

# 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**

<input type="checkbox"/> Custom Liquid- Complete Table	<input type="checkbox"/> Liquid
<input type="checkbox"/> Custom Gas- Complete Table	<input type="checkbox"/> Gas
<input type="checkbox"/> Custom Natural Gas- Complete Table	<input type="checkbox"/> 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/ft<sup>3</sup>  Kg/m<sup>3</sup>  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/ft<sup>3</sup>  Kg/m<sup>3</sup>  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 <sub>4</sub>	Methane mole percent	%	0 – 100 percent
N <sub>2</sub>	Nitrogen mole percent	%	0 – 100 percent
CO <sub>2</sub>	Carbon Dioxide mole percent	%	0 – 100 percent
C <sub>2</sub> H <sub>6</sub>	Ethane mole percent	%	0 – 100 percent
C <sub>3</sub> H <sub>8</sub>	Propane mole percent	%	0 – 12 percent
H <sub>2</sub> O	Water mole percent	%	0 – Dew point
H <sub>2</sub> S	Hydrogen Sulfide mole percent	%	0 – 100 percent
H <sub>2</sub>	Hydrogen mole percent	%	0 – 100 percent
CO	Carbon monoxide mole percent	%	0 – 3.0 percent
O <sub>2</sub>	Oxygen mole percent	%	0 – 21 percent
C <sub>4</sub> H <sub>10</sub>	i-Butane mole percent	%	0 – 6 percent <sup>(1)</sup>
C <sub>4</sub> H <sub>10</sub>	n-Butane mole percent	%	0 – 6 percent <sup>(1)</sup>
C <sub>5</sub> H <sub>12</sub>	i-Pentane mole percent	%	0 – 4 percent <sup>(2)</sup>
C <sub>5</sub> H <sub>12</sub>	n-Pentane mole percent	%	0 – 4 percent
C <sub>6</sub> H <sub>14</sub>	n-Hexane mole percent	%	0 – Dew Point
C <sub>7</sub> H <sub>18</sub>	n-Heptane mole percent	%	0 – Dew Point
C <sub>8</sub> H <sub>18</sub>	n-Octane mole percent	%	0 – Dew Point
C <sub>9</sub> H <sub>20</sub>	n-Nonane mole percent	%	0 – Dew Point
C <sub>10</sub> H <sub>22</sub>	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<sub>2</sub>)

	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<sub>2</sub>-N<sub>2</sub>)

	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.