```
isopentane          !short name
78-78-4             !CAS number
2-methylbutane      !full name
(CH3)2CHCH2CH3      !chemical formula {C5H12}
R-601a              !synonym
72.14878            !molecular weight [g/mol]
112.65              !triple point temperature [K]
300.98              !normal boiling point [K]
460.35              !critical temperature [K]
3378.0              !critical pressure [kPa]
3.271               !critical density [mol/L]
0.2274              !acentric factor
0.11                !dipole moment [Debye]
NBP                 !default reference state
8.0                 !version number
1265                !UN Number
br-alkane           !family
3528.83             !heating value (gross or superior) [kJ/mol]
```

```
! compiled by E.W. Lemmon, NIST Physical and Chemical Properties Division, Boulder,
Colorado
! 04-02-98 EWL, original version
! 11-10-98 EWL, add equation of Polt et al. (1992), set as default equation
! 11-13-98 EWL, update format to version 6.1
! 01-24-00  MM, add ECS EOS from Refprop v 5.10
! 01-26-00 EWL, change lower limit of Polt equation to 200 K (verified graphically)
! 03-07-00 EWL, add DDMIX transport properties
! 05-14-01 EWL, add Span equation
! 03-13-03 EWL, replace cp0 equation
! 02-11-04 EWL, finalize equation of state
! 05-28-04 MLH, add TK3
! 08-26-04 AHH, change dipole moment
! 10-13-04 MLH, add family
! 12-05-06 EWL, add melting line
! 01-23-07 MLH, add ECS transport block
! 10-14-09 EWL, replace Kunz FEK equation with Lemmon and Span
! 06-28-10 CKL, add ancillary equations
```

```
#EOS               !equation of state specification
FEQ  short Helmholtz equation of state for isopentane of Lemmon and Span (2006).
?LITERATURE REFERENCE \
?Lemmon, E.W. and Span, R.,
? "Short Fundamental Equations of State for 20 Industrial Fluids,"
? J. Chem. Eng. Data, 51:785-850, 2006.
?\
?The uncertainties are approximately 0.2% in density at temperatures up to
?320 K, 0.5% in density at higher temperatures, 2% in heat capacity above
?250 K, 4% in heat capacity at lower temperatures, 0.1% in the vapor phase
?speed of sound, 3% in the liquid phase speed of sound, and 0.4% in vapor
?pressure at temperatures above 200 K.
?\
!end of info section
112.65             !lower temperature limit [K]
500.0              !upper temperature limit [K]
1000000.0          !upper pressure limit [kPa]
13.3               !maximum density [mol/L]
CPP                                    !pointer to Cp0 model
72.14878                               !molecular weight [g/mol]
112.65                                 !triple point temperature [K]
0.83D-7                                !pressure at triple point [kPa]
10.925                                 !density at triple point [mol/L]
300.98                                 !normal boiling point temperature [K]
0.2274                                 !acentric factor
460.35       3378.0       3.271        !Tc [K], pc [kPa], rhoc [mol/L]
460.35                    3.271        !reducing parameters [K, mol/L]
8.314472                               !gas constant [J/mol-K]
  12  4      0  0      0  0            !# terms, # coeff/term for:  "normal" terms,
critical, spare
  1.0963          0.25    1.0   0      !a(i),t(i),d(i),l(i)
 -3.0402          1.125   1.0   0
  1.0317          1.5     1.0   0
 -0.15410         1.375   2.0   0
  0.11535         0.25    3.0   0
  0.00029809      0.875   7.0   0
  0.39571         0.625   2.0   1
 -0.045881        1.75    5.0   1
 -0.35804         3.625   1.0   2
 -0.10107         3.625   4.0   2
 -0.035484       14.5     3.0   3
  0.018156       12.0     4.0   3
```

```
#AUX               !auxiliary model specification
CPP  ideal gas heat capacity function
?LITERATURE REFERENCE \
?Lemmon, E.W. and Span, R. (see eos for reference)
?\
!end of info section
200.0              !lower temperature limit [K]
1500.0             !upper temperature limit [K]
0.0                !upper pressure limit [kPa]
0.0                !maximum density [mol/L]
1.0          8.314472                  !reducing parameters for T, Cp0
  1  4    0  0    0  0  0              !Nterms:  polynomial, exponential, cosh, sinh
 4.0         0.0
 7.4056     442.0
 9.5772    1109.0
 15.765    2069.0
 12.119    4193.0
```

```
#AUX               !auxiliary model specification
PH0  Helmholtz form for the ideal-gas state
?LITERATURE REFERENCE \
?Lemmon, E.W. and Span, R. (see eos for reference)
?\
!end of info section
200.0              !lower temperature limit [K]
1500.0             !upper temperature limit [K]
0.0                !upper pressure limit [kPa]
0.0                !maximum density [mol/L]
1 2  4  0 0  0 0 0 !Nterms:  ai*log(tau**ti); ai*tau**ti; ai*log(1-exp(bi*tau))
    3.0000000000    1.0000000000   !ai, ti for [ai*log(tau**ti)] terms
    2.5822330405    0.0000000000   !aj, ti for [ai*tau**ti] terms
    1.1609103419    1.0000000000
    7.4056000000   -0.9601390247   !aj, ti for [ai*log(1-exp(ti*tau)] terms
    9.5772000000   -2.4090366026
   15.7650000000   -4.4944064299
   12.1190000000   -9.1082871728
```

```
@EOS               !equation of state specification
FEK  short Helmholtz equation of state for isopentane of Lemmon and Span (2006).
?LITERATURE REFERENCE \
?Lemmon, E.W. and Span, R.,
? "Short Fundamental Equations of State for 20 Industrial Fluids,"
? J. Chem. Eng. Data, 51:785-850, 2006.
?\
!end of info section
112.65             !lower temperature limit [K]
500.0              !upper temperature limit [K]
1000000.0          !upper pressure limit [kPa]
13.3               !maximum density [mol/L]
PHK                                  !pointer to Cp0 model
72.14878                             !molecular weight [g/mol]
112.65                               !triple point temperature [K]
0.83D-7                              !pressure at triple point [kPa]
10.925                               !density at triple point [mol/L]
300.98                               !normal boiling point temperature [K]
0.2274                               !acentric factor
460.35       3378.0       3.271      !Tc [K], pc [kPa], rhoc [mol/L]
460.35                    3.271      !reducing parameters [K, mol/L]
8.314472                             !gas constant [J/mol-K]
  12  4      0  0      0  0          !# terms, # coeff/term for:  "normal" terms,
critical, spare
  1.0963          0.25    1.0   0    !a(i),t(i),d(i),l(i)
 -3.0402          1.125   1.0   0
  1.0317          1.5     1.0   0
 -0.15410         1.375   2.0   0
  0.11535         0.25    3.0   0
  0.00029809      0.875   7.0   0
  0.39571         0.625   2.0   1
 -0.045881        1.75    5.0   1
 -0.35804         3.625   1.0   2
 -0.10107         3.625   4.0   2
 -0.035484       14.5     3.0   3
  0.018156       12.0     4.0   3
```

```
#AUX               !auxiliary model specification
PHK  Helmholtz form for the ideal-gas state for isopentane of Kunz and Wagner (2004).
?LITERATURE REFERENCE \
?Kunz, O., Klimeck, R., Wagner, W., Jaeschke, M.
? "The GERG-2004 Wide-Range Equation of State for Natural Gases
? and Other Mixtures," GERG Technical Monograph 15,
? Fortschritt-Berichte VDI, VDI-Verlag, Düsseldorf, 2007.
?\
!end of info section
0.                 !lower temperature limit [K]
1000.0             !upper temperature limit [K]
0.0                !upper pressure limit [kPa]
0.0                !maximum density [mol/L]
1 2  0  1 2  0 0 0 !Nterms:  ai*log(tau**ti); ai*tau**ti; ai*log(1-exp(bi*tau)); cosh;
sinh
    3.           1.             !ai, ti for [ai*log(tau**ti)] terms
   15.449907693  0.             !aj, ti for [ai*tau**ti] terms
 -101.298172792  1.
  -20.1101       1.977271641    !aj, ti for cosh and sinh terms
   11.7618       0.635392636
   33.1688       4.169371131
```

```
@EOS               !equation of state specification
FE1  Helmholtz equation of state for isopentane of Polt et al. (1992).
?LITERATURE REFERENCE \
?Polt, A., Platzer, B., and Maurer, G.,
? "Parameter der thermischen Zustandsgleichung von Bender fuer 14
? mehratomige reine Stoffe,"
? Chem. Tech. (Leipzig), 44(6):216-224, 1992.
?\
!end of info section
200.0              !lower temperature limit [K]
553.0              !upper temperature limit [K]
7500.0             !upper pressure limit [kPa]
5.2252             !maximum density [mol/L]
CP1                                  !pointer to Cp0 model
72.151                               !molecular weight [g/mol]
112.65                               !triple point temperature [K]
51.964                               !pressure at triple point [kPa]
8.7248                               !density at triple point [mol/L]
301.011                              !normal boiling point temperature [K]
0.2266                               !acentric factor
460.39       3369.6       3.2709179    !Tc [K], pc [kPa], rhoc [mol/L]
460.39                    3.2709179    !reducing parameters [K, mol/L]
8.3143                               !gas constant [J/mol-K]
      22  5      0  0       0  0       !# terms, # coeff/term for:  "normal" terms,
critical, spare
-0.143819012123E+01  3.0     0.0     0  0.0     !a(i),t(i),d(i),l(i)
 0.138298276836E+01  4.0     0.0     0  0.0
-0.203328695121E+00  5.0     0.0     0  0.0
 0.619304204378E+00  0.0     1.0     0  0.0
-0.311353942178E+01  1.0     1.0     0  0.0
 0.316914412369E+01  2.0     1.0     0  0.0
-0.218812895934E+01  3.0     1.0     0  0.0
 0.211230723299E+00  4.0     1.0     0  0.0
 0.765790344231E+00  0.0     2.0     0  0.0
-0.851773312153E+00  1.0     2.0     0  0.0
 0.706192861166E+00  2.0     2.0     0  0.0
-0.165802139239E+00  0.0     3.0     0  0.0
 0.781356542750E-01  1.0     3.0     0  0.0
 0.106516957202E+00  0.0     4.0     0  0.0
-0.205642736936E+00  1.0     4.0     0  0.0
 0.360787537633E-01  1.0     5.0     0  0.0
 0.143819012123E+01  3.0     0.0     2  1.002528
-0.138298276836E+01  4.0     0.0     2  1.002528
 0.203328695121E+00  5.0     0.0     2  1.002528
-0.213463476736E+01  3.0     2.0     2  1.002528
 0.547491842897E+01  4.0     2.0     2  1.002528
-0.335666356499E+01  5.0     2.0     2  1.002528
```

```
#AUX               !auxiliary model specification
CP1  ideal gas heat capacity function
?LITERATURE REFERENCE \
?Polt, A., Platzer, B., and Maurer, G.,
? "Parameter der thermischen Zustandsgleichung von Bender fuer 14
? mehratomige reine Stoffe,"
? Chem. Tech. (Leipzig), 44(6):216-224, 1992.
?\
!end of info section
200.0              !lower temperature limit [K]
553.0              !upper temperature limit [K]
0.0                !upper pressure limit [kPa]
0.0                !maximum density [mol/L]
1.0          72.151                    !reducing parameters for T, Cp0
  5  0    0  0    0  0  0              !Nterms:  polynomial, exponential, cosh, sinh
 0.39650400d+00    0.00
 0.26067800d-02    1.00
 0.93677000d-05    2.00
-0.15828600d-07    3.00
 0.76525000d-11    4.00
```

```
@EOS               !equation of state specification
FE2  Helmholtz equation of state for isopentane of Starling (1973).
?LITERATURE REFERENCE \
?Starling, K.E.,
? "Fluid Thermodynamic Properties for Light Petroleum Systems,"
? Gulf Publishing Company, 1973.
?\
!end of info section
199.82             !lower temperature limit [K]
589.0              !upper temperature limit [K]
55000.0            !upper pressure limit [kPa]
9.9258626          !maximum density [mol/L]
CP2                                  !pointer to Cp0 model
72.147                               !molecular weight [g/mol]
112.65                               !triple point temperature [K]
0.34375                              !pressure at triple point [kPa]
9.9259                               !density at triple point [mol/L]
301.080                              !normal boiling point temperature [K]
0.217                                !acentric factor
460.93889    3330.1680    3.2411118    !Tc [K], pc [kPa], rhoc [mol/L]
460.93889                 3.2411118    !reducing parameters [K, mol/L]
8.3159524                            !gas constant [J/mol-K]
      13  5      0  0       0  0       !# terms, # coeff/term for:  "normal" terms,
critical, spare
 0.179378842786E+01  3.000   0.00    0  0.0     !a(i),t(i),d(i),l(i)
 0.258488286720E+00  0.000   1.00    0  0.0
-0.812072482201E+00  1.000   1.00    0  0.0
-0.753941018871E+00  3.000   1.00    0  0.0
 0.565338153509E-01  4.000   1.00    0  0.0
-0.115706201242E-02  5.000   1.00    0  0.0
 0.406090628523E+00  0.000   2.00    0  0.0
-0.469700474204E+00  1.000   2.00    0  0.0
-0.967480812300E-01  2.000   2.00    0  0.0
 0.958936263943E-02  1.000   5.00    0  0.0
 0.197520012548E-02  2.000   5.00    0  0.0
-0.179378842786E+01  3.000   0.00    2  0.48056842
-0.431019031876E+00  3.000   2.00    2  0.48056842
```

```
#AUX               !auxiliary model specification
CP2  ideal gas heat capacity function
?LITERATURE REFERENCE \
?Starling, K.E.,
? "Fluid Thermodynamic Properties for Light Petroleum Systems,"
? Gulf Publishing Company, 1973.
?\
!end of info section
199.82             !lower temperature limit [K]
589.0              !upper temperature limit [K]
0.0                !upper pressure limit [kPa]
0.0                !maximum density [mol/L]
1.0          4.184                      !reducing parameters for T, Cp0
  1  0    1  1    0  0  0               !Nterms:  polynomial, exponential, cosh, sinh
 21.3861            0.0
    2.8330244d7  -2.0  7.7589900d2  -1.0  -2.0
    2.1524504d8  -2.0  1.7015800d3  -1.0  -2.0
```

```
#TCX               !thermal conductivity model specification
TC1  pure fluid thermal conductivity model
?LITERATURE REFERENCE \
?Coefficients are taken from NIST14, Version 9.08
?\
?Critical enhancement model of Olchowy and Sengers added. Estimated uncertainty, except
near
? the critical region, is 4-6%
?\
!end of info section
112.65             !lower temperature limit [K]
500.0              !upper temperature limit [K]
1000000.0          !upper pressure limit [kPa]
10.94              !maximum density [mol/L]
3   0              !# terms for dilute gas function:  numerator, denominator
341.06    1.0d-3   !reducing parameters for T, tcx
 1.35558587             0.0       !coeff, power in T
-0.152666315743857     -1.0       !coeff, power in T
 1.                   -96.0       !coeff, power in T
6   0              !# terms for background gas function:  numerator, denominator
460.51  3.24   1.0d-3              !reducing parameters for T, rho, tcx
18.6089331038   0.0  1.0  0.0 !coeff, powers of T, rho, exp(rho)
-5.836570612990  0.0    3.0   0.0
 3.489871005290  0.0    4.0   0.0
 0.704467355508 -1.0    4.0   0.0
-0.206501417728  0.0    5.0   0.0
-0.223070394020 -1.0    5.0   0.0
TK3                           !pointer to critical enhancement auxiliary function
```

```
#AUX               !thermal conductivity critical enhancement model
TK3  simplified thermal conductivity critical enhancement of Olchowy and Sengers
?LITERATURE REFERENCE \
?Olchowy, G.A. and Sengers, J.V.,
? "A simplified representation for the thermal conductivity of fluids in the
? critical region,"
? Int. J. Thermophysics, 10:417-426, 1989.
?\
?as applied to CO2 by:
?\
?Vesovic, V., Wakeham, W.A., Olchowy, G.A., Sengers, J.V., Watson, J.T.R.
? and Millat, J.,
? "The transport properties of carbon dioxide,"
? J. Phys. Chem. Ref. Data, 19:763-808, 1990.
?\
!end of info section
112.65             !lower temperature limit [K]
500.0              !upper temperature limit [K]
1000000.0          !upper pressure limit [kPa]
10.94              !maximum density [mol/L]
9  0  0  0         !# terms:  CO2-terms, spare, spare, spare
1.0     1.0     1.0      !reducing par for T, rho, tcx (mW/m-K)
0.630d0            !gnu (universal exponent)
1.239d0            !gamma (universal exponent)
1.03d0             !R0 (universal amplitude)
0.063d0            !z (universal exponent--not used for t.c., only viscosity)
1.00d0             !c (constant in viscosity eqn = 1/[2 - (alpha + gamma)/(2*nu)], but
often set to 1)
0.194d-9           !xi0 (amplitude) [m]
0.0496             !gam0 (amplitude) [-]
 0.9316d-9         !qd_inverse (modified effective cutoff parameter) [m] ; estimated-
not fit to data
 690.525d+00       !tref (reference temperature)=1.5*Tc [K]
```

```
#ETA                !viscosity model specification
VS2  pure fluid viscosity model
?LITERATURE REFERENCE \
?Coefficients are taken from NIST14, Version 9.08
?\
?Estimated uncertainty is 2 %.
?\
!end of info section
112.65              !lower temperature limit [K]
500.0               !upper temperature limit [K]
1000000.0           !upper pressure limit [kPa]
10.94               !maximum density [mol/L]
CI0                 !pointer to collision integral model
0.56232             !Lennard-Jones coefficient sigma [nm]
341.06              !Lennard-Jones coefficient epsilon/kappa [K]
0.2267237           !const
0.5                 !exponent for T
0.0                 !coeff for initial density dependence of viscosity
0.0
0.0
100.0
-4.57981980159405   !coefficients for residual viscosity
-3393.52438560000
 9.38066543240000
 33641.3512000000
 0.15624235969000
 122.900175430000
-20914.7951660000
 3.24
NUL                 !pointer to critical enhancement auxiliary function (none used)
```

```
@TRN               !transport model specification
ECS  Extended Corresponding States model (Nitrogen reference);  predictive mode.
?LITERATURE REFERENCES \
?Klein, S.A., McLinden, M.O., and Laesecke, A.,
? "An improved extended corresponding states method for estimation of
? viscosity of pure refrigerants and mixtures,"
? Int. J. Refrigeration, 20:208-217, 1997.
?\
?McLinden, M.O., Klein, S.A., and Perkins, R.A.,
? "An extended corresponding states model for the thermal conductivity
? of refrigerants and refrigerant mixtures,"
? Int. J. Refrigeration, 23:43-63, 2000.
?\
?Thermal conductivity and viscosity data used in the development of the
? extended corresponding states correlations were taken from:
?\
?Younglove, B.A. and Ely, J.F.,
? "Thermophysical properties of fluids. II. Methane, ethane, propane,
? isobutane and normal butane,"
? J. Phys. Chem. Ref. Data, 16:577-798, 1987.
?\
?the Lennard-Jones parameters are taken from NIST14, v9.08
?\
!end of info section
112.65             !lower temperature limit [K]
500.0              !upper temperature limit [K]
1000000.0          !upper pressure limit [kPa]
10.94              !maximum density [mol/L]
FEQ nitrogen.fld
VS1                !model for reference fluid viscosity
TC1                !model for reference fluid thermal conductivity
1                  !Lennard-Jones flag (0 or 1) (0 => use estimates)
0.56232            !Lennard-Jones coefficient sigma [nm]
341.06             !Lennard-Jones coefficient epsilon/kappa [K]
1  0  0                      !number of terms in f_int term in Eucken correlation,
spare1, spare2
 1.32d-3        0.0  0.0  0.0 !coeff, power of T, spare 1, spare 2
1  0  0                      !number of terms in psi (visc shape factor):
poly,spare1,spare2
 1.0            0.0  0.0  0.0 !coeff, power of Tr, power of Dr, spare
1  0  0                      !number of terms in chi (t.c. shape factor):
poly,spare1,spare2
 1.0            0.0  0.0  0.0 !coeff, power of Tr, power of Dr, spare
NUL                          !pointer to critical enhancement auxiliary function
```

```
#STN        !surface tension specification
ST1  surface tension model; fit of data from Jasper (1972).
?LITERATURE REFERENCE \
?Fit of data from:
?Jasper, J.J.
? "The Surface Tension of Pure Liquid Compounds,"
? J. Phys. Chem. Ref. Data, 1(4):841-1009, 1972.
?\
!end of info section
200.0              !lower temperature limit [K]
460.39             !upper temperature limit [K]
0.0                !(dummy) upper pressure limit
0.0                !(dummy) maximum density
1                          !number of terms in surface tension model
460.39                     !critical temperature used in fit (dummy)
 0.05106     1.21          !sigma0 and n
```

```
#DE         !dielectric constant specification
DE3  dielectric constant model of Harvey and Lemmon (2005).
?LITERATURE REFERENCE \
?Harvey, A.H. and Lemmon, E.W.
? "Method for Estimating the Dielectric Constant of Natural Gas Mixtures,"
? Int. J. Thermophys., 26(1):31-46, 2005.
?\
!end of info section
0.0                !lower temperature limit [K]
2000.0             !upper temperature limit [K]
0.0                !(dummy) upper pressure limit
0.0                !(dummy) maximum density
273.16 1000.0 1.0  !reducing parameters for t and d
1 2 4 0 0 0                          !number of terms in dielectric constant model
 0.26977         -1.    1.    0.    !coef, t exp, d exp
 25.31            0.    1.    0.
 0.025            1.    1.    0.
 108.9            0.    2.    0.
 63.68            1.    2.    0.
-15447.0          0.    3.    0.
-5449.3           1.    3.    0.
```

```
#MLT        !melting line specification
ML1  melting line model of Reeves et al. (1964).
?LITERATURE REFERENCE \
?Reeves, L.E., Scott, G.J., Babb, S.E., Jr.
? "Melting curves of pressure-transmitting fluids,"
? J. Chem. Phys., 40(12):3662-6, 1964.
?\
!end of info section
112.65             !lower temperature limit [K]
2000.0             !upper temperature limit [K]
0.0                !(dummy) upper pressure limit
0.0                !(dummy) maximum density
112.65  0.83d-7    !reducing temperature and pressure
2 0 0 0 0 0                !number of terms in melting line equation
-7127700000000.0       0.          !coefficients and exponents
 7127700000001.0       1.563
```

```
#PS         !vapor pressure equation
PS5  vapor pressure equation of Lemmon (2010).
?LITERATURE REFERENCE \
?Lemmon, C.K. and Lemmon, E.W., 2010.
?\
!end of info section
112.65             !lower temperature limit [K]
460.356            !upper temperature limit [K]
0.0                !(dummy) upper pressure limit
0.0                !(dummy) maximum density
460.356   3378.0   !reducing parameters
5 0 0 0 0 0        !number of terms in equation
-0.72392D+01       1.0
 0.22635D+01       1.5
-0.18237D+01       2.02
-0.29997D+01       4.24
-0.27752D+01      16.1
```

```
#DL         !saturated liquid density equation
DL1  saturated liquid density equation of Lemmon (2010).
?LITERATURE REFERENCE \
?Lemmon, C.K. and Lemmon, E.W., 2010.
?\
!end of info section
112.65              !lower temperature limit [K]
460.356             !upper temperature limit [K]
0.0                 !(dummy) upper pressure limit
0.0                 !(dummy) maximum density
460.356   3.271     !reducing parameters
5 0 0 0 0 0         !number of terms in equation
 0.18367D+02        1.21         !coefficients and exponents
-0.30283D+02        1.41
 0.13557D+02        1.65
-0.90533D+00        0.09
 0.20927D+01        0.164
```

```
#DV         !saturated vapor density equation
DV3  saturated vapor density equation of Lemmon (2010).
?LITERATURE REFERENCE \
?Lemmon, C.K. and Lemmon, E.W., 2010.
?\
!end of info section
112.65             !lower temperature limit [K]
460.356            !upper temperature limit [K]
0.0                !(dummy) upper pressure limit
0.0                !(dummy) maximum density
460.356   3.271    !reducing parameters
6 0 0 0 0 0        !number of terms in equation
-0.38825D+02       0.565         !coefficients and exponents
 0.79040D+02       0.66
-0.48791D+02       0.77
-0.21603D+02       3.25
-0.57218D+02       7.3
-0.15164D+03      16.6
```

```
@END
c        1         2         3         4         5         6         7         8
c2345678901234567890123456789012345678901234567890123456789012345678901234567890
```

```
@EOS               !equation of state specification
ECS  Thermodynamic Extended Corresponding States model w/ T-dependent shape factors.
?LITERATURE REFERENCE \
?Huber, M.L. and Ely, J.F.,
? "A predictive extended corresponding states model for pure and mixed
? refrigerants including an equation of state for R134a,"
? Int. J. Refrigeration, 17:18-31, 1994.\
?\
?ECS parameters fitted by M.L. Huber, NIST\
?\
?Ideal gas heat capacity function is from:  Starling, K.E.,
? "Fluid Thermodynamic Properties for Light Petroleum Systems,"
? Gulf Publishing Company, 1973.
?\
!end of info section
112.65             !lower temperature limit [K]
500.0              !upper temperature limit [K]
1000000.0          !upper pressure limit [kPa]
10.94              !maximum density [mol/L]
CP2                !pointer to Cp0 model
r134a.fld
BWR                !pointer to reference fluid model
0.32668            !acentric factor for R134a used in shape factor correlation
0.259147           !critical compressibility for R134a used in correlation
0.22916021         !acentric factor for fluid used in shape factor correlation
460.4              !critical temperature [K]
3390.              !critical pressure [kPa]
3.26797386         !critical density [mol/L]
2                        !number of temperature coefficients for 'f' shape factor
  0.86242680d-1    0     !alpha1 of Huber & Ely
 -0.56766095d+0    1     !alpha2 of Huber & Ely (log(Tr) term)
0                        !number of density coefficients for 'f' shape factor
2                        !number of temperature coefficients for 'h' shape factor
 -0.51096465d+0    0     !beta1 of Huber & Ely
  0.35608016d+0    1     !beta2 of Huber & Ely (log(Tr) term)
0                        !number of density coefficients for 'h' shape factor
```