

DP-Flow Fluid Data Sheet (FDS)

For custom fluid not in the Rosemount Fluid Database

For technical assistance in filling out this CDS, call an Emerson Process Management representative. Complete this form to define a custom fluid. The H symbol identifies the default value.

NOTE

This form is not required if using the Rosemount Fluid Database.

* = Required Item

★ = Default

Customer Information

Customer:

Contact Name:

Customer Phone:

Customer Fax:

Customer PO:

Fluid Properties

☐ Custom Liquid– Complete Table

☐ Liquid

☐ Custom Gas– Complete Table

☐ Gas

☐ Custom Natural Gas– Complete Table

☐ Natural Gas

For Rosemount Use Only

S.O.:

LI

CHAMP:

DATE:

ADMIN:

TABLE 1. Custom Liquid Worksheet

* = Required Item

★ = Default

Mass Liquid Density and Viscosity Information

1. Fill in the following operating temperatures

- a) _____ min
 b) _____ [$^{1/3}(\text{max} - \text{min})$] + min
 c) _____ [$^{2/3}(\text{max} - \text{min})$] + min
 d) _____ max

2. Transfer the values from the above section to the numbered lines below.

3. Check one Density box, then enter the values for each temperature and the standard density.

4. Check one Viscosity box, then enter values for each temperature. (At least one viscosity value is required).

Density

- ☐ Density in lbs/CuFt
☐ Density in kg/CuM

Viscosity

- ☐ Viscosity in centipoise
☐ Viscosity in lbs/ft sec
☐ Viscosity in pascal sec

Temperature

- a) _____ min
 b) _____ [$^{1/3}(\text{max} - \text{min})$] + min
 c) _____ [$^{2/3}(\text{max} - \text{min})$] + min
 d) _____ max

Temperature

- a) _____ min.
 b) _____ [$^{1/3}(\text{max} - \text{min})$] + min
 c) _____ [$^{2/3}(\text{max} - \text{min})$] + min
 d) _____ max

Base density: _____
 (at base reference conditions specified)

Volumetric Liquid Density and Viscosity Information

* Density at Flow: _____ Units: ☐ lb/ft³ ☐ Kg/m³ ☐ Other:

OR

Specific Gravity at Flow: _____

* Viscosity at Flow: _____ Units: ☐ Centipoise ☐ Other:

TABLE 2. Custom Gas Worksheet

* = Required Item

★ = Default

Mass Gas Compressibility and Viscosity Information

1. Fill in the following operating pressures and operating temperatures

Operating Pressures

- 1) _____ min
 2) _____ [$^{1/3}$ (max - min))] + min
 3) _____ [$^{2/3}$ (max - min))] + min
 4) _____ max

Operating Temperatures

- 5) _____ min
 6) _____ [$^{1/2}$ (max - min))] + min
 7) _____ max
 8) _____ [$^{1/3}$ (max - min))] + min
 9) _____ [$^{2/3}$ (max - min))] + min

2. Transfer the values from the above section to the numbered lines below

3. Check one Density/Compressibility box, then enter the 12 values for each pressure/temperature range.
 4. Check one Viscosity box, then enter values for each temperature. (At least one viscosity value is required).
 5. Enter values for molecular weight, isentropic exponent, and standard density (or standard compressibility).

Density

☐ Density in lbs/CuFt☐ Density in kg/CuM☐ Compressibility

Pressure

Temperature

- | | |
|----------|----------|
| 1) _____ | 5) _____ |
| 2) _____ | 5) _____ |
| 3) _____ | 5) _____ |
| 4) _____ | 5) _____ |
| 1) _____ | 6) _____ |
| 2) _____ | 6) _____ |
| 3) _____ | 6) _____ |
| 4) _____ | 6) _____ |
| 1) _____ | 7) _____ |
| 2) _____ | 7) _____ |
| 3) _____ | 7) _____ |
| 4) _____ | 7) _____ |

Viscosity

☐ Viscosity in centipoise☐ Viscosity in lbs/ft sec☐ Viscosity in pascal sec

Temperature

- 5) _____
 8) _____
 9) _____
 7) _____

Molecular Weight: _____

Isentropic Exponent: _____ 1.4 ★

Standard density/compressibility: _____

Volumetric Gas Compressibility and Viscosity Information* Density at Flow: _____ Units: ☐ lb/ft³ ☐ Kg/m³ ☐ Other: _____

OR

M.W. / Specific Gravity at Flow: _____

Compressibility at Flow: _____

Compressibility at Base: _____

* Viscosity at Flow: _____ Units: ☐ Centipoise ☐ Other: _____ Isentropic Exponent (K): _____ 1.4 ★

TABLE 3. Natural Gas Worksheet

NOTE

The minimum requirement for the Volumetric options is highlighted gray below.

Compressibility Factor Information

Choose desired characterization method and only enter values for that method.

☐ Detail Characterization Method (AGA8 1992)			Mole	Valid Range
CH ₄	Methane mole percent	_____	%	0 – 100 percent
N ₂	Nitrogen mole percent	_____	%	0 – 100 percent
CO ₂	Carbon Dioxide mole percent	_____	%	0 – 100 percent
C ₂ H ₆	Ethane mole percent	_____	%	0 – 100 percent
C ₃ H ₈	Propane mole percent	_____	%	0 – 12 percent
H ₂ O	Water mole percent	_____	%	0 – Dew point
H ₂ S	Hydrogen Sulfide mole percent	_____	%	0 – 100 percent
H ₂	Hydrogen mole percent	_____	%	0 – 100 percent
CO	Carbon monoxide mole percent	_____	%	0 – 3.0 percent
O ₂	Oxygen mole percent	_____	%	0 – 21 percent
C ₄ H ₁₀	i-Butane mole percent	_____	%	0 – 6 percent ⁽¹⁾
C ₄ H ₁₀	n-Butane mole percent	_____	%	0 – 6 percent ⁽¹⁾
C ₅ H ₁₂	i-Pentane mole percent	_____	%	0 – 4 percent ⁽²⁾
C ₅ H ₁₂	n-Pentane mole percent	_____	%	0 – 4 percent
C ₆ H ₁₄	n-Hexane mole percent	_____	%	0 – Dew Point
C ₇ H ₁₈	n-Heptane mole percent	_____	%	0 – Dew Point
C ₈ H ₁₈	n-Octane mole percent	_____	%	0 – Dew Point
C ₉ H ₂₀	n-Nonane mole percent	_____	%	0 – Dew Point
C ₁₀ H ₂₂	n-Decane mole percent	_____	%	0 – Dew Point
He	Helium mole percent	_____	%	0 – 3.0percent
Ar	Argon mole percent	_____	%	0 – 1.0 percent
☐ Gross Characterization Method, Option Code 1 (AGA8 Gr-Hv-CO ₂)			Mole	Valid Range
Specific Gravity at 14.73 psia and 60 °F			_____	0.554 – 0.87
Volumetric gross heating value at base conditions			BTU/SCF	477 – 1150 BTU/SCF
Carbon Dioxide mole percent			%	0 – 30 percent
Hydrogen mole percent			%	0 – 10 percent
Carbon Monoxide mole percent			%	0 – 3.0 percent
☐ Gross Characterization Method, Option Code 2 (AGA8 Gr-CO ₂ -N ₂)			Mole	Valid Range
Specific Gravity at 14.73 psia and 60 °F			%	0.554 – 0.87
Carbon Dioxide mole percent			%	0 – 30 percent
Nitrogen mole percent			%	0 – 50 percent
Hydrogen mole percent			%	0 – 10 percent
Carbon Monoxide mole percent			%	0 – 3.0 percent

(1) The summaries of i-Butane and n-Butane cannot exceed 6 percent.

(2) The summaries of i-Pentane and n-Pentane cannot exceed 4 percent.