14              |
| 99131   | 1.344        | 311.209       | .5463         | .17198    | .02938                     | .002 | .02934  | .93               |
| 99130   | 1.344        | 310.263       | .5484         | .14248    | .02930                     | .002 | .02940  | 1.11              |
| 99129   | 1.345        | 309.620       | .5499         | .11591    | .02694                     | .003 | .02913  | .20               |
| 99128   | 2.429        | 312.256       | 1.0275        | .23970    | .03065                     | .001 | .03049  | .56               |
| 99127   | 2.429        | 311.560       | 1.0307        | .20388    | .03017                     | .002 | .03009  | -0.82             |
| 99126   | 2.427        | 310.787       | 1.0329        | .17173    | .02994                     | .003 | .02996  | -1.23             |
| 99125   | 2.427        | 310.474       | 1.0343        | .14246    | .02972                     | .002 | .02979  | -1.84             |
| 99124   | 3.415        | 311.989       | 1.5107        | .23859    | .03169                     | .002 | .03175  | .40               |
| 99123   | 3.415        | 311.132       | 1.5165        | .20377    | .03141                     | .002 | .03138  | -0.84             |
| 99122   | 3.417        | 310.419       | 1.5222        | .17182    | .03149                     | .001 | .03155  | -0.31             |
| 99119   | 4.327        | 311.505       | 2.0001        | .23861    | .03353                     | .002 | .03345  | 1.26              |
| 99118   | 4.327        | 310.714       | 2.0092        | .20383    | .03307                     | .002 | .03310  | .13               |

|       |        |         |         |        |        |      |        |       |
|-------|--------|---------|---------|--------|--------|------|--------|-------|
| 90117 | 4.327  | 310.032 | 2.0173  | .17164 | .03241 | .002 | .03253 | -1.68 |
| 90116 | 5.101  | 311.789 | 2.4444  | .27616 | .03483 | .001 | .03472 | .98   |
| 90115 | 5.101  | 311.204 | 2.4537  | .23841 | .03426 | .003 | .03422 | -.53  |
| 90114 | 5.101  | 310.507 | 2.4650  | .20362 | .03390 | .004 | .03395 | -1.43 |
| 90112 | 5.891  | 311.443 | 2.9458  | .27609 | .03654 | .002 | .03648 | 1.31  |
| 90111 | 5.491  | 310.706 | 2.9617  | .23847 | .03621 | .002 | .03624 | .51   |
| 90110 | 5.891  | 310.210 | 2.9725  | .20378 | .03526 | .005 | .03535 | -2.10 |
| 90109 | 5.890  | 309.542 | 2.9843  | .17177 | .03488 | .002 | .03504 | -3.11 |
| 90108 | 6.446  | 311.152 | 3.3249  | .27604 | .03692 | .003 | .03689 | -1.11 |
| 90107 | 6.444  | 310.465 | 3.3431  | .23849 | .03812 | .002 | .03817 | 2.11  |
| 90106 | 6.444  | 309.958 | 3.3568  | .20378 | .03626 | .005 | .03637 | -2.87 |
| 90105 | 6.444  | 309.533 | 3.3583  | .17169 | .03605 | .005 | .03711 | -.93  |
| 90104 | 7.076  | 311.524 | 3.7649  | .31599 | .03915 | .006 | .03909 | .48   |
| 90103 | 7.076  | 310.584 | 3.7826  | .27639 | .03967 | .005 | .03966 | 1.74  |
| 90102 | 7.075  | 310.185 | 3.8089  | .23857 | .03939 | .003 | .03947 | 1.00  |
| 90101 | 7.075  | 309.692 | 3.8250  | .20383 | .03927 | .002 | .03940 | .68   |
| 90100 | 7.624  | 310.845 | 4.3639  | .31642 | .04177 | .002 | .04178 | 1.31  |
| 90099 | 7.824  | 310.276 | 4.3848  | .27611 | .04089 | .005 | .04095 | -.92  |
| 90098 | 7.824  | 309.787 | 4.4059  | .23862 | .04173 | .002 | .04183 | 1.00  |
| 90097 | 7.824  | 309.211 | 4.4312  | .20378 | .04100 | .006 | .04115 | -.88  |
| 90096 | 8.429  | 311.284 | 4.8291  | .35985 | .04390 | .003 | .04387 | 1.59  |
| 90095 | 8.428  | 310.696 | 4.9578  | .31673 | .04325 | .002 | .04327 | -.07  |
| 90094 | 8.428  | 310.093 | 4.8888  | .27623 | .04374 | .001 | .04381 | .86   |
| 90093 | 8.428  | 309.477 | 4.9208  | .23845 | .04299 | .004 | .04310 | -1.08 |
| 90092 | 8.924  | 312.001 | 4.9528  | .40610 | .04385 | .005 | .04377 | .14   |
| 90091 | 8.624  | 311.452 | 4.9813  | .34007 | .04481 | .007 | .04477 | 2.11  |
| 90090 | 8.624  | 310.730 | 5.0195  | .31673 | .04435 | .005 | .04436 | .84   |
| 90089 | 8.524  | 310.199 | 5.0490  | .27644 | .04437 | .004 | .04442 | .69   |
| 90088 | 9.311  | 312.096 | 5.5218  | .45460 | .04751 | .002 | .04744 | 2.59  |
| 90087 | 9.311  | 311.359 | 5.5672  | .40579 | .04742 | .002 | .04739 | 2.07  |
| 90086 | 9.311  | 310.840 | 5.5999  | .35977 | .04683 | .003 | .04683 | .59   |
| 90085 | 9.311  | 310.242 | 5.4382  | .31629 | .04620 | .006 | .04624 | -1.07 |
| 90083 | 10.047 | 311.847 | 6.1667  | .45468 | .04987 | .002 | .04980 | 1.36  |
| 90082 | 10.047 | 311.241 | 6.2105  | .40595 | .04941 | .003 | .04940 | .09   |
| 90081 | 10.047 | 310.693 | 6.2214  | .39974 | .04851 | .007 | .04852 | -2.11 |
| 90080 | 10.047 | 310.153 | 6.2912  | .31674 | .04856 | .007 | .04859 | -2.34 |
| 90080 | 10.624 | 312.147 | 5.6368  | .50666 | .05230 | .002 | .05226 | 1.79  |
| 90079 | 10.625 | 311.643 | 6.6770  | .44697 | .05213 | .002 | .05211 | 1.14  |
| 90078 | 10.524 | 311.004 | 6.7277  | .40614 | .05229 | .001 | .05229 | 1.03  |
| 90077 | 10.524 | 310.558 | 6.7633  | .36003 | .05221 | .002 | .05222 | .58   |
| 90076 | 11.180 | 312.054 | 7.1291  | .50672 | .05346 | .003 | .05344 | -.15  |
| 90075 | 11.180 | 311.412 | 7.1636  | .45491 | .05399 | .002 | .05398 | .40   |
| 90074 | 11.181 | 310.996 | 7.2007  | .40588 | .05391 | .002 | .05391 | -.05  |
| 90073 | 11.181 | 310.255 | 7.2664  | .36001 | .05412 | .002 | .05413 | -.19  |
| 90072 | 11.794 | 312.113 | 7.5009  | .56076 | .05677 | .002 | .05626 | .88   |
| 90071 | 11.795 | 311.698 | 7.6386  | .59633 | .05653 | .003 | .05652 | 1.04  |
| 90070 | 11.795 | 311.175 | 7.6859  | .45470 | .05615 | .002 | .05615 | .00   |
| 90069 | 11.795 | 310.663 | 7.7325  | .40581 | .05539 | .010 | .05539 | -1.74 |
| 90068 | 12.434 | 311.999 | 8.1037  | .56090 | .05778 | .002 | .05777 | -.40  |
| 90067 | 12.434 | 311.402 | 8.1594  | .50610 | .05825 | .002 | .05825 | -.01  |
| 90066 | 12.434 | 310.991 | 8.1975  | .45451 | .05784 | .005 | .05784 | -1.00 |
| 90065 | 12.434 | 310.286 | 8.2342  | .40595 | .05727 | .013 | .05727 | -2.51 |
| 90064 | 12.494 | 311.778 | 8.5314  | .55988 | .05963 | .002 | .05963 | -.40  |
| 90063 | 12.494 | 311.265 | 8.797   | .50573 | .05983 | .003 | .05983 | -.40  |
| 90062 | 12.492 | 310.693 | 8.6324  | .45447 | .05932 | .002 | .05932 | -1.54 |
| 90060 | 13.501 | 311.762 | 8.9798  | .56071 | .06022 | .002 | .06082 | -.86  |
| 90058 | 13.501 | 311.211 | 8.9319  | .50615 | .06005 | .004 | .06005 | -2.51 |
| 90057 | 13.501 | 310.518 | 8.9967  | .45379 | .06081 | .002 | .06081 | -1.69 |
| 90060 | 13.501 | 310.292 | 9.0204  | .40599 | .06050 | .004 | .06050 | -2.35 |
| 90056 | 14.713 | 311.971 | 9.6096  | .61766 | .06423 | .001 | .06422 | -.18  |
| 90055 | 14.713 | 311.542 | 9.6495  | .56024 | .06410 | .001 | .06409 | -.62  |
| 90054 | 14.712 | 311.080 | 9.6925  | .50629 | .06413 | .004 | .06413 | -.84  |
| 90053 | 14.712 | 310.516 | 9.7452  | .45445 | .06411 | .003 | .06412 | -1.18 |
| 90052 | 15.670 | 311.812 | 10.1415 | .61750 | .06456 | .003 | .06654 | .11   |
| 90051 | 15.671 | 311.153 | 10.2015 | .55997 | .06654 | .001 | .06553 | -.26  |
| 90050 | 15.669 | 310.857 | 10.2277 | .50603 | .06623 | .002 | .06625 | -.85  |
| 90049 | 16.408 | 311.655 | 10.5141 | .61731 | .06788 | .301 | .06785 | -.18  |
| 90046 | 16.410 | 310.955 | 10.5363 | .55929 | .06786 | .301 | .06796 | -.60  |
| 90045 | 16.412 | 310.140 | 10.6500 | .45374 | .06777 | .302 | .06775 | -1.17 |
| 90044 | 17.846 | 311.635 | 11.1296 | .61801 | .07123 | .002 | .07119 | .87   |
| 90043 | 17.845 | 311.152 | 11.1715 | .56122 | .07114 | .002 | .07113 | .52   |
| 90042 | 17.845 | 310.578 | 11.2196 | .50631 | .07094 | .002 | .07098 | .02   |
| 90041 | 17.845 | 310.099 | 11.2506 | .45473 | .07104 | .002 | .07111 | -.05  |
| 90040 | 18.906 | 312.214 | 11.5115 | .67988 | .07283 | .002 | .07274 | .62   |
| 90039 | 18.906 | 311.701 | 11.5524 | .62026 | .07357 | .002 | .07352 | 1.41  |
| 90038 | 18.995 | 311.371 | 11.5783 | .56377 | .07384 | .001 | .07381 | 1.64  |
| 90037 | 18.994 | 310.872 | 11.6186 | .45829 | .07399 | .002 | .07398 | 1.61  |
| 90036 | 21.034 | 311.758 | 12.1942 | .57819 | .07498 | .001 | .07690 | 1.60  |
| 90035 | 21.034 | 311.164 | 12.2375 | .61813 | .07712 | .001 | .07710 | 1.55  |
| 90034 | 21.034 | 310.821 | 12.2430 | .56091 | .07707 | .002 | .07708 | 1.35  |
| 90033 | 21.035 | 300.925 | 12.3294 | .45441 | .07469 | .001 | .07679 | .51   |
| 90032 | 22.981 | 311.446 | 12.7329 | .67740 | .08004 | .002 | .06000 | 1.63  |
| 90031 | 22.981 | 311.050 | 12.7602 | .51746 | .07912 | .002 | .07911 | .31   |
| 90030 | 22.982 | 310.587 | 12.7922 | .55061 | .07997 | .002 | .08001 | 1.14  |
| 90029 | 22.982 | 309.843 | 12.8437 | .44749 | .07962 | .002 | .07974 | .47   |
| 90028 | 24.941 | 312.300 | 13.1247 | .80480 | .08263 | .001 | .08186 | .88   |

|       |        |         |         |        |        |      |        |      |
|-------|--------|---------|---------|--------|--------|------|--------|------|
| 99027 | 24.939 | 311.421 | 13.1811 | .67751 | .08294 | .002 | .08288 | 1.65 |
| 99025 | 24.940 | 310.535 | 12.2321 | .56079 | .08295 | .001 | .08299 | 1.57 |
| 99025 | 24.938 | 309.721 | 13.2909 | .45456 | .08256 | .002 | .08271 | .57  |
| 99024 | 27.877 | 312.133 | 13.7084 | .80733 | .08520 | .002 | .08512 | -.09 |
| 99023 | 27.877 | 311.245 | 13.7513 | .67801 | .08700 | .001 | .08695 | 1.57 |
| 99022 | 27.877 | 310.441 | 13.8093 | .56117 | .08663 | .001 | .08670 | .87  |
| 99021 | 27.877 | 309.505 | 13.8592 | .45520 | .08686 | .001 | .08705 | .83  |
| 99020 | 30.946 | 312.217 | 14.2091 | .80786 | .08953 | .002 | .08933 | .27  |
| 99019 | 30.948 | 311.240 | 14.2625 | .67921 | .09076 | .001 | .09071 | 1.29 |
| 99018 | 30.951 | 310.703 | 14.2927 | .56778 | .09110 | .002 | .09113 | 1.47 |
| 99017 | 30.951 | 310.478 | 14.3053 | .45898 | .09168 | .001 | .09175 | 2.02 |
| 99016 | 34.782 | 311.784 | 14.7642 | .80653 | .09467 | .001 | .09453 | .64  |
| 99015 | 34.75% | 310.946 | 14.9071 | .47843 | .09496 | .001 | .09496 | .67  |
| 99014 | 34.783 | 310.174 | 14.8471 | .56119 | .09496 | .001 | .09503 | .41  |
| 99013 | 34.782 | 309.436 | 14.8849 | .45500 | .09457 | .002 | .09482 | -.24 |
| 99012 | 39.861 | 312.338 | 15.3265 | .94549 | .10035 | .001 | .10010 | .73  |
| 99011 | 39.862 | 311.505 | 15.3650 | .80579 | .10015 | .002 | .10005 | .28  |
| 99010 | 39.862 | 310.672 | 15.4054 | .57852 | .09972 | .002 | .09976 | -.42 |
| 99009 | 39.863 | 310.078 | 15.4336 | .56099 | .10063 | .002 | .10078 | .31  |
| 99008 | 46.825 | 312.033 | 16.0029 | .94637 | .10740 | .001 | .10719 | .48  |
| 99007 | 46.822 | 310.865 | 16.0532 | .80627 | .10679 | .002 | .10690 | -.43 |
| 99006 | 46.826 | 310.369 | 16.0750 | .57868 | .10767 | .002 | .10777 | .24  |
| 99005 | 46.822 | 309.717 | 16.1028 | .56164 | .10834 | OE?  | .10856 | .67  |
| 99004 | 53.798 | 311.432 | 16.5744 | .94666 | .11409 | .002 | .11399 | .40  |
| 99003 | 53.788 | 311.172 | 16.5849 | .80861 | .11433 | .001 | .11428 | .54  |
| 99002 | 53.790 | 310.184 | 16.5248 | .67904 | .11428 | .002 | .11442 | .22  |
| 99001 | 53.788 | 309.575 | 16.6492 | .56186 | .11494 | .002 | .11520 | .62  |

| Pun Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Experimental<br>Thermal<br>Conductivity<br>W/m.K |                       |                       | STAT | Adjusted Thermal Conductivity<br>at a Nominal<br>Temperature of 330.3K from Correlation<br>W/m.K |        |
|---------|-----------------|------------------|------------------|--|-----------------------|-----------------------|------|--|--------|
|         |                 |                  |                  | Power<br>W/m                                     | Conductivity<br>W/m.K | Deviation<br>per cent |      |  |        |
| 100132  | .398            | 331.692          | .1451            | .19719   | .03149                | .002                  |      | .03126   | .60    |
| 100131  | .399            | 330.880          | .1466            | .16621   | .03127                | .002                  |      | .03118   | .32    |
| 100130  | .399            | 329.094          | .1470            | .13782   | .03130                | .003                  |      | .03135   | .87    |
| 100133  | .399            | 329.272          | .1472            | .11217   | .03103                | .003                  |      | .03120   | .38    |
| 100129  | 1.349           | 331.813          | .5086            | .23119   | .03233                | .001                  |      | .03209   | .39    |
| 100128  | 1.350           | 331.205          | .5098            | .19721   | .03204                | .002                  |      | .03190   | -.22   |
| 100127  | 1.350           | 330.198          | .5116            | .16656   | .03203                | .002                  |      | .03205   | .24    |
| 100125  | 1.350           | 329.466          | .5131            | .13787   | .03183                | .002                  |      | .03196   | -.03   |
| 100125  | 2.569           | 332.067          | 1.0046           | .26741   | .03354                | .001                  |      | .03326   | .17    |
| 100124  | 2.569           | 331.309          | 1.0077           | .23104   | .03318                | .002                  |      | .03302   | -.58   |
| 100123  | 2.570           | 330.525          | 1.0111           | .19734   | .03333                | .002                  |      | .03330   | .23    |
| 100122  | 2.570           | 329.735          | 1.0144           | .16627   | .03285                | .002                  |      | .03294   | -.87   |
| 100121  | 3.624           | 331.628          | 1.4695           | .26743   | .03465                | .001                  |      | .03444   | .12    |
| 100119  | 3.624           | 330.070          | 1.4802           | .19745   | .03429                | .002                  |      | .03433   | -.30   |
| 100118  | 3.624           | 329.578          | 1.4836           | .16632   | .03403                | .002                  |      | .03414   | -.87   |
| 100117  | 4.754           | 331.254          | .70076           | .26764   | .03577                | .001                  |      | .03563   | .63    |
| 100116  | 4.754           | 330.817          | 2.0124           | .23125   | .03517                | .303                  |      | .03509   | -.20   |
| 100115  | 4.754           | 329.846          | 2.0226           | .19740   | .03522                | .002                  |      | .03529   | -.1.70 |
| 100114  | 4.755           | 329.098          | .70309           | .16632   | .03520                | .003                  |      | .03538   | -.1.50 |
| 100112  | 5.669           | 330.762          | 2.4799           | .26770   | .03668                | .002                  |      | .03661   | -.1.56 |
| 100111  | 5.668           | 330.324          | 2.4860           | .23115   | .03668                | .003                  |      | .03668   | -.1.43 |
| 100110  | 5.668           | 329.565          | 2.4970           | .19734   | .03622                | .003                  |      | .03633   | -.2.49 |
| 100109  | 6.552           | 331.357          | .2.0487          | .30688   | .03873                | .001                  |      | .03858   | .61    |
| 100108  | 6.552           | 330.555          | 2.9635           | .26761   | .03892                | .002                  |      | .03889   | .67    |
| 100107  | 6.552           | 330.109          | 2.9723           | .23126   | .03788                | .004                  |      | .03791   | -.1.96 |
| 100106  | 6.552           | 329.447          | 2.9848           | .19747   | .03757                | .003                  |      | .03769   | -.2.65 |
| 100105  | 7.248           | 331.396          | 3.3437           | .30653   | .03924                | .004                  |      | .03909   | -.1.84 |
| 100104  | 7.248           | 330.544          | 3.3529           | .26794   | .03980                | .004                  |      | .03977   | -.27   |
| 100103  | 7.249           | 329.795          | 3.3808           | .23137   | .03963                | .002                  |      | .03970   | -.59   |
| 100102  | 7.250           | 329.198          | 3.3949           | .19749   | .03875                | .005                  |      | .03890   | -.2.77 |
| 100101  | 8.094           | 331.471          | 3.8452           | .34868   | .04125                | .004                  |      | .04110   | -.87   |
| 100100  | 8.094           | 331.037          | 3.8574           | .30663   | .04148                | .005                  |      | .04139   | -.28   |
| 100099  | 8.094           | 330.060          | 3.8852           | .26783   | .04249                | .002                  |      | .04252   | 2.17   |
| 100098  | 9.094           | 329.515          | 3.9007           | .23131   | .04045                | .002                  |      | .04055   | -.2.72 |
| 100097  | 8.938           | 331.256          | 4.3774           | .34896   | .04403                | .003                  |      | .04392   | 1.37   |
| 100095  | 8.938           | 330.612          | 4.3992           | .30714   | .04411                | .004                  |      | .04408   | 1.54   |
| 100095  | 8.937           | 329.804          | 4.4272           | .26789   | .04293                | .002                  |      | .04299   | -.1.19 |
| 100094  | 8.935           | 329.264          | 4.4452           | .23111   | .04438                | .002                  |      | .04450   | 2.10   |
| 100092  | 9.733           | 331.694          | 4.8720           | .35042   | .04533                | .006                  |      | .04519   | .10    |
| 100090  | 9.733           | 331.160          | 4.8933           | .27123   | .04579                | .003                  |      | .04570   | 1.05   |
| 100091  | 9.734           | 330.972          | 4.9016           | .30924   | .04641                | .002                  |      | .04634   | 2.35   |
| 100093  | 9.734           | 329.702          | 4.9545           | .23254   | .04446                | .004                  |      | .04452   | -.2.09 |
| 100088  | 10.397          | 331.469          | 5.3163           | .39422   | .04737                | .005                  |      | .04726   | .87    |
| 100089  | 10.397          | 331.429          | 5.3184           | .39434   | .04761                | .004                  |      | .04751   | 1.37   |
| 100087  | 10.398          | 330.574          | 5.3535           | .34951   | .04865                | .003                  |      | .04952   | 3.34   |
| 100086  | 10.397          | 330.306          | 5.3701           | .30780   | .04625                | .005                  |      | .04625   | -.1.75 |
| 100085  | 10.397          | 329.956          | 5.3866           | .26876   | .04592                | .005                  |      | .04595   | -.2.55 |
| 100084  | 11.165          | 331.001          | 5.8483           | .39243   | .04855                | .011                  |      | .04849   | -.98   |
| 100082  | 11.165          | 329.844          | 5.9091           | .30626   | .04862                | .007                  |      | .04866   | -.1.16 |
| 100081  | 11.165          | 329.184          | 5.9448           | .26688   | .04837                | .005                  |      | .04846   | -.1.88 |
| 100080  | 11.680          | 331.109          | 6.1838           | .39337   | .05046                | .013                  |      | .05040   | .11    |
| 100079  | 11.580          | 330.655          | 6.2091           | .34926   | .05001                | .007                  |      | .04999   | -.93   |
| 100076  | 12.561          | 330.612          | 6.7877           | .39276   | .05409                | .008                  |      | .05407   | 2.22   |

|        |        |         |         |         |        |      |        |       |
|--------|--------|---------|---------|---------|--------|------|--------|-------|
| 100075 | 12.559 | 329.973 | 6.8264  | .34839  | .05300 | .003 | .05302 | -.03  |
| 100073 | 12.563 | 329.392 | 6.9652  | .26848  | .05378 | .005 | .05383 | 1.17  |
| 100072 | 12.378 | 330.274 | 7.3266  | .39318  | .05602 | .002 | .05602 | 1.54  |
| 100070 | 12.378 | 329.209 | 7.3980  | .30649  | .05500 | .005 | .05505 | -.75  |
| 100069 | 13.379 | 328.755 | 7.4292  | .26733  | .0479  | .004 | .05486 | -1.34 |
| 100065 | 14.092 | 329.661 | 7.8025  | .34805  | .05733 | .007 | .05736 | .29   |
| 100057 | 14.090 | 328.657 | 7.8714  | .26782  | .05701 | .007 | .05708 | -.71  |
| 100052 | 14.854 | 330.179 | 9.2056  | .43937  | .05887 | .002 | .05888 | -.07  |
| 100054 | 14.852 | 329.283 | 8.2692  | .34846  | .05922 | .003 | .05926 | .13   |
| 100050 | 16.006 | 331.203 | 8.7481  | .54204  | .06139 | .003 | .06135 | .19   |
| 100059 | 16.009 | 330.454 | 8.9028  | .48974  | .06082 | .005 | .06081 | -1.09 |
| 100057 | 16.010 | 329.649 | 8.8615  | .39229  | .06751 | .014 | .06054 | -1.97 |
| 100056 | 16.485 | 331.001 | 9.0977  | .54222  | .06305 | .002 | .06302 | .44   |
| 100055 | 16.685 | 330.654 | 9.1201  | .48989  | .05332 | .002 | .06330 | .74   |
| 100054 | 16.584 | 329.897 | 9.1754  | .43967  | .06252 | .002 | .06254 | -.87  |
| 100051 | 18.075 | 330.805 | 9.7382  | .54187  | .06589 | .002 | .06586 | .53   |
| 100049 | 18.077 | 329.809 | 9.8099  | .43952  | .04525 | .004 | .06528 | -.84  |
| 100052 | 18.074 | 329.591 | 9.8247  | .39333  | .06114 | .002 | .06518 | .43   |
| 100047 | 19.254 | 331.281 | 10.1793 | .59763  | .06795 | .002 | .36789 | .63   |
| 100046 | 19.254 | 330.755 | 10.2160 | .54245  | .06828 | .002 | .06825 | .91   |
| 100049 | 19.252 | 330.370 | 10.2421 | .49065  | .06795 | .001 | .06795 | .29   |
| 100045 | 19.256 | 329.695 | 10.2910 | .43984  | .06739 | .002 | .06743 | -.80  |
| 100043 | 20.692 | 331.519 | 10.6110 | .65501  | .06967 | .004 | .06958 | -.27  |
| 100044 | 20.692 | 331.125 | 10.7076 | .59824  | .07089 | .001 | .07089 | 1.32  |
| 100042 | 20.693 | 330.811 | 10.7293 | .54293  | .06990 | .002 | .06985 | -.19  |
| 100041 | 20.593 | 329.714 | 10.8040 | .43968  | .07085 | .001 | .07089 | .76   |
| 100040 | 22.334 | 331.997 | 11.1783 | .71518  | .07256 | .002 | .07342 | 1.69  |
| 100039 | 22.333 | 331.180 | 11.2248 | .55425  | .07417 | .002 | .07409 | 2.26  |
| 100038 | 22.333 | 330.389 | 11.2766 | .54174  | .07411 | .003 | .07410 | 1.92  |
| 100037 | 22.335 | 329.183 | 11.3555 | .43874  | .07272 | .002 | .07382 | .99   |
| 100036 | 24.124 | 331.445 | 11.7056 | .71373  | .07458 | .002 | .07446 | -.64  |
| 100035 | 24.125 | 330.944 | 11.7384 | .65355  | .07625 | .002 | .07518 | 1.41  |
| 100034 | 24.126 | 330.087 | 11.7925 | .54077  | .07534 | .002 | .07535 | -.06  |
| 100033 | 24.127 | 328.919 | 11.8664 | .43901  | .07564 | .002 | .07579 | -.04  |
| 100032 | 26.205 | 331.558 | 12.2064 | .77646  | .07848 | .001 | .07833 | .71   |
| 100031 | 26.205 | 330.728 | 12.2564 | .65339  | .07839 | .002 | .07834 | .34   |
| 100030 | 26.206 | 329.870 | 12.3080 | .54127  | .07859 | .001 | .07864 | .32   |
| 100027 | 28.829 | 330.579 | 12.8139 | .65427  | .08150 | .001 | .08146 | -.16  |
| 100026 | 28.830 | 329.722 | 12.8526 | .54163  | .08136 | .002 | .08144 | -.59  |
| 100025 | 28.831 | 329.707 | 12.9202 | .43881  | .08170 | .001 | .08192 | -.48  |
| 100024 | 21.639 | 331.397 | 13.2749 | .77755  | .08469 | .002 | .08453 | -.32  |
| 100023 | 31.638 | 330.256 | 13.3356 | .65234  | .08533 | .001 | .08534 | .11   |
| 100022 | 31.639 | 329.463 | 13.3782 | .54089  | .08588 | .001 | .08601 | .52   |
| 100021 | 31.639 | 328.654 | 13.4214 | .43892  | .08483 | .002 | .08508 | -.94  |
| 100020 | 35.063 | 331.020 | 13.8243 | .77577  | .08931 | .001 | .08920 | .21   |
| 100019 | 35.065 | 330.235 | 13.8641 | .55409  | .08875 | .001 | .08876 | -.64  |
| 100018 | 35.067 | 329.386 | 13.9069 | .54142  | .08797 | .002 | .08812 | -1.77 |
| 100017 | 35.070 | 328.735 | 12.9401 | .43932  | .08970 | =OEE | .08995 | .01   |
| 100016 | 38.571 | 331.745 | 14.2564 | .91242  | .09193 | .001 | .09168 | -1.03 |
| 100015 | 38.571 | 330.833 | 14.3006 | .77771  | .09248 | .001 | .09239 | -.67  |
| 100014 | 38.573 | 330.137 | 14.3339 | .65397  | .09289 | .001 | .09292 | -.42  |
| 100013 | 38.574 | 329.127 | 14.3821 | .54103  | .09197 | .002 | .09217 | -1.69 |
| 100012 | 43.140 | 331.491 | 14.7949 | .91228  | .09723 | .001 | .09702 | -.55  |
| 100011 | 43.141 | 330.718 | 14.8296 | .77857  | .09865 | .001 | .09858 | .70   |
| 100010 | 43.144 | 329.808 | 14.8706 | .65504  | .09789 | .001 | .09798 | -.31  |
| 100009 | 43.147 | 329.075 | 14.9037 | .54121  | .09800 | .001 | .09922 | -.39  |
| 100008 | 47.941 | 331.245 | 15.2802 | .91314  | .10287 | .001 | .10269 | .29   |
| 100007 | 47.943 | 330.518 | 15.3112 | .77835  | .10242 | .001 | .10238 | -.33  |
| 100006 | 47.945 | 329.461 | 15.3561 | .65428  | .10245 | .001 | .10261 | -.57  |
| 100005 | 47.946 | 328.943 | 15.3782 | .54188  | .10217 | .002 | .10243 | -.98  |
| 100004 | 55.082 | 331.815 | 15.8569 | 1.05787 | .10963 | .001 | .10933 | .59   |
| 100003 | 55.083 | 330.067 | 15.8905 | .91338  | .10863 | .001 | .10850 | -.53  |
| 100002 | 55.085 | 330.245 | 15.9194 | .77953  | .10843 | .002 | .10844 | -.89  |
| 100001 | 55.090 | 329.382 | 15.9538 | .65535  | .10925 | .002 | .10943 | -.34  |

4. Results for a 35/65 Mixture of Methane-Ethane.

A total of 645 points are given in table 3. The actual mole fraction of methane in the mixture is 0.34588 with the balance ethane. The computer programs developed for the thermal conductivity surface of this mixture are shown below. The equation of state used for this mixture is given in [14].

```

C      FUNCTION TC3565(RHO,T)
C      COEF. FROM TC021, FIRST PASS, 28 MAR 83
DIMENSION A(3),B(5)
DATA A/ .2849547E-01,-.1971104E-03, .6064916E-06/
DATA B/ .2294100E-02,-.1757653E-05, .1023516E-04,
1   .8856678E-08, .6095540E-08/
TCZERO=A(1)+A(2)*T+A(3)*T**2
EXCESS=(B(1)+B(2)*T)*RHO+(B(3)+B(4)*T)*RHO**3+B(5)*RHO**5
TC3565=TCZERO+FXCESS+CR3565(RHO,T)
RETURN
END

C      FUNCTION CR3565(RHO,TEMP)
C      COEF. FROM TC021 AND MINIMS, FIRST PASS, 28 MAR 85
DIMENSION C(6)
DATA (TC=278.910),(RHOC=8.06)
DATA C/ .6371151E-01,-.2729000E+03, .6649022E-01,-.1753457E-03,
1 -.2242510E+00, .2417181E+00/
T=TEMP
IF(T.LT.TC) T=TC
DEN=RHO
IF(T.LT.382.509) GO TO 4
5 CR3565=0.
RETURN
4 CONTINUE
AMPL=C(1)/(T+C(2))+C(3)+C(4)*T
DELRHO=DEN-RHOC
YI-C(5)*DELRHO
IF(DEN.GT.RHOC) X1=C(6)*DELRHO
CR3565=AMPL*EXP(-X1**2)
RETURN
END

```

Table 3. The Thermal Conductivity of a 35/65 Methane-Ethane Mix

| Run Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Power<br>W/m | Experimental<br>Thermal<br>Conductivity<br>W/m.K |      | STAT | Adjusted Thermal Conductivity<br>at a Nominal<br>Temperature of 152.1K from<br>Corelation<br>W/m.K | Deviation<br>percent |
|---------|-----------------|------------------|------------------|--------------|--|------|------|--|----------------------|
|         |                 |                  |                  |              |  |      |      |  |                      |
| 112024  | 1.702           | 152.600          | 20.8237          | 1.25332      | .18162   | .001 |      | .18160   | -.88                 |
| 112023  | 1.700           | 152.105          | 20.8484          | 1.13980      | .18244   | .001 |      | .18244   | -.73                 |
| 112022  | 1.698           | 151.875          | 20.8498          | 1.03405      | .18422   | .001 |      | .18423   | .11                  |
| 112021  | 1.692           | 151.489          | 20.3789          | .92881       | .18235   | .001 |      | .18237   | -1.15                |
| 112020  | 9.750           | 153.014          | 21.0508          | 1.37295      | .18882   | .001 |      | .18879   | .05                  |
| 112019  | 9.743           | 152.654          | 21.0774          | 1.25416      | .18911   | .001 |      | .18909   | .01                  |
| 112018  | 9.740           | 152.223          | 21.0975          | 1.14036      | .18941   | .001 |      | .18941   | -.08                 |
| 112017  | 9.733           | 151.679          | 21.1227          | 1.02846      | .18647   | .003 |      | .18648   | -1.96                |
| 112016  | 17.555          | 152.874          | 21.2967          | 1.37145      | .19512   | .001 |      | .19509   | .41                  |
| 112015  | 17.542          | 152.522          | 21.3120          | 1.25363      | .19401   | .003 |      | .19399   | -.34                 |
| 112014  | 17.539          | 152.049          | 21.3328          | 1.13903      | .19565   | .001 |      | .19565   | .25                  |
| 112013  | 17.530          | 151.518          | 21.3561          | 1.02740      | .19417   | .002 |      | .19419   | -.79                 |
| 112012  | 25.842          | 152.807          | 21.5248          | 1.37012      | .20105   | .001 |      | .20102   | .59                  |
| 112011  | 25.845          | 152.439          | 21.5405          | 1.25208      | .20127   | .001 |      | .20126   | .51                  |
| 112010  | 25.837          | 151.704          | 21.5713          | 1.13297      | .20065   | .001 |      | .20065   | -.16                 |
| 112009  | 25.844          | 151.358          | 21.5861          | 1.02490      | .20023   | .001 |      | .20026   | -.55                 |
| 112008  | 33.388          | 152.937          | 21.7100          | 1.49010      | .20477   | .003 |      | .20474   | .13                  |
| 112007  | 33.366          | 152.615          | 21.7226          | 1.36804      | .20548   | .002 |      | .20546   | .33                  |
| 112006  | 33.343          | 152.147          | 21.7411          | 1.24779      | .20592   | .001 |      | .20592   | .33                  |
| 112005  | 33.322          | 151.769          | 21.7559          | 1.13540      | .20636   | .001 |      | .20637   | .37                  |
| 112004  | 34.664          | 152.020          | 21.7781          | 1.47843      | .20498   | .001 |      | .20498   | -.58                 |
| 112003  | 34.647          | 151.695          | 21.7908          | 1.35646      | .20574   | .001 |      | .20576   | -.36                 |
| 112002  | 34.638          | 150.940          | 21.8211          | 1.12803      | .20661   | .001 |      | .20666   | -.30                 |
| 112001  | 34.628          | 150.822          | 21.8256          | 1.13091      | .20463   | .002 |      | .20468   | -1.32                |
| Run Pt. | Pressure<br>MPa | Tenperature<br>K | Density<br>mol/L | Power<br>W/m | Experimental<br>Thermal<br>Conductivity<br>W/m.K |      | STAT | Adjusted Thermal Conductivity<br>at a Nominal<br>Tenoereture of 176.9K from<br>Corelation<br>W/m.K | Deviation<br>percent |
|         |                 |                  |                  |              |  |      |      |  |                      |
| 112044  | 2.099           | 178.109          | 19.4955          | 1.23951      | .15570   | .001 |      | .15564   | -.17                 |
| 112043  | 2.099           | 177.400          | 19.5238          | 1.11568      | .15591   | .001 |      | .15588   | -.38                 |
| 112042  | 2.098           | 177.028          | 19.5556          | .99997       | .15616   | .002 |      | .15616   | -.60                 |
| 112041  | 2.098           | 176.545          | 19.5824          | .89230       | .15671   | .001 |      | .15673   | -.58                 |
| 112040  | 8.506           | 177.911          | 19.7985          | 1.23638      | .16149   | .002 |      | .16144   | -.36                 |
| 112039  | 8.503           | 177.323          | 19.8284          | 1.11403      | .16246   | .001 |      | .16244   | -.12                 |
| 112038  | 8.500           | 176.844          | 19.8528          | .99918       | .16317   | .001 |      | .16318   | .03                  |
| 112037  | 8.499           | 176.513          | 19.8696          | .89090       | .16287   | .002 |      | .16289   | -.36                 |
| 112036  | 14.971          | 177.702          | 20.0711          | 1.23629      | .16771   | .001 |      | .16767   | -.02                 |
| 112035  | 14.967          | 177.247          | 20.0927          | 1.11444      | .16820   | .002 |      | .16818   | .02                  |
| 112034  | 14.964          | 176.808          | 20.1135          | .99938       | .16895   | .001 |      | .16895   | .21                  |
| 112033  | 14.958          | 176.495          | 20.1282          | .89213       | .17035   | .001 |      | .17037   | .86                  |
| 112032  | 21.426          | 177.529          | 20.3157          | 1.23587      | .17354   | .001 |      | .17351   | .32                  |
| 112031  | 21.417          | 176.993          | 20.3395          | 1.11280      | .17349   | .001 |      | .17349   | .01                  |
| 112030  | 21.409          | 176.492          | 20.3618          | .99651       | .17387   | .001 |      | .17390   | -.04                 |
| 112029  | 21.400          | 176.045          | 20.3816          | .88806       | .17447   | .001 |      | .17452   | .07                  |
| 112028  | 27.825          | 177.355          | 20.5373          | 1.23660      | .17913   | .002 |      | .17911   | .71                  |
| 112027  | 27.821          | 176.744          | 20.5634          | 1.11125      | .17893   | .002 |      | .17894   | .29                  |
| 112026  | 27.818          | 175.021          | 20.5943          | .88871       | .18009   | .001 |      | .18014   | .57                  |
| 112025  | 27.815          | 175.594          | 20.6125          | .78730       | .18135   | .001 |      | .18143   | 1.05                 |
| Run Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Power<br>W/m | Experimental<br>Thermal<br>Conductivity<br>W/m.K |      | STAT | Adjusted Thermal Conductivity<br>at a Nominal<br>Temperature of 202.7K from<br>Corelation<br>W/m.K | Deviation<br>percent |
|         |                 |                  |                  |              |  |      |      |  |                      |
| 112064  | 2.732           | 203.239          | 18.0208          | 1.02856      | .12854   | .003 |      | .12850   | -1.52                |
| 112063  | 2.731           | 202.701          | 18.0559          | .91114       | .12988   | .003 |      | .12988   | -.90                 |
| 112062  | 2.730           | 202.179          | 18.0890          | .90028       | .13071   | .002 |      | .13074   | -.67                 |
| 112061  | 2.728           | 201.412          | 18.1394          | .69730       | .13119   | .001 |      | .13128   | -.90                 |
| 112060  | 9.127           | 203.543          | 18.4455          | 1.15261      | .13746   | .001 |      | .13740   | -.28                 |
| 112059  | 9.124           | 202.975          | 18.4787          | 1.02758      | .13799   | .001 |      | .13797   | -.28                 |
| 112058  | 9.120           | 202.628          | 18.4982          | .91068       | .13995   | .024 |      | .13995   | .89                  |
| 112057  | 9.122           | 201.946          | 18.5371          | .80010       | .13923   | .005 |      | .13928   | -.08                 |
| 112054  | 15.733          | 203.554          | 18.8257          | 1.15696      | .14455   | .001 |      | .14448   | -.12                 |
| 112055  | 15.724          | 202.987          | 18.8544          | 1.03051      | .14568   | .001 |      | .14566   | .32                  |
| 112054  | 15.725          | 202.377          | 18.8857          | .91270       | .14622   | .001 |      | .14624   | .33                  |
| 112053  | 15.714          | 202.006          | 18.9041          | .80299       | .14634   | .002 |      | .14639   | .19                  |
| 112052  | 22.471          | 203.282          | 19.1704          | 1.15650      | .15170   | .002 |      | .15165   | .32                  |
| 112051  | 22.476          | 202.457          | 19.2001          | 1.03055      | .15049   | .004 |      | .15049   | -.83                 |
| 112049  | 22.460          | 202.448          | 19.2092          | .91484       | .15249   | .001 |      | .15251   | .39                  |
| 112050  | 22.474          | 201.585          | 19.2505          | .80183       | .15093   | .007 |      | .15099   | -1.14                |
| 112048  | 28.764          | 203.755          | 19.4211          | 1.28962      | .15806   | .003 |      | .15797   | 1.20                 |
| 112047  | 28.762          | 202.174          | 19.4467          | 1.15635      | .15404   | .012 |      | .15400   | -1.68                |
| 112046  | 28.760          | 202.608          | 19.4717          | 1.09129      | .15918   | .004 |      | .15918   | 1.32                 |
| 112045  | 28.734          | 202.222          | 19.4877          | .91414       | .15635   | .005 |      | .15639   | -.65                 |

| Run Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Power<br>W/m | Experimental<br>Thermal<br>Conductivity |       | STAT | Adjusted Thermal Conductivity<br>at a Nominal<br>Temperature of 227.7K from Correlation |  | Deviation<br>percent |
|---------|-----------------|------------------|------------------|--------------|---|-------|------|---|--|----------------------|
|         |                 |                  |                  |              | W/m.K                                   | W/m.K |      | Temperature of 227.7K from Corelation<br>W/m.K  |  |                      |
| 113008  | .363            | 230.414          | .1981            | .10589       | .01685                                  | .003  |      | .01663  |  | -.37                 |
| 113007  | .363            | 229.434          | .1991            | .08605       | .01667                                  | .005  |      | .01653  |  | -.99                 |
| 113005  | .363            | 228.589          | .2001            | .06827       | .01662                                  | .007  |      | .01655  |  | -.90                 |
| 113005  | .363            | 227.729          | .2010            | .05251       | .01661                                  | .010  |      | .01661  |  | -.56                 |
| 113004  | .903            | 229.515          | .5363            | .10560       | .01767                                  | .004  |      | .01753  |  | -1.06                |
| 113003  | .905            | 229.706          | .5399            | .08575       | .01750                                  | .005  |      | .01742  |  | -1.74                |
| 113002  | .906            | 227.881          | .5438            | .06806       | .01740                                  | .007  |      | .01739  |  | -2.01                |
| 112085  | 3.592           | 228.957          | 15.2129          | 1.04786      | .10636                                  | .005  |      | .10625  |  | .81                  |
| 112083  | 3.693           | 228.101          | 16.2862          | .92096       | .10711                                  | .002  |      | .10707  |  | .67                  |
| 112084  | 3.692           | 227.399          | 16.3455          | .80271       | .10723                                  | .002  |      | .10726  |  | .11                  |
| 112082  | 3.691           | 225.703          | 16.4034          | .69097       | .10854                                  | .003  |      | .10863  |  | .55                  |
| 112081  | 3.691           | 226.070          | 16.4556          | .58919       | .10794                                  | .001  |      | .10808  |  | -.51                 |
| 112080  | 10.747          | 228.362          | 17.0792          | 1.04332      | .11808                                  | .001  |      | .11802  |  | .52                  |
| 112079  | 10.745          | 227.491          | 17.0995          | .91889       | .11802                                  | .001  |      | .11800  |  | .13                  |
| 112078  | 10.744          | 227.182          | 17.1453          | .79907       | .11998                                  | .004  |      | .12003  |  | 1.24                 |
| 112077  | 10.741          | 226.697          | 17.1759          | .58923       | .11966                                  | .002  |      | .11975  |  | .63                  |
| 112076  | 17.630          | 228.094          | 17.6427          | 1.04247      | .12673                                  | .002  |      | .12669  |  | .31                  |
| 112075  | 17.631          | 227.415          | 17.6799          | .91596       | .12651                                  | .003  |      | .12654  |  | -.29                 |
| 112074  | 17.528          | 226.918          | 17.7067          | .79791       | .12747                                  | .001  |      | .12755  |  | .16                  |
| 112073  | 17.627          | 226.272          | 17.7417          | .68774       | .12849                                  | .006  |      | .12863  |  | .56                  |
| 112072  | 24.631          | 227.836          | 18.1055          | 1.04155      | .13415                                  | .002  |      | .13414  |  | .10                  |
| 112071  | 24.632          | 227.294          | 18.1319          | .91531       | .13401                                  | .005  |      | .13405  |  | -.30                 |
| 112070  | 24.633          | 226.649          | 18.1633          | .79759       | .13502                                  | .001  |      | .13512  |  | .10                  |
| 112069  | 24.626          | 225.154          | 18.1864          | .68774       | .13354                                  | .004  |      | .13369  |  | -1.27                |
| 112068  | 31.498          | 228.171          | 18.4585          | 1.17502      | .14108                                  | .003  |      | .14103  |  | .60                  |
| 112067  | 21.504          | 227.597          | 18.4846          | 1.04196      | .14097                                  | .001  |      | .14098  |  | .23                  |
| 112066  | 31.505          | 227.053          | 18.5089          | .91519       | .14234                                  | .003  |      | .14241  |  | .93                  |
| 112065  | 31.500          | 226.514          | 18.5326          | .79714       | .14072                                  | .012  |      | .14084  |  | -.48                 |

| Run Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Power<br>W/m | Experimental<br>Thermal<br>Conductivity |       | STAT | Adjusted Thermal Conductivity<br>at a Nominal<br>Temperature of 238.9K from Correlation |  | Deviation<br>percent |
|---------|-----------------|------------------|------------------|--------------|---|-------|------|---|--|----------------------|
|         |                 |                  |                  |              | W/m.K                                   | W/m.K |      | Temperature of 238.9K from Corelation<br>W/m.K  |  |                      |
| 113020  | .345            | 240.134          | .1797            | .11056       | .01781                                  | .004  |      | .01770  |  | .55                  |
| 113019  | .345            | 239.256          | .1804            | .08991       | .01771                                  | .005  |      | .01769  |  | .44                  |
| 113018  | .345            | 238.391          | .1813            | .07128       | .01769                                  | .007  |      | .01774  |  | .76                  |
| 113017  | .345            | 237.537          | .1821            | .05488       | .01771                                  | .010  |      | .01784  |  | 1.29                 |
| 113016  | .818            | 240.420          | .4494            | .13344       | .01871                                  | .003  |      | .01857  |  | .94                  |
| 113015  | .818            | 239.402          | .4517            | .11053       | .01851                                  | .004  |      | .01846  |  | .29                  |
| 113014  | .818            | 238.568          | .4543            | .08972       | .01851                                  | .005  |      | .01854  |  | .70                  |
| 113013  | .818            | 237.837          | .4562            | .07123       | .01829                                  | .007  |      | .01839  |  | -.16                 |
| 113012  | 1.236           | 240.207          | .7199            | .13348       | .01934                                  | .004  |      | .01922  |  | -.16                 |
| 113011  | 1.238           | 239.046          | .7271            | .11055       | .01911                                  | .004  |      | .01910  |  | -.93                 |
| 113010  | 1.243           | 238.500          | .7338            | .08989       | .01907                                  | .006  |      | .01911  |  | -.99                 |
| 113009  | 1.248           | 237.900          | .7404            | .07142       | .01910                                  | .008  |      | .01919  |  | -.66                 |

| Run Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Power<br>W/m | Experimental<br>Thermal<br>Conductivity |       | STAT | Adjusted Thermal Conductivity<br>at a Nominal<br>Temperature of 251.4K from Correlation |  | Deviation<br>percent |
|---------|-----------------|------------------|------------------|--------------|---|-------|------|---|--|----------------------|
|         |                 |                  |                  |              | W/m.K                                   | W/m.K |      | Temperature of 251.4K from Corelation<br>W/m.K  |  |                      |
| 113037  | .305            | 251.131          | .1506            | .13939       | .01895                                  | .003  |      | .01898  |  | 1.13                 |
| 113035  | .305            | 250.247          | .1512            | .11546       | .01885                                  | .004  |      | .01898  |  | 1.09                 |
| 113035  | .305            | 249.215          | .1522            | .09384       | .01874                                  | .005  |      | .01897  |  | 1.07                 |
| 113034  | .306            | 248.350          | .1528            | .07446       | .01861                                  | .007  |      | .01893  |  | .85                  |
| 113033  | .306            | 247.589          | .1533            | .05732       | .01864                                  | .010  |      | .01904  |  | 1.41                 |
| 113032  | .715            | 250.665          | .3677            | .13936       | .01950                                  | .003  |      | .01958  |  | .95                  |
| 113031  | .715            | 249.612          | .3596            | .11531       | .01936                                  | .004  |      | .01955  |  | .77                  |
| 113030  | .715            | 248.644          | .3714            | .09363       | .01924                                  | .006  |      | .01953  |  | .65                  |
| 113029  | .715            | 248.663          | .3714            | .09374       | .01939                                  | .005  |      | .01968  |  | 1.40                 |
| 113028  | 1.125           | 251.182          | .6041            | .16565       | .02027                                  | .003  |      | .02030  |  | .87                  |
| 113027  | 1.125           | 250.244          | .6075            | .13944       | .02023                                  | .003  |      | .02035  |  | 1.11                 |
| 113026  | 1.126           | 249.313          | .5110            | .11557       | .02000                                  | .004  |      | .02022  |  | .40                  |
| 113025  | 1.126           | 248.378          | .6145            | .09380       | .01993                                  | .006  |      | .02025  |  | .48                  |
| 113024  | 1.583           | 250.461          | .9750            | .16557       | .02126                                  | .003  |      | .02136  |  | .05                  |
| 112023  | 1.493           | 249.561          | .9816            | .13940       | .02128                                  | .003  |      | .02147  |  | .47                  |
| 113022  | 1.484           | 248.755          | .9879            | .11544       | .02110                                  | .004  |      | .02138  |  | -.08                 |
| 113021  | 1.484           | 248.025          | .9931            | .09388       | .02085                                  | .005  |      | .02120  |  | -1.02                |
| 112112  | 5.522           | 253.265          | 14.0887          | .77453       | .08750                                  | .009  |      | .08730  |  | 2.66                 |
| 112113  | 5.524           | 252.490          | 14.1895          | .71560       | .08798                                  | .002  |      | .08786  |  | 2.34                 |
| 112111  | 5.521           | 252.352          | 14.2059          | .65993       | .08914                                  | .004  |      | .08904  |  | 3.48                 |
| 112110  | 5.518           | 251.787          | 14.2761          | .55483       | .08800                                  | .004  |      | .08796  |  | 1.62                 |
| 112109  | 7.729           | 253.982          | 14.6408          | .89018       | .09306                                  | .002  |      | .09277  |  | 3.16                 |
| 112108  | 7.727           | 253.074          | 14.7310          | .76875       | .09308                                  | .002  |      | .09290  |  | 2.34                 |
| 112107  | 7.696           | 252.324          | 14.7975          | .65501       | .09386                                  | .003  |      | .09376  |  | 2.55                 |
| 112106  | 7.722           | 251.930          | 14.9417          | .55159       | .09334                                  | .002  |      | .09328  |  | 1.57                 |
| 112105  | 10.383          | 253.643          | 15.2037          | .89031       | .09710                                  | .002  |      | .09685  |  | 1.28                 |
| 112104  | 10.380          | 252.592          | 15.2898          | .75777       | .09738                                  | .002  |      | .09725  |  | .71                  |
| 112103  | 10.370          | 252.109          | 15.2280          | .65512       | .09770                                  | .002  |      | .09762  |  | .65                  |
| 112102  | 10.381          | 251.629          | 15.3668          | .55185       | .09965                                  | .002  |      | .09963  |  | 2.21                 |

|        |        |         |         |         |        |      |        |       |
|--------|--------|---------|---------|---------|--------|------|--------|-------|
| 117101 | 14.031 | 253.391 | 15.7625 | .89086  | .10243 | .005 | .10220 | .11   |
| 112099 | 14.032 | 251.981 | 15.8594 | .65499  | .10396 | .002 | .10391 | .61   |
| 112098 | 14.032 | 251.429 | 15.8971 | .55103  | .10417 | .001 | .10417 | .40   |
| 112097 | 18.707 | 253.896 | 16.2628 | 1.0224  | .10917 | .001 | .10988 | .36   |
| 112096 | 18.709 | 253.201 | 16.3343 | .89105  | .11001 | .002 | .10980 | .69   |
| 112095 | 18.707 | 252.584 | 15.3407 | .76961  | .11086 | .003 | .11072 | 1.08  |
| 112094 | 18.709 | 251.812 | 16.3965 | .65544  | .11112 | .002 | .11107 | .83   |
| 112093 | 24.411 | 253.418 | 16.8018 | 1.02069 | .11650 | .001 | .11526 | .23   |
| 112092 | 24.413 | 252.743 | 16.8372 | .88955  | .11715 | .001 | .11699 | .41   |
| 112991 | 24.415 | 252.119 | 16.8699 | .75708  | .11580 | .008 | .11571 | -1.10 |
| 112090 | 24.414 | 251.447 | 16.9047 | .65361  | .11717 | .002 | .11717 | -.28  |
| 112089 | 29.693 | 253.981 | 17.1637 | 1.16080 | .12312 | .007 | .12280 | 1.16  |
| 112088 | 29.694 | 253.189 | 17.2015 | 1.02079 | .12079 | .013 | .12057 | -1.15 |
| 112086 | 29.689 | 251.988 | 17.2582 | .74772  | .12201 | .003 | .12194 | -.73  |

| Run Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Power<br>W/m | Experimental<br>Thermal<br>Conductivity |       | STAT   | Temperature of<br>259.7K from<br>Correlation<br>W/m.K | Adjusted Thersal<br>Condoctvity<br>at a Nominal<br>Deviation<br>Percent |
|---------|-----------------|------------------|------------------|--------------|---|-------|--------|---|---|
|         |                 |                  |                  |              | W/m.K                                   | W/m.K |        |   |   |
| 113057  | .356            | 261.090          | .1690            | .14547       | .02009                                  | ■GC3  | .01993 | .87   |   |
| 113055  | .356            | 260.052          | .1597            | .12060       | .01997                                  | .004  | .01993 | .88   |   |
| 113055  | .357            | 258.993          | .1707            | .09794       | .01988                                  | .005  | .01995 | 1.04  |   |
| 113054  | .357            | 259.251          | .1712            | .07766       | .01976                                  | .007  | .01993 | .86   |   |
| 113053  | .845            | 261.432          | .4185            | .17264       | .02093                                  | .003  | .02073 | 1.21  |   |
| 113052  | .846            | 260.437          | .4205            | .14537       | .02073                                  | .003  | .02065 | .78   |   |
| 113051  | .845            | 259.400          | .4226            | .12044       | .02072                                  | .004  | .02076 | 1.29  |   |
| 113950  | .845            | 259.556          | .4243            | .09785       | .02056                                  | .005  | .02069 | .97   |   |
| 113049  | 1.321           | 260.913          | .6865            | .17270       | .02143                                  | .003  | .02129 | -.09  |   |
| 113048  | 1.325           | 259.937          | .6924            | .14541       | .02140                                  | .003  | .02137 | .22   |   |
| 113047  | 1.325           | 259.118          | .6956            | .12049       | .02123                                  | .004  | .02130 | -.18  |   |
| 113045  | 1.326           | 258.235          | .6999            | .09792       | .02122                                  | .006  | .02139 | .19   |   |
| 113045  | 1.825           | 261.492          | .9996            | .20256       | .02256                                  | .002  | .02236 | .01   |   |
| 113044  | 1.829           | 260.490          | 1.0082           | .17270       | .02242                                  | .003  | .02233 | -.27  |   |
| 113043  | 1.832           | 259.597          | 1.0162           | .14542       | .02224                                  | .003  | .02225 | -.74  |   |
| 113042  | 1.834           | 258.552          | 1.0249           | .12042       | .02213                                  | .004  | .02226 | -.82  |   |
| 113041  | 2.301           | 260.634          | 1.3464           | .20224       | .02383                                  | .002  | .02372 | .36   |   |
| 113040  | 2.301           | 259.819          | 1.3553           | .17260       | .02371                                  | .003  | .02370 | .11   |   |
| 113039  | 2.301           | 259.076          | 1.3639           | .14539       | .02341                                  | .004  | .02348 | -.95  |   |
| 113038  | 2.301           | 258.321          | 1.3725           | .12061       | .02332                                  | .005  | .02348 | -1.11   |   |

| Run Pt. | Pressure<br>MPa | Terperature<br>K | Censity<br>mol/L | Power<br>W/m | Experimental<br>Thermal<br>Conductivity |       | STAT   | Temperature of<br>269.4K from<br>Correlation<br>W/m.K | Adjusted Thermal Conductivity<br>at a Nominal<br>Deviation<br>percent |
|---------|-----------------|------------------|------------------|--------------|---|-------|--------|---|---|
|         |                 |                  |                  |              | W/m.K                                   | W/m.K |        |   |   |
| 113082  | .283            | 270.566          | .1284            | .15127       | .02089                                  | .003  | .02073 | -.47  |   |
| 113081  | .283            | 269.686          | .1288            | .12533       | .02094                                  | .003  | .02090 | .31   |   |
| 113083  | .283            | 268.830          | .1293            | .10195       | .02094                                  | .005  | .02101 | .62   |   |
| 113070  | .283            | 268.065          | .1297            | .08097       | .02065                                  | .007  | .02102 | .87   |   |
| 113078  | .769            | 271.240          | .3612            | .17973       | .02109                                  | .002  | .02175 | 1.15  |   |
| 113077  | .769            | 270.180          | .3630            | .15138       | .02187                                  | .003  | .02175 | 1.21  |   |
| 113076  | .769            | 269.278          | .3645            | .12541       | .02167                                  | .004  | .02168 | .81   |   |
| 113375  | .769            | 268.342          | .3660            | .10195       | .02171                                  | .006  | .02184 | 1.52  |   |
| 113074  | 1.484           | 270.684          | .7429            | .17976       | .02272                                  | .002  | .02255 | -.55  |   |
| 113073  | 1.485           | 269.703          | .7474            | .15145       | .02256                                  | .003  | .02252 | -.76  |   |
| 113072  | 1.487           | 268.865          | .7520            | .12542       | .02250                                  | .004  | .02256 | -.61  |   |
| 113071  | 1.490           | 268.018          | .7571            | .10199       | .02244                                  | .005  | .02261 | -.47  |   |
| 113070  | 2.058           | 270.821          | 1.0886           | .21031       | .02385                                  | .003  | .02366 | -.80  |   |
| 113069  | 2.065           | 270.007          | 1.0984           | .17957       | .02388                                  | .002  | .02380 | -.37  |   |
| 113068  | 2.067           | 269.229          | 1.1053           | .15126       | .02374                                  | .004  | .02376 | -.65  |   |
| 113067  | 2.072           | 268.444          | 1.1140           | .12540       | .02354                                  | .004  | .02366 | -1.21   |   |
| 113066  | 2.076           | 267.734          | 1.1223           | .10201       | .02384                                  | .005  | .02405 | .31   |   |
| 113065  | 2.585           | 270.373          | 1.4546           | .21048       | .02511                                  | .003  | .02498 | -1.02   |   |
| 113064  | 2.586           | 269.677          | 1.4630           | .17985       | .02523                                  | .003  | .02519 | -.31  |   |
| 113063  | 2.587           | 268.744          | 1.4745           | .15126       | .02490                                  | .004  | .02498 | -1.34   |   |
| 113062  | 2.590           | 268.025          | 1.4851           | .12543       | .02480                                  | .005  | .02497 | -1.55   |   |
| 113040  | 3.211           | 270.502          | 1.9652           | .24389       | .02778                                  | .003  | .02763 | .73   |   |
| 113059  | 3.211           | 269.509          | 1.9838           | .21059       | .02736                                  | .003  | .02734 | -.58  |   |
| 113058  | 3.211           | 269.089          | 1.9945           | .17981       | .02764                                  | .004  | .02767 | .38   |   |
| 113061  | 3.211           | 268.348          | 2.0100           | .15150       | .02736                                  | .004  | .02749 | -.56  |   |

| Run Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Power<br>W/m | Experimental<br>Thermal<br>Conductivity |       | STAT   | Temperature of<br>277.8K from<br>Correlation<br>W/m.K | Adjusted Thermal Conductivity<br>at a Nominal<br>Deviation<br>percent |
|---------|-----------------|------------------|------------------|--------------|---|-------|--------|---|---|
|         |                 |                  |                  |              | W/m.K                                   | W/m.K |        |   |   |
| 113120  | .312            | 279.782          | .1369            | .15678       | .02222                                  | .003  | .02201 | .07   |   |
| 113119  | .312            | 278.548          | .1375            | .13002       | .02225                                  | .005  | .02215 | .69   |   |
| 113118  | .312            | 277.648          | .1381            | .10561       | .02196                                  | .005  | .02199 | -.05  |   |
| 113117  | .312            | 276.874          | .1386            | .08386       | .02188                                  | .007  | .02202 | .07   |   |
| 113116  | .708            | 279.101          | .3202            | .15665       | .02275                                  | .003  | .02259 | .35   |   |
| 113115  | .708            | 278.223          | .3216            | .12983       | .02262                                  | .004  | .02257 | .22   |   |
| 113114  | .708            | 277.253          | .3229            | .10561       | .02253                                  | .005  | .02261 | .40   |   |
| 113113  | .708            | 276.549          | .3238            | .08385       | .02240                                  | .007  | .02258 | .25   |   |
| 113112  | 1.370           | 279.503          | .6498            | .18603       | .02360                                  | .002  | .02344 | -.31  |   |

|        |        |         |         |        |        |      |        |       |
|--------|--------|---------|---------|--------|--------|------|--------|-------|
| 113111 | 1.370  | 278.532 | .4529   | .15652 | .02350 | .001 | .02340 | -.48  |
| 113112 | 1.370  | 277.770 | .6453   | .12977 | .02343 | .004 | .02344 | -.36  |
| 113109 | 1.370  | 276.876 | .6482   | .10551 | .02327 | .005 | .02340 | -.56  |
| 113108 | 1.388  | 279.161 | .9358   | .18613 | .02432 | .003 | .02417 | -1.12 |
| 113107 | 1.395  | 278.324 | .9439   | .15674 | .02430 | .003 | .02423 | -.99  |
| 113106 | 1.398  | 277.542 | .9495   | .12993 | .02378 | .005 | .02382 | -2.82 |
| 113105 | 1.399  | 276.888 | .9540   | .10563 | .02398 | .005 | .02411 | -1.64 |
| 113104 | 2.508  | 279.559 | 1.3115  | .21757 | .02534 | .003 | .02522 | -2.30 |
| 113103 | 2.512  | 278.777 | 1.3211  | .18595 | .02545 | .003 | .02532 | -2.03 |
| 113102 | 2.521  | 277.798 | 1.3357  | .15669 | .02535 | .004 | .02536 | -2.11 |
| 113101 | 2.532  | 277.299 | 1.3474  | .12994 | .02510 | .005 | .02518 | -3.03 |
| 113100 | 3.120  | 279.153 | 1.7455  | .21741 | .02679 | .003 | .02667 | -3.35 |
| 113099 | 3.121  | 278.445 | 1.7561  | .18565 | .02685 | .003 | .02677 | -3.15 |
| 113098 | 3.122  | 277.670 | 1.7582  | .15645 | .02683 | .004 | .02685 | -3.01 |
| 113097 | 3.124  | 277.019 | 1.7793  | .12962 | .02679 | .004 | .02690 | -3.00 |
| 113094 | 3.587  | 278.462 | 2.1361  | .21718 | .02668 | .007 | .02957 | -2.76 |
| 113093 | 3.587  | 277.840 | 2.1543  | .18556 | .02877 | .003 | .02877 | -2.34 |
| 113096 | 3.586  | 277.401 | 2.1623  | .15644 | .02866 | .004 | .02872 | -2.66 |
| 113091 | 4.155  | 279.023 | 2.6872  | .29845 | .03179 | .003 | .03168 | -1.80 |
| 113092 | 4.155  | 277.224 | 2.7535  | .18573 | .03180 | .005 | .03188 | -2.33 |
| 113097 | 4.529  | 279.283 | 3.1293  | .32727 | .03481 | .004 | .03482 | -.21  |
| 113086 | 4.529  | 278.604 | 3.1551  | .28815 | .03431 | .007 | .03421 | -2.66 |
| 113085 | 4.529  | 277.994 | 3.1993  | .25129 | .03460 | .006 | .03458 | -2.18 |
| 113084 | 4.529  | 277.392 | 3.2347  | .21730 | .03468 | .005 | .03474 | -2.36 |
| 113083 | 4.529  | 276.767 | 3.2715  | .18577 | .03499 | .006 | .03513 | -1.90 |
| 112159 | 6.958  | 277.330 | 10.3687 | .59496 | .07943 | .008 | .07950 | 5.91  |
| 112158 | 6.958  | 275.935 | 10.4885 | .46046 | .08115 | .006 | .08127 | 7.86  |
| 112157 | 6.957  | 275.717 | 10.5511 | .41331 | .08016 | .004 | .08031 | 6.70  |
| 112155 | 7.303  | 278.558 | 10.5695 | .57199 | .07520 | .010 | .07511 | .22   |
| 112156 | 6.957  | 276.409 | 10.6422 | .36878 | .07902 | .004 | .07921 | 5.32  |
| 112154 | 7.300  | 277.746 | 10.7794 | .61494 | .07572 | .005 | .07573 | .84   |
| 112153 | 7.300  | 277.659 | 10.8012 | .55085 | .07520 | .006 | .07522 | .14   |
| 112152 | 7.299  | 277.111 | 10.9390 | .46019 | .07520 | .003 | .07530 | .07   |
| 112150 | 7.937  | 278.536 | 11.3132 | .61479 | .07469 | .004 | .07450 | -1.45 |
| 112151 | 7.937  | 278.537 | 11.3137 | .67246 | .07345 | .006 | .07336 | -3.16 |
| 112149 | 7.935  | 277.855 | 11.4479 | .55071 | .07478 | .002 | .07478 | -1.47 |
| 112148 | 7.925  | 277.017 | 11.6104 | .49966 | .07476 | .005 | .07487 | -1.73 |
| 112147 | 8.778  | 278.605 | 11.9485 | .67229 | .07587 | .001 | .07577 | -1.52 |
| 112146 | 8.779  | 278.337 | 11.9913 | .61494 | .07578 | .003 | .07571 | -1.74 |
| 112145 | 8.778  | 277.888 | 12.0611 | .56098 | .07597 | .002 | .07595 | -1.65 |
| 112144 | 8.775  | 277.513 | 12.1175 | .50911 | .07746 | .004 | .07750 | .16   |
| 112142 | 9.860  | 278.593 | 12.5303 | .67187 | .07813 | .003 | .07803 | -1.00 |
| 112141 | 9.862  | 278.354 | 12.5618 | .51575 | .07794 | .008 | .07787 | -1.36 |
| 112140 | 9.862  | 277.854 | 12.5257 | .56014 | .07883 | .010 | .07883 | -.46  |
| 112143 | 9.863  | 277.623 | 12.6548 | .50969 | .07938 | .002 | .07941 | .12   |
| 112139 | 11.436 | 279.217 | 13.0695 | .79375 | .07993 | .008 | .07987 | -1.81 |
| 112139 | 11.434 | 278.667 | 13.1257 | .73092 | .08032 | .004 | .08021 | -1.77 |
| 112137 | 11.435 | 278.439 | 13.1498 | .67213 | .08134 | .002 | .08126 | -.62  |
| 112136 | 11.434 | 277.960 | 13.1996 | .61477 | .08141 | .005 | .08139 | -.80  |
| 112134 | 13.389 | 278.980 | 13.6509 | .79282 | .08503 | .001 | .08489 | -.03  |
| 112133 | 13.390 | 278.562 | 13.5883 | .73121 | .08521 | .002 | .08511 | -.09  |
| 112135 | 13.389 | 278.260 | 13.7146 | .67216 | .08344 | .005 | .08338 | -2.39 |
| 112132 | 13.392 | 277.683 | 13.7662 | .61461 | .08542 | .002 | .08544 | -.36  |
| 112130 | 15.828 | 279.404 | 14.1499 | .85720 | .08838 | .002 | .08826 | -.56  |
| 112131 | 15.827 | 278.942 | 14.1851 | .79275 | .08987 | .003 | .08972 | .75   |
| 112129 | 15.826 | 278.535 | 14.2159 | .73087 | .08913 | .003 | .08903 | -.31  |
| 112128 | 15.831 | 277.737 | 14.2776 | .61526 | .09042 | .002 | .09044 | .65   |
| 112127 | 19.302 | 279.465 | 14.7339 | .92270 | .09493 | .004 | .09477 | .72   |
| 112126 | 19.302 | 279.105 | 14.7575 | .85694 | .09524 | .004 | .09509 | .81   |
| 112125 | 19.297 | 278.227 | 14.9143 | .73087 | .09477 | .003 | .09472 | -.18  |
| 112124 | 19.294 | 277.792 | 14.8423 | .61589 | .09587 | .002 | .09588 | .74   |
| 112122 | 23.443 | 279.935 | 15.2532 | .99270 | .10102 | .031 | .10080 | 1.24  |
| 112123 | 23.450 | 279.638 | 15.2711 | .92583 | .10003 | .016 | .09983 | .08   |
| 112120 | 23.433 | 278.069 | 15.3993 | .73093 | .10063 | .002 | .10060 | -.15  |
| 112119 | 23.425 | 277.506 | 15.3906 | .61584 | .10118 | .002 | .10123 | .12   |
| 112117 | 25.362 | 279.750 | 15.4801 | .99279 | .10288 | .030 | .10266 | .50   |
| 112118 | 25.362 | 279.232 | 15.5085 | .92389 | .10190 | .029 | .10172 | -.75  |
| 112116 | 25.362 | 278.634 | 15.5412 | .85674 | .10241 | .001 | .10229 | -.56  |
| 112115 | 25.361 | 277.945 | 15.5787 | .73122 | .10261 | .017 | .10260 | -.70  |
| 112114 | 25.363 | 277.293 | 15.6144 | .61460 | .10325 | .004 | .10333 | -.40  |

| Run Pt. | Pressure MPa | Temperature K | Density g/ml | Power W/m | Experimental Thermal Conductivity W/m.K | STAT | Adjusted Thermal Conductivity at a Nominal Temperature of 283.2K from Correlation |                   |                     |
|---------|--------------|---------------|--------------|-----------|---|------|---|-------------------|---------------------|
|         |              |               |              |           |   |      | W/m.K   | Deviation percent | Correlation percent |
| 109142  | .319         | 286.362       | .1366        | .16009    | .02305                                  | .002 | .02267  | .56               |                     |
| 109141  | .319         | 285.297       | .1371        | .13265    | .02286                                  | .002 | .02261  | .31               |                     |
| 109140  | .320         | 284.386       | .1379        | .10795    | .02258                                  | .005 | .02244  | -.45              |                     |
| 109139  | .320         | 283.498       | .1384        | .08567    | .02278                                  | .010 | .02275  | .88               |                     |
| 109138  | 1.016        | 285.663       | .4567        | .16006    | .02384                                  | .002 | .02357  | .73               |                     |
| 109137  | 1.015        | 284.685       | .4588        | .13282    | .02369                                  | .002 | .02353  | .55               |                     |
| 109136  | 1.017        | 283.801       | .4607        | .10805    | .02363                                  | .003 | .02357  | .68               |                     |
| 109135  | 1.017        | 283.062       | .4623        | .08575    | .02348                                  | .004 | .02350  | .36               |                     |
| 109134  | 2.025        | 285.672       | .9795        | .18994    | .02501                                  | .001 | .02478  | -.64              |                     |
| 109133  | 2.027        | 284.839       | .9851        | .16002    | .02499                                  | .002 | .02484  | -.45              |                     |

|        |       |         |         |        |        |      |        |       |
|--------|-------|---------|---------|--------|--------|------|--------|-------|
| 109132 | 2.032 | 284.079 | .9920   | .13270 | .02491 | .002 | .02484 | -.57  |
| 109130 | 2.865 | 285.880 | 1.4862  | .22249 | .02671 | .001 | .02632 | -.48  |
| 109129 | 2.870 | 285.026 | 1.4981  | .18990 | .0261  | .001 | .02639 | -1.14 |
| 109128 | 2.875 | 284.229 | 1.5101  | .15998 | .02639 | .002 | .02533 | -1.54 |
| 109127 | 2.881 | 283.579 | 1.5203  | .13269 | .02627 | .003 | .02625 | -1.99 |
| 109126 | 3.578 | 285.300 | 2.0031  | .22245 | .02852 | .002 | .02844 | -.75  |
| 109125 | 3.579 | 284.511 | 2.0173  | .18991 | .02853 | .002 | .02849 | -.79  |
| 109124 | 3.579 | 283.890 | 2.0288  | .15996 | .02856 | .001 | .02854 | -.77  |
| 109123 | 3.581 | 283.197 | 2.0427  | .13259 | .02839 | .003 | .02839 | -1.52 |
| 109122 | 4.124 | 285.585 | 2.4589  | .25743 | .03068 | .005 | .03066 | -.04  |
| 109121 | 4.124 | 284.544 | 2.4865  | .22263 | .03071 | .003 | .03072 | -.29  |
| 109120 | 4.124 | 284.018 | 2.5012  | .18989 | .03063 | .003 | .03064 | -.77  |
| 109119 | 4.124 | 283.440 | 2.5172  | .16004 | .03056 | .003 | .03056 | -1.26 |
| 109118 | 4.545 | 284.225 | 2.9002  | .29496 | .03291 | .002 | .03298 | .33   |
| 109117 | 4.555 | 284.520 | 2.9271  | .25730 | .03290 | .002 | .03296 | -.16  |
| 109116 | 4.556 | 283.877 | 2.9534  | .22216 | .03281 | .002 | .03285 | -.93  |
| 109115 | 4.556 | 283.413 | 2.9727  | .18974 | .03256 | .003 | .03257 | -2.09 |
| 109114 | 5.021 | 284.649 | 3.4966  | .29546 | .03645 | .003 | .03660 | 1.04  |
| 109113 | 5.021 | 284.124 | 3.5291  | .25771 | .03610 | .004 | .03621 | -.57  |
| 109112 | 5.021 | 283.558 | 3.5660  | .22267 | .03665 | .002 | .03659 | .16   |
| 109111 | 5.021 | 282.990 | 3.6042  | .19010 | .03670 | .002 | .03666 | -.55  |
| 109110 | 5.254 | 284.194 | 3.8752  | .29495 | .03912 | .004 | .03927 | 1.82  |
| 109109 | 5.254 | 283.805 | 3.9082  | .25732 | .03857 | .004 | .03857 | -.27  |
| 109107 | 5.254 | 283.005 | 3.9776  | .19009 | .03829 | .007 | .03825 | -2.55 |
| 109106 | 5.381 | 283.517 | 4.1945  | .25741 | .04068 | .003 | .04074 | .88   |
| 109105 | 5.382 | 283.162 | 4.1914  | .22249 | .04095 | .003 | .04084 | .50   |
| 109104 | 5.382 | 282.661 | 4.2455  | .19011 | .04089 | .004 | .04075 | -.60  |
| 109103 | 5.382 | 282.487 | 4.2648  | .16035 | .04131 | .004 | .04112 | -.01  |
| 109102 | 5.708 | 282.855 | 4.9247  | .25820 | .04651 | .008 | .04538 | 1.40  |
| 109101 | 5.708 | 282.309 | 5.0175  | .19054 | .04586 | .009 | .04551 | -.96  |
| 109100 | 5.708 | 282.084 | 5.0577  | .16059 | .04747 | .004 | .04701 | .69   |
| 109099 | 5.708 | 281.487 | 5.1708  | .13319 | .04934 | .004 | .04756 | .11   |
| 109098 | 5.708 | 281.448 | 5.1784  | .10820 | .04828 | .005 | .04747 | -.18  |
| 109097 | 5.919 | 281.788 | 5.7196  | .19025 | .05102 | .005 | .05025 | -.24  |
| 109096 | 5.919 | 281.488 | 5.7874  | .15022 | .05173 | .005 | .05077 | -2.35 |
| 109095 | 5.919 | 281.249 | 5.8494  | .13278 | .05194 | .005 | .05080 | -3.17 |
| 109094 | 5.919 | 280.893 | 5.9459  | .10793 | .05329 | .005 | .05184 | -.41  |
| 109093 | 5.919 | 280.609 | 6.0264  | .08568 | .05370 | .008 | .05198 | -.23  |
| 109092 | 5.995 | 281.317 | 6.0760  | .16011 | .05396 | .005 | .05280 | -2.30 |
| 109091 | 5.996 | 281.035 | 6.1583  | .13279 | .05464 | .005 | .05343 | -.216 |
| 109090 | 5.996 | 280.865 | 6.2085  | .10792 | .05733 | .013 | .05576 | 1.49  |
| 109089 | 5.996 | 280.649 | 6.2742  | .08572 | .05668 | .008 | .05490 | -.89  |
| 109088 | 6.240 | 281.418 | 6.8544  | .16049 | .06074 | .006 | .05947 | .45   |
| 109087 | 6.240 | 281.056 | 6.9745  | .13294 | .05142 | .005 | .05982 | -.21  |
| 109086 | 6.240 | 281.033 | 6.9758  | .10825 | .05255 | .007 | .06102 | 1.64  |
| 109085 | 6.240 | 280.734 | 7.0902  | .08585 | .06248 | .008 | .06053 | -.19  |
| 109084 | 6.437 | 281.717 | 7.4008  | .22244 | .06475 | .012 | .06366 | 1.96  |
| 109083 | 6.437 | 281.542 | 7.6618  | .19004 | .06432 | .009 | .06308 | .53   |
| 109082 | 6.437 | 281.216 | 7.5782  | .16005 | .06499 | .007 | .06344 | .12   |
| 109081 | 6.437 | 281.029 | 7.6461  | .13274 | .06557 | .009 | .06383 | .19   |
| 109080 | 6.437 | 280.944 | 7.6774  | .10704 | .06689 | .009 | .06594 | 1.82  |
| 109078 | 6.611 | 281.689 | 7.9542  | .22293 | .06829 | .012 | .06715 | 2.90  |
| 109077 | 6.611 | 281.427 | 8.0496  | .19004 | .06665 | .009 | .06528 | -.54  |
| 109075 | 6.611 | 281.099 | 8.1694  | .13282 | .06911 | .005 | .06743 | 1.96  |
| 109076 | 6.611 | 280.971 | 8.2159  | .15001 | .06833 | .007 | .06532 | .27   |
| 109079 | 6.611 | 280.844 | 8.2631  | .10795 | .07007 | .007 | .06813 | 2.35  |
| 109073 | 6.762 | 281.790 | 8.3634  | .25604 | .06996 | .014 | .06891 | 2.89  |
| 109072 | 6.762 | 281.569 | 8.4422  | .22207 | .06896 | .008 | .06773 | .76   |
| 109071 | 6.762 | 281.221 | 8.5671  | .18951 | .07009 | .012 | .06855 | 1.30  |
| 109070 | 6.762 | 281.080 | 8.5194  | .15989 | .07119 | .005 | .06952 | 2.43  |
| 109074 | 6.762 | 280.913 | 8.6791  | .13255 | .07038 | .004 | .06856 | .77   |
| 109068 | 6.935 | 282.101 | 8.7200  | .29467 | .07137 | .012 | .07060 | 3.45  |
| 109067 | 6.935 | 281.938 | 8.8112  | .25697 | .07092 | .009 | .06995 | 2.15  |
| 109066 | 6.935 | 281.659 | 8.8727  | .22215 | .07090 | .007 | .06979 | 1.67  |
| 109069 | 6.935 | 281.466 | 8.9391  | .18981 | .07126 | .006 | .06999 | 1.69  |
| 109065 | 7.130 | 282.701 | 9.0425  | .37752 | .07254 | .014 | .07223 | 4.35  |
| 109063 | 7.149 | 282.279 | 9.1743  | .33445 | .07199 | .011 | .07139 | 2.75  |
| 109062 | 7.149 | 282.059 | 9.2450  | .29461 | .07169 | .007 | .07094 | 1.89  |
| 109060 | 7.335 | 283.036 | 9.3362  | .42258 | .07247 | .012 | .07235 | 3.54  |
| 109061 | 7.150 | 281.787 | 9.3344  | .25689 | .07088 | .005 | .06994 | .20   |
| 109064 | 7.150 | 281.742 | 9.3684  | .22226 | .07191 | .004 | .07094 | 1.56  |
| 109058 | 7.335 | 282.621 | 9.4560  | .37740 | .07133 | .008 | .07098 | 1.28  |
| 109057 | 7.334 | 282.300 | 9.5306  | .33447 | .07199 | .006 | .07145 | 1.66  |
| 109056 | 7.334 | 282.080 | 9.6191  | .29670 | .07115 | .005 | .07046 | .10   |
| 109059 | 7.325 | 281.824 | 9.6965  | .25721 | .07129 | .005 | .07044 | -.15  |
| 109051 | 7.612 | 282.441 | 9.7133  | .52077 | .07220 | .011 | .07231 | 2.34  |
| 109053 | 7.612 | 283.385 | 9.7479  | .47070 | .07025 | .010 | .07033 | -.44  |
| 109052 | 7.612 | 283.994 | 9.8565  | .42249 | .07144 | .005 | .07132 | .67   |
| 109054 | 7.611 | 282.501 | 9.9608  | .37755 | .07032 | .006 | .07099 | -1.46 |
| 109051 | 7.612 | 282.355 | 10.0254 | .33473 | .07125 | .003 | .07189 | -.34  |
| 109050 | 8.024 | 284.617 | 10.0651 | .62965 | .07014 | .010 | .07372 | -.69  |
| 109049 | 8.024 | 283.802 | 10.2570 | .52127 | .07050 | .005 | .07083 | -.59  |
| 109048 | 8.025 | 283.158 | 10.4079 | .42312 | .07093 | .005 | .07080 | -1.40 |
| 109047 | 8.025 | 282.592 | 10.5369 | .33524 | .06461 | .005 | .06934 | -3.86 |
| 109046 | 8.422 | 284.598 | 10.5500 | .63001 | .07095 | .004 | .07143 | -.58  |
| 109045 | 8.419 | 283.840 | 10.7129 | .52112 | .07048 | .002 | .07070 | -2.32 |

|        |        |         |         |         |        |      |        |       |
|--------|--------|---------|---------|---------|--------|------|--------|-------|
| 109044 | 8.419  | 282.838 | 10.9135 | .42283  | .07142 | .001 | .07128 | -2.02 |
| 109043 | 8.419  | 282.290 | 11.0224 | .33487  | .07128 | .002 | .07094 | -2.83 |
| 109042 | 8.979  | 284.499 | 11.1088 | .62982  | .07169 | .002 | .07204 | -1.53 |
| 109041 | 8.980  | 283.993 | 11.1974 | .52119  | .07166 | .002 | .07187 | -2.04 |
| 109040 | 8.978  | 282.972 | 11.3715 | .42286  | .07231 | .002 | .07224 | -2.11 |
| 109039 | 8.976  | 282.721 | 11.4122 | .32488  | .07260 | .003 | .07246 | -1.94 |
| 109037 | 9.805  | 284.794 | 11.5496 | .63055  | .07324 | .002 | .07353 | -1.36 |
| 109036 | 9.807  | 283.931 | 11.7756 | .52181  | .07380 | .001 | .07393 | -1.34 |
| 109035 | 9.807  | 283.624 | 11.8198 | .42361  | .07427 | .002 | .07435 | -0.98 |
| 109039 | 9.810  | 282.811 | 11.9374 | .33561  | .07362 | .004 | .07354 | -2.63 |
| 109034 | 10.923 | 285.319 | 12.1720 | .74734  | .07547 | .001 | .07570 | -0.87 |
| 109033 | 10.921 | 284.403 | 12.2834 | .62894  | .07605 | .001 | .07618 | -0.84 |
| 109032 | 10.920 | 283.864 | 12.3478 | .52042  | .07664 | .001 | .07671 | -0.50 |
| 109031 | 10.921 | 283.178 | 12.4307 | .42234  | .07654 | .001 | .07653 | -1.22 |
| 109030 | 12.239 | 285.544 | 12.6951 | .7904   | .07935 | .002 | .07946 | .87   |
| 109029 | 12.289 | 284.540 | 12.7994 | .63033  | .07921 | .001 | .07927 | -0.06 |
| 109028 | 12.287 | 283.917 | 12.8632 | .52143  | .07979 | .001 | .07982 | .19   |
| 109027 | 12.290 | 283.189 | 12.9383 | .42262  | .07954 | .003 | .07954 | -0.70 |
| 109026 | 13.880 | 285.244 | 13.2081 | .74857  | .08220 | .001 | .08220 | .54   |
| 109025 | 13.880 | 284.405 | 13.2748 | .62981  | .08270 | .001 | .08270 | .62   |
| 109024 | 13.878 | 283.927 | 17.3353 | .52157  | .08205 | .001 | .08205 | -0.66 |
| 109023 | 13.878 | 283.417 | 13.3907 | .42400  | .08237 | .002 | .08237 | -0.64 |
| 109022 | 16.220 | 285.347 | 13.7704 | .74675  | .08613 | .001 | .08603 | .30   |
| 109021 | 16.221 | 284.751 | 13.8167 | .62941  | .08724 | .002 | .08717 | 1.18  |
| 109020 | 16.219 | 283.908 | 13.9816 | .52008  | .08619 | .002 | .08616 | -0.58 |
| 109018 | 18.994 | 285.899 | 14.2599 | .87461  | .09066 | .001 | .09045 | .60   |
| 109017 | 18.994 | 284.503 | 14.3216 | .74519  | .09093 | .001 | .09080 | .35   |
| 109015 | 18.992 | 284.278 | 14.3639 | .62753  | .09152 | .001 | .09144 | .62   |
| 109015 | 18.992 | 283.441 | 14.4206 | .51974  | .09159 | .001 | .09157 | .19   |
| 109014 | 18.990 | 283.158 | 14.4394 | .42301  | .09225 | .001 | .09226 | .73   |
| 109013 | 22.401 | 285.712 | 14.7805 | .87754  | .09561 | .001 | .09535 | .41   |
| 109012 | 22.402 | 284.781 | 14.8367 | .74875  | .09604 | .001 | .09588 | .35   |
| 109011 | 22.400 | 284.019 | 14.8823 | .62990  | .09623 | .001 | .09615 | .13   |
| 109010 | 22.400 | 283.362 | 14.9218 | .52151  | .09659 | .001 | .09658 | .14   |
| 109009 | 26.799 | 285.392 | 15.3302 | .87745  | .10147 | .001 | .10121 | .22   |
| 109008 | 26.793 | 284.685 | 15.3674 | .74858  | .10184 | .002 | .10165 | .25   |
| 109007 | 26.799 | 283.790 | 15.4154 | .52866  | .10211 | .001 | .10204 | .07   |
| 109006 | 25.797 | 283.084 | 15.4529 | .51910  | .10133 | .002 | .10135 | -1.06 |
| 109003 | 30.275 | 285.931 | 15.6526 | 1.01643 | .10539 | .001 | .10503 | .20   |
| 109002 | 30.271 | 285.119 | 15.6925 | .87746  | .10567 | .001 | .10542 | .10   |
| 109001 | 30.268 | 284.456 | 15.7252 | .74865  | .10621 | .001 | .10605 | .31   |
| 109004 | 30.277 | 283.602 | 15.7683 | .62948  | .10618 | .002 | .10613 | -0.12 |
| 109005 | 30.281 | 283.078 | 15.7946 | .52105  | .10627 | .002 | .10629 | -0.29 |

| Run Pt. | Pressure<br>MPa | Temperature<br>K | Densrity<br>mol/L | Power<br>W/m | Experimental<br>Thermal<br>Conductivity<br>W/m.K | STAT | Adjusted Thermal Conductivity<br>at Nominal<br>Temperature of 304.5K from Correlation<br>w/m.K |       |
|---------|-----------------|------------------|-------------------|--------------|--|------|--|-------|
|         |                 |                  |                   |              |  |      | Devstion<br>percent  |       |
| 110128  | .228            | 305.610          | .0903             | .17187       | .02617   | .003 | .02582   | 1.30  |
| 110127  | .229            | 305.749          | .0907             | .14264       | .02600   | .003 | .02579   | 1.19  |
| 110126  | .228            | 304.678          | .0911             | .11582       | .02566   | .003 | .02563   | .55   |
| 110125  | .228            | 303.765          | .0914             | .09206       | .02544   | .005 | .02555   | .27   |
| 110123  | 1.158           | 306.544          | .4812             | .20391       | .02683   | .001 | .02648   | .34   |
| 110122  | 1.158           | 305.581          | .4833             | .17178       | .02667   | .001 | .02649   | .36   |
| 110121  | 1.158           | 304.712          | .4651             | .14233       | .02652   | .002 | .02648   | .30   |
| 110120  | 1.158           | 303.743          | .4870             | .11568       | .02611   | .005 | .02622   | -0.70 |
| 110124  | 1.158           | 303.250          | .4876             | .09211       | .02630   | .003 | .02649   | .31   |
| 110119  | 2.272           | 305.924          | 1.0078            | .20397       | .02802   | .001 | .02780   | .25   |
| 110118  | 2.273           | 305.015          | 1.0124            | .17186       | .02790   | .001 | .02782   | .27   |
| 110117  | 2.273           | 304.171          | 1.0165            | .14249       | .02786   | .002 | .02790   | .54   |
| 110116  | 2.273           | 303.232          | 1.0215            | .11577       | .02757   | .002 | .02776   | -0.04 |
| 110115  | 3.213           | 306.148          | 1.5094            | .23900       | .02963   | .001 | .02939   | .81   |
| 110114  | 3.213           | 305.467          | 1.5154            | .20401       | .02951   | .001 | .02937   | .68   |
| 110113  | 3.213           | 304.614          | 1.5230            | .17208       | .02949   | .002 | .02947   | .94   |
| 110112  | 3.213           | 303.998          | 1.5288            | .14284       | .02932   | .002 | .02939   | .61   |
| 110111  | 3.213           | 303.133          | 1.5364            | .11577       | .02904   | .002 | .02923   | -0.02 |
| 110110  | 3.971           | 305.480          | 1.971             | .23874       | .03106   | .001 | .03093   | .96   |
| 110109  | 3.971           | 304.827          | 1.9950            | .20385       | .03095   | .001 | .03090   | .78   |
| 110108  | 3.971           | 304.081          | 1.9954            | .17157       | .03074   | .001 | .03079   | .31   |
| 110107  | 3.971           | 303.443          | 2.0043            | .14226       | .03085   | .002 | .03098   | .83   |
| 110106  | 4.599           | 305.158          | 2.4844            | .23953       | .03206   | .002 | .03298   | 1.63  |
| 110105  | 4.700           | 304.511          | 2.4983            | .20390       | .03298   | .002 | .03293   | 1.46  |
| 110103  | 4.700           | 303.935          | 2.5104            | .17184       | .03276   | .002 | .03282   | .87   |
| 110104  | 4.700           | 303.203          | 2.5260            | .14248       | .03293   | .003 | .03308   | 1.45  |
| 110102  | 5.217           | 305.485          | 2.8791            | .27487       | .03480   | .002 | .03469   | 2.00  |
| 110101  | 5.217           | 304.758          | 2.8990            | .23750       | .03460   | .002 | .03457   | 1.41  |
| 110100  | 5.217           | 304.103          | 2.9174            | .20282       | .03440   | .003 | .03444   | .81   |
| 110099  | 5.217           | 303.599          | 2.9315            | .17106       | .03466   | .002 | .03475   | 1.53  |
| 110098  | 5.753           | 305.589          | 3.3393            | .31576       | .03699   | .002 | .03699   | 2.43  |
| 110097  | 5.753           | 304.263          | 3.3665            | .27544       | .03693   | .002 | .03690   | 2.11  |
| 110096  | 5.753           | 304.280          | 3.3886            | .23777       | .03697   | .002 | .03699   | 2.08  |
| 110095  | 5.753           | 303.483          | 3.4193            | .20293       | .03674   | .002 | .03684   | 1.32  |
| 110094  | 6.212           | 305.471          | 3.7876            | .31660       | .03940   | .002 | .03933   | 3.09  |
| 110093  | 6.211           | 304.883          | 3.8152            | .27554       | .03953   | .003 | .03950   | 3.17  |
| 110092  | 6.211           | 304.417          | 3.8382            | .23842       | .03954   | .002 | .03954   | 2.99  |

|        |        |         |         |        |        |      |        |       |
|--------|--------|---------|---------|--------|--------|------|--------|-------|
| 110091 | 6.211  | 303.453 | 3.8869  | .20279 | .03914 | .002 | .03921 | 1.53  |
| 110090 | 6.710  | 305.513 | 4.3208  | .35857 | .04235 | .003 | .04230 | 3.45  |
| 110089 | 6.709  | 304.914 | 4.3585  | .31562 | .04227 | .003 | .04225 | 2.86  |
| 110088 | 6.709  | 304.173 | 4.4068  | .27534 | .04210 | .002 | .04211 | 1.93  |
| 110087 | 6.709  | 303.445 | 4.4428  | .23771 | .04227 | .032 | .04230 | 1.91  |
| 110085 | 7.103  | 305.163 | 4.8130  | .35956 | .04496 | .003 | .04494 | 3.15  |
| 110084 | 7.103  | 304.474 | 4.8672  | .21610 | .04482 | .002 | .04482 | 2.21  |
| 110083 | 7.101  | 304.295 | 4.8800  | .27618 | .04515 | .003 | .04515 | 2.77  |
| 110086 | 7.104  | 303.693 | 4.9338  | .23887 | .04495 | .002 | .04496 | 1.69  |
| 110082 | 7.391  | 305.047 | 5.1887  | .40536 | .04686 | .004 | .04686 | 2.58  |
| 110081 | 7.391  | 304.596 | 5.2304  | .35967 | .04639 | .002 | .04639 | 1.08  |
| 110080 | 7.390  | 303.806 | 5.3055  | .31630 | .04663 | .002 | .04663 | .67   |
| 110079 | 7.391  | 303.405 | 5.3462  | .27558 | .04665 | .002 | .04665 | .20   |
| 110078 | 7.694  | 305.298 | 5.5670  | .45407 | .04926 | .005 | .04927 | 2.93  |
| 110077 | 7.694  | 304.910 | 5.6076  | .40606 | .04941 | .003 | .04942 | 2.75  |
| 110076 | 7.693  | 304.396 | 5.6609  | .36005 | .04886 | .004 | .04886 | 1.01  |
| 110075 | 7.693  | 303.980 | 5.7065  | .31710 | .04910 | .002 | .04909 | .95   |
| 110074 | 7.938  | 305.177 | 5.9125  | .45473 | .05100 | .004 | .05102 | 2.36  |
| 110073 | 7.937  | 304.719 | 5.9643  | .40539 | .05073 | .003 | .05074 | 1.24  |
| 110072 | 7.936  | 304.147 | 6.0311  | .36017 | .05057 | .002 | .05056 | .13   |
| 110071 | 7.936  | 303.633 | 6.0927  | .31679 | .05061 | .003 | .05059 | -.52  |
| 110070 | 8.356  | 304.932 | 6.5247  | .45467 | .05397 | .004 | .05399 | 1.33  |
| 110069 | 8.357  | 304.579 | 6.5720  | .40557 | .05394 | .003 | .05395 | .75   |
| 110068 | 8.255  | 303.819 | 6.6738  | .35971 | .05396 | .002 | .05392 | -.32  |
| 110067 | 8.355  | 303.418 | 6.7305  | .31655 | .05390 | .002 | .05384 | -1.05 |
| 110066 | 8.681  | 304.671 | 7.0111  | .45427 | .05603 | .004 | .05604 | .25   |
| 110065 | 8.680  | 304.113 | 7.0912  | .40571 | .05609 | .002 | .05607 | -.46  |
| 110064 | 8.680  | 303.713 | 7.1501  | .35981 | .05606 | .002 | .05601 | -1.10 |
| 110063 | 8.681  | 302.995 | 7.2596  | .31654 | .05611 | .002 | .05600 | -2.11 |
| 110061 | 9.054  | 304.524 | 7.5369  | .45384 | .05825 | .004 | .05825 | -.53  |
| 110060 | 9.053  | 303.859 | 7.6378  | .40522 | .05777 | .002 | .05772 | -2.29 |
| 110059 | 9.052  | 303.339 | 7.7169  | .35911 | .05789 | .002 | .05780 | -2.80 |
| 110062 | 9.054  | 303.247 | 7.7338  | .31711 | .05842 | .002 | .05832 | -2.01 |
| 110057 | 9.423  | 304.787 | 7.9687  | .50578 | .05879 | .004 | .05881 | -2.99 |
| 110056 | 9.423  | 304.412 | 8.0262  | .45478 | .06025 | .004 | .06025 | -.97  |
| 110055 | 9.422  | 303.663 | 8.1421  | .40509 | .05986 | .003 | .05980 | -2.58 |
| 110058 | 9.423  | 303.590 | 8.1525  | .36041 | .06031 | .001 | .06024 | -1.90 |
| 110054 | 9.882  | 305.127 | 8.4554  | .56031 | .06204 | .003 | .06209 | -.89  |
| 110053 | 9.882  | 304.711 | 8.5187  | .50615 | .06217 | .002 | .06219 | -1.13 |
| 110052 | 9.881  | 304.096 | 8.6119  | .45453 | .06207 | .002 | .06204 | -1.95 |
| 110051 | 9.881  | 303.551 | 8.6964  | .40483 | .06197 | .002 | .06190 | -2.70 |
| 110050 | 10.445 | 305.001 | 9.0599  | .56058 | .06379 | .002 | .06382 | -1.68 |
| 110049 | 10.444 | 304.456 | 9.1371  | .50596 | .06431 | .003 | .06431 | -1.32 |
| 110048 | 10.446 | 303.993 | 9.2086  | .45417 | .06398 | .002 | .06395 | -2.27 |
| 110047 | 10.445 | 303.578 | 9.2691  | .40532 | .06442 | .002 | .06437 | -1.92 |
| 110046 | 10.962 | 304.935 | 9.5353  | .55817 | .06606 | .002 | .06609 | -.61  |
| 110045 | 10.961 | 304.416 | 9.6067  | .50388 | .05522 | .002 | .06522 | -2.29 |
| 110044 | 10.961 | 303.980 | 9.5681  | .45255 | .06608 | .002 | .06606 | -1.29 |
| 110043 | 10.960 | 303.546 | 9.7281  | .40411 | .05592 | .001 | .06589 | -1.86 |
| 110041 | 11.445 | 304.968 | 9.9131  | .55948 | .06707 | .002 | .06709 | -.91  |
| 110040 | 11.445 | 304.601 | 9.9616  | .50533 | .06710 | .003 | .06710 | -1.11 |
| 110039 | 11.445 | 304.436 | 9.9836  | .45439 | .06784 | .002 | .06784 | -.12  |
| 110042 | 11.445 | 303.763 | 10.0721 | .40540 | .06733 | .003 | .06731 | -1.32 |
| 110038 | 12.580 | 305.151 | 10.6290 | .67583 | .07019 | .001 | .07019 | .21   |
| 110037 | 12.579 | 304.960 | 10.6510 | .61587 | .07021 | .002 | .07021 | .13   |
| 110036 | 12.579 | 304.685 | 10.6830 | .55992 | .06980 | .002 | .06980 | -.61  |
| 110035 | 12.579 | 303.877 | 10.7769 | .45422 | .07003 | .001 | .07003 | -.74  |
| 110033 | 13.764 | 305.298 | 11.2149 | .67558 | .07299 | .008 | .07295 | 1.04  |
| 110034 | 13.766 | 304.711 | 11.2760 | .61631 | .07255 | .002 | .07254 | .12   |
| 110032 | 13.762 | 304.378 | 11.3082 | .55959 | .07333 | .002 | .07333 | 1.02  |
| 110031 | 13.761 | 303.556 | 11.3928 | .45402 | .07268 | .002 | .07272 | -.31  |
| 110030 | 14.908 | 305.413 | 11.6753 | .67807 | .07490 | .001 | .07485 | .28   |
| 110029 | 14.894 | 304.374 | 11.7675 | .56096 | .07630 | .002 | .07631 | 2.20  |
| 110025 | 14.866 | 303.942 | 11.7976 | .45452 | .07317 | .009 | .07320 | -2.14 |
| 110024 | 16.325 | 305.703 | 12.1340 | .67461 | .07365 | .013 | .07355 | -3.09 |
| 110023 | 16.327 | 305.036 | 12.1911 | .61523 | .07465 | .008 | .07461 | -2.94 |
| 110021 | 16.326 | 303.535 | 12.3173 | .45338 | .07477 | .005 | .07485 | -3.55 |
| 110020 | 18.149 | 308.737 | 12.5671 | .80344 | .07715 | .009 | .07593 | -2.69 |
| 110019 | 18.150 | 305.291 | 12.6772 | .67585 | .08087 | .002 | .08079 | 1.35  |
| 110018 | 18.149 | 304.327 | 12.7502 | .55954 | .08090 | .002 | .08100 | 1.03  |
| 110017 | 18.150 | 303.685 | 12.7991 | .45365 | .07769 | .006 | .07777 | -3.50 |
| 110016 | 20.650 | 306.117 | 13.1834 | .80478 | .08485 | .003 | .08465 | 1.70  |
| 110015 | 20.649 | 307.041 | 13.2560 | .67620 | .08504 | .001 | .08497 | 1.42  |
| 110014 | 20.647 | 304.381 | 13.3000 | .55950 | .08349 | .004 | .08350 | -.72  |
| 110013 | 20.647 | 303.592 | 13.3532 | .45417 | .08468 | .005 | .08479 | .33   |
| 110012 | 23.409 | 305.964 | 13.7008 | .80331 | .08729 | .003 | .08709 | -.21  |
| 110011 | 23.410 | 304.716 | 13.7770 | .67617 | .08792 | .003 | .08789 | -.15  |
| 110010 | 23.410 | 303.859 | 13.8283 | .55899 | .08640 | .004 | .08548 | -2.30 |
| 110009 | 23.414 | 303.320 | 13.8623 | .45387 | .08971 | .001 | .08987 | 1.22  |
| 110008 | 26.007 | 305.650 | 14.1187 | .80410 | .09310 | .001 | .09293 | 1.94  |
| 110007 | 26.002 | 304.822 | 14.1645 | .67683 | .09157 | .005 | .09152 | -.04  |
| 110006 | 26.003 | 304.299 | 14.1941 | .56180 | .09320 | .001 | .09322 | 1.48  |
| 110005 | 26.006 | 303.116 | 14.2607 | .45365 | .09357 | .001 | .09377 | 1.37  |
| 110004 | 28.217 | 305.583 | 14.4187 | .80491 | .09325 | .004 | .09308 | -1.04 |
| 110003 | 28.218 | 304.663 | 14.4676 | .67661 | .09479 | .001 | .09476 | .22   |
| 110002 | 28.222 | 304.047 | 14.5007 | .55998 | .09213 | .004 | .09219 | -2.92 |
| 110001 | 28.220 | 303.154 | 14.5477 | .44424 | .09661 | .001 | .09701 | 1.64  |

| Run Pt. | Pressure<br>MPa | Temperature<br>K | Density<br>mol/L | Power<br>W/n | Experimental<br>Thermal<br>Conductivity |       | STAT | Adjusted Thermal Conductivity<br>at a Nominal<br>Temperature of 324.8K from Correlation |       | Deviation<br>percent |
|---------|-----------------|------------------|------------------|--------------|---|-------|------|---|-------|----------------------|
|         |                 |                  |                  |              | W/m.K                                   | W/m.K |      | W/m.K   | W/m.K |                      |
| 111112  | .391            | 326.922          | .1458            | .10951       | .02801                                  | .001  |      | .02351  |       | -2.32                |
| 111111  | .391            | 325.852          | .1445            | .16798       | .02878                                  | .002  |      | .02858  |       | -2.06                |
| 111110  | .391            | 325.008          | .1469            | .13922       | .02849                                  | .002  |      | .02845  |       | -2.53                |
| 111109  | .391            | 324.139          | .1473            | .11321       | .02937                                  | .003  |      | .02849  |       | -2.38                |
| 111108  | 1.348           | 324.203          | .5244            | .10967       | .02975                                  | .001  |      | .02349  |       | -1.56                |
| 111107  | 1.348           | 325.296          | .5253            | .16806       | .02955                                  | .002  |      | .02946  |       | -1.79                |
| 111106  | 1.348           | 324.452          | .5280            | .13944       | .02951                                  | .002  |      | .02957  |       | -1.40                |
| 111105  | 1.348           | 323.771          | .5293            | .11331       | .02934                                  | .003  |      | .02953  |       | -1.57                |
| 111104  | 2.459           | 326.549          | 1.0021           | .23364       | .03088                                  | .001  |      | .03056  |       | -1.67                |
| 111103  | 2.459           | 325.639          | 1.0050           | .19963       | .03079                                  | .002  |      | .03064  |       | -1.45                |
| 111102  | 2.459           | 324.557          | 1.0095           | .16801       | .03058                                  | .002  |      | .03057  |       | -1.71                |
| 111101  | 2.459           | 324.044          | 1.0131           | .13931       | .02053                                  | .002  |      | .03056  |       | -1.42                |
| 111100  | 2.459           | 325.983          | 1.4834           | .23368       | .03221                                  | .002  |      | .03220  |       | -85                  |
| 111099  | 3.465           | 325.141          | 1.4899           | .19940       | .03216                                  | .002  |      | .03210  |       | -60                  |
| 111098  | 3.465           | 324.537          | 1.4945           | .16812       | .03203                                  | .002  |      | .03207  |       | -72                  |
| 111097  | 3.465           | 323.768          | 1.5004           | .13930       | .03203                                  | .002  |      | .03220  |       | -36                  |
| 111096  | 4.434           | 326.159          | 1.9931           | .27034       | .03398                                  | .002  |      | .03376  |       | .21                  |
| 111095  | 4.434           | 325.310          | 2.0031           | .23348       | .03381                                  | .001  |      | .03373  |       | .04                  |
| 111094  | 4.434           | 324.727          | 2.0101           | .19937       | .03370                                  | .002  |      | .03371  |       | .07                  |
| 111093  | 4.434           | 324.006          | 2.0188           | .16792       | .03346                                  | .002  |      | .03359  |       | .51                  |
| 111092  | 5.202           | 325.923          | 2.4430           | .27044       | .03552                                  | .002  |      | .03535  |       | .82                  |
| 111091  | 5.202           | 325.259          | 2.4539           | .23371       | .03544                                  | .002  |      | .03537  |       | .78                  |
| 111090  | 5.202           | 324.444          | 2.4676           | .19948       | .03513                                  | .002  |      | .03518  |       | .13                  |
| 111089  | 5.202           | 323.821          | 2.4781           | .16791       | .03519                                  | .002  |      | .03534  |       | .46                  |
| 111088  | 5.900           | 326.314          | 2.8791           | .31009       | .03720                                  | .002  |      | .03698  |       | 1.25                 |
| 111087  | 5.900           | 325.600          | 2.8948           | .27064       | .03732                                  | .002  |      | .03721  |       | 1.69                 |
| 111086  | 5.901           | 324.800          | 2.9127           | .23376       | .03696                                  | .002  |      | .03696  |       | .86                  |
| 111085  | 5.901           | 324.275          | 2.9244           | .19940       | .03682                                  | .001  |      | .03649  |       | .57                  |
| 111084  | 6.579           | 325.579          | 3.3676           | .31009       | .03909                                  | .001  |      | .03899  |       | 1.72                 |
| 111083  | 6.579           | 325.282          | 3.3761           | .27047       | .03919                                  | .002  |      | .03913  |       | 1.99                 |
| 111082  | 6.579           | 324.471          | 3.3996           | .23375       | .03917                                  | .002  |      | .03921  |       | 1.96                 |
| 111081  | 6.579           | 324.034          | 3.4126           | .19961       | .03864                                  | .002  |      | .03873  |       | .62                  |
| 111080  | 7.164           | 325.948          | 3.7945           | .35195       | .04108                                  | .001  |      | .04095  |       | 2.26                 |
| 111079  | 7.165           | 325.278          | 3.8195           | .30972       | .04072                                  | .002  |      | .04067  |       | 1.32                 |
| 111078  | 7.165           | 324.867          | 3.8344           | .27028       | .04082                                  | .002  |      | .04081  |       | 1.52                 |
| 111077  | 7.166           | 324.107          | 3.8629           | .23347       | .04053                                  | .002  |      | .04060  |       | .72                  |
| 111076  | 7.759           | 325.651          | 4.2827           | .35213       | .04322                                  | .004  |      | .04314  |       | 2.34                 |
| 111075  | 7.759           | 324.962          | 4.3137           | .30996       | .04305                                  | .002  |      | .04303  |       | 1.79                 |
| 111074  | 7.760           | 324.548          | 4.3331           | .27041       | .04330                                  | .003  |      | .04332  |       | 2.24                 |
| 111073  | 7.760           | 324.105          | 4.3534           | .23350       | .04315                                  | .002  |      | .04321  |       | 1.78                 |
| 111072  | 8.310           | 325.933          | 4.7359           | .39742       | .04532                                  | .002  |      | .04523  |       | 2.28                 |
| 111071  | 8.310           | 325.326          | 4.7674           | .35243       | .04484                                  | .002  |      | .04480  |       | 1.01                 |
| 111070  | 8.313           | 324.847          | 4.7959           | .31008       | .04497                                  | .002  |      | .04497  |       | 1.08                 |
| 111069  | 8.312           | 324.327          | 4.8236           | .27076       | .04524                                  | .002  |      | .04527  |       | 1.46                 |
| 111068  | 8.836           | 325.712          | 5.2101           | .39804       | .04776                                  | .002  |      | .04771  |       | 2.60                 |
| 111067  | 8.835           | 325.236          | 5.2391           | .35320       | .04756                                  | .002  |      | .04754  |       | 1.95                 |
| 111066  | 8.835           | 324.834          | 5.2645           | .31092       | .04766                                  | .002  |      | .04756  |       | 1.94                 |
| 111065  | 8.834           | 324.589          | 5.2799           | .27102       | .04718                                  | .003  |      | .04719  |       | .81                  |
| 111064  | 9.330           | 325.289          | 5.5846           | .44341       | .04931                                  | .002  |      | .04929  |       | .99                  |
| 111063  | 9.330           | 324.702          | 5.7244           | .39605       | .04930                                  | .002  |      | .04930  |       | .60                  |
| 111062  | 9.330           | 324.157          | 5.7643           | .35122       | .04882                                  | .002  |      | .04884  |       | .73                  |
| 111061  | 9.332           | 323.683          | 5.8021           | .30899       | .04938                                  | .002  |      | .04942  |       | .96                  |
| 111060  | 9.889           | 325.670          | 6.1641           | .49412       | .05169                                  | .002  |      | .05167  |       | .93                  |
| 111059  | 9.888           | 325.121          | 6.2070           | .44409       | .05109                                  | .003  |      | .05108  |       | .62                  |
| 111058  | 9.887           | 324.394          | 6.2645           | .39605       | .05151                                  | .002  |      | .05152  |       | .33                  |
| 111057  | 9.888           | 323.863          | 6.3085           | .35109       | .05145                                  | .001  |      | .05147  |       | .86                  |
| 111056  | 10.443          | 325.487          | 6.6947           | .49450       | .05389                                  | .002  |      | .05388  |       | .14                  |
| 111055  | 10.444          | 324.845          | 6.7507           | .44414       | .05398                                  | .002  |      | .05398  |       | .19                  |
| 111054  | 10.444          | 324.448          | 6.7850           | .39677       | .05410                                  | .002  |      | .05410  |       | .29                  |
| 111053  | 10.444          | 323.729          | 6.8499           | .35147       | .05403                                  | .001  |      | .05403  |       | .99                  |
| 111052  | 10.899          | 325.004          | 7.1194           | .49425       | .05580                                  | .002  |      | .05580  |       | .11                  |
| 111051  | 10.900          | 324.557          | 7.1516           | .44390       | .05577                                  | .002  |      | .05577  |       | .44                  |
| 111050  | 10.899          | 324.262          | 7.1874           | .39645       | .05577                                  | .002  |      | .05577  |       | .75                  |
| 111049  | 10.900          | 323.526          | 7.2567           | .35098       | .05532                                  | .002  |      | .05531  |       | 2.18                 |
| 111048  | 11.563          | 325.593          | 7.5722           | .54774       | .05829                                  | .004  |      | .05830  |       | .53                  |
| 111047  | 11.504          | 324.922          | 7.6355           | .49382       | .05768                                  | .002  |      | .05768  |       | -1.03                |
| 111046  | 11.504          | 324.337          | 7.6914           | .44366       | .05724                                  | .002  |      | .05724  |       | -2.27                |
| 111045  | 11.504          | 323.499          | 7.7734           | .35138       | .05771                                  | .002  |      | .05769  |       | -2.10                |
| 111044  | 12.168          | 325.330          | 8.1167           | .54758       | .06015                                  | .002  |      | .06016  |       | .46                  |
| 111043  | 12.169          | 324.910          | 8.1580           | .49443       | .05988                                  | .001  |      | .05988  |       | -1.22                |
| 111042  | 12.169          | 324.299          | 8.2177           | .44391       | .05960                                  | .002  |      | .05979  |       | -1.80                |
| 111041  | 12.170          | 323.530          | 8.2945           | .35151       | .05984                                  | .002  |      | .05982  |       | -2.30                |
| 111040  | 12.836          | 325.701          | 8.5608           | .60233       | .06145                                  | .003  |      | .06146  |       | -1.41                |
| 111039  | 12.837          | 325.140          | 8.6152           | .54700       | .06216                                  | .002  |      | .06216  |       | .62                  |
| 111038  | 12.837          | 324.167          | 8.7098           | .44380       | .06203                                  | .001  |      | .06203  |       | -1.47                |
| 111037  | 12.838          | 323.158          | 8.8099           | .35100       | .06172                                  | .001  |      | .06171  |       | -2.65                |
| 111036  | 13.603          | 325.440          | 9.0829           | .60232       | .06369                                  | .002  |      | .06369  |       | -1.17                |
| 111035  | 13.605          | 324.939          | 9.1315           | .54652       | .06412                                  | .002  |      | .06412  |       | .79                  |
| 111034  | 13.604          | 324.052          | 9.2155           | .44370       | .06399                                  | .001  |      | .06399  |       | -1.51                |
| 111033  | 13.603          | 323.265          | 9.2906           | .35104       | .06410                                  | .002  |      | .06411  |       | -1.79                |
| 111032  | 14.534          | 325.414          | 9.6173           | .60262       | .06656                                  | .002  |      | .06655  |       | .02                  |

|        |        |         |         |        |        |      |        |       |
|--------|--------|---------|---------|--------|--------|------|--------|-------|
| 111031 | 14.534 | 324.905 | 9.5641  | .54677 | .06665 | .002 | .06665 | -.11  |
| 111030 | 14.534 | 324.017 | 9.7454  | .44390 | .06616 | .002 | .06617 | -1.31 |
| 111029 | 14.536 | 323.132 | 9.8276  | .35120 | .06623 | .001 | .06626 | -1.66 |
| 111028 | 15.578 | 325.758 | 10.1042 | .66069 | .06909 | .002 | .06906 | .85   |
| 111027 | 15.576 | 324.759 | 10.1900 | .54674 | .06775 | .002 | .06775 | -1.57 |
| 111026 | 15.578 | 323.851 | 10.2686 | .44372 | .06916 | .002 | .06920 | .08   |
| 111025 | 15.578 | 323.159 | 10.3299 | .35143 | .06868 | .001 | .06874 | -.94  |
| 111024 | 16.844 | 325.683 | 10.6470 | .66062 | .07102 | .001 | .07097 | .32   |
| 111023 | 16.845 | 324.769 | 10.7216 | .54681 | .07122 | .001 | .07122 | .21   |
| 111021 | 16.846 | 323.416 | 10.8318 | .35161 | .07141 | .002 | .07149 | -.10  |
| 111020 | 18.338 | 325.828 | 11.1698 | .66145 | .07358 | .002 | .07350 | .47   |
| 111019 | 18.338 | 324.906 | 11.2389 | .54700 | .07419 | .001 | .07418 | .93   |
| 111018 | 18.337 | 324.156 | 11.2948 | .44405 | .07410 | .002 | .07415 | .51   |
| 111017 | 18.337 | 323.345 | 11.3557 | .35193 | .07380 | .002 | .07392 | -.22  |
| 111016 | 20.107 | 325.552 | 11.7187 | .66146 | .07686 | .001 | .07678 | .99   |
| 111015 | 20.109 | 324.899 | 11.7643 | .54754 | .07682 | .002 | .07681 | .69   |
| 111014 | 20.110 | 324.020 | 11.8254 | .44464 | .07693 | .002 | .07701 | .50   |
| 111013 | 20.111 | 323.109 | 11.8890 | .35153 | .07706 | .002 | .07724 | .31   |
| 111012 | 22.149 | 326.882 | 12.1442 | .78956 | .08054 | .001 | .08029 | 2.19  |
| 111011 | 22.149 | 326.192 | 12.1982 | .66584 | .08078 | .001 | .08061 | 2.23  |
| 111010 | 22.151 | 324.746 | 12.2806 | .54758 | .08015 | .001 | .08016 | .94   |
| 111009 | 22.153 | 323.659 | 12.3503 | .44337 | .07999 | .001 | .08013 | .33   |
| 111008 | 24.473 | 325.365 | 12.6691 | .78669 | .08337 | .001 | .08316 | 1.33  |
| 111007 | 24.473 | 325.427 | 12.7241 | .66207 | .08335 | .001 | .08325 | .98   |
| 111006 | 24.472 | 324.463 | 12.7806 | .54764 | .08333 | .001 | .08338 | .62   |
| 111005 | 24.473 | 323.609 | 12.8310 | .44422 | .08389 | .001 | .08405 | .98   |
| 111004 | 26.953 | 326.052 | 13.1315 | .78653 | .08639 | .002 | .08620 | .76   |
| 111003 | 26.954 | 325.002 | 13.1890 | .66124 | .08645 | .002 | .08642 | .47   |
| 111002 | 26.954 | 324.240 | 13.2306 | .54732 | .08563 | .004 | .08571 | -.74  |
| 111001 | 26.951 | 323.549 | 13.2679 | .44381 | .06663 | .001 | .08692 | .19   |

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