



# POLYGLYCEROL-3

## Polyglycerol-3 Properties

Polyglycerol-3 is a clear yellowish viscous liquid with an average molecular weight of 250. It is water soluble and is less hygroscopic than glycerol or diglycerol. Its main application is the conversion to esters for use as emulsifiers in food and cosmetics.

### Identification

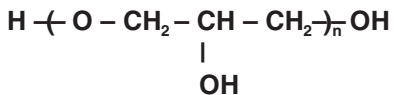
Description	Yellowish viscous liquid
INCI name	Polyglycerin-3
Molecular weight	Average 250

### Composition

Solvay Polyglycerol-3 is characterized by its narrow oligomer distribution, ranging mainly from diglycerol to pentaglycerol with trace amounts of glycerol. Its content of cyclic derivatives is also lower than equivalent products made by the condensation route. (See technical data sheet PGL-02-002 for a description of Solvay Polyglycerol-3 manufacturing process.)

**Chemical structure**

Linear oligomers have the following structure:



where n averages 3

**Specifications**

Solvay Polyglycerol-3 has the following specifications:

Triglycerol (%)	35-55
Diglycerol (%)	15-30
Tetraglycerol (%)	10-25
Pentaglycerol (%)	Max 10
Higher oligomers (%)	Max 5
Water (ppm)	Max 1,000
Chloride (ppm)	Max 100
Color (APHA)	Max 250

**Physical properties**

Property	Unit	Solvay Polyglycerol-3	Solvay Diglycerol	Glycerol
Density	g/mL	1.284	1.276	1.256
Dynamic viscosity	Pa.s	41	13	1
Refractive index	-	1.491	1.487	1.472
Dielectric constant	-	30	34	46
Boiling point	°C	-	205 (1.3 mbar)	290
Heat of Dissolution in water	J/g	-57	-52	-62
Specific heat capacity	J/g.K	2.24	2.28	2.38
Thermal conductivity	W/m.K	0.26	0.28	0.29
Thermal expansion coefficient	°C <sup>-1</sup>	0.00054 (20-60°C)	0.00053 (20-60°C)	0.00052 (20-25°C)
Flash point	°C	260	230	199
Fire point	°C	296	264	204
Autoignition	°C	400	380	370

Results obtained at 25°C, unless otherwise noted

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