

Pluriol[®] A types

® = Registered trademark of BASF

Pluriol[®] A 350 E

Pluriol[®] A 500 E

Pluriol[®] A 520 E

Pluriol[®] A 750 E

Pluriol[®] A 1020 E

Pluriol[®] A 2010 E

Pluriol[®] A 3010 E

Pluriol[®] A 5010 E

Pluriol[®] A 1350 P

Pluriol[®] A 500 PE

Pluriol[®] A 2600 PE Plus

Pluriol[®] A 6000 PE

Pluriol[®] A 10 R

Pluriol[®] A 46 R

Pluriol[®] A 750 R

Pluriol[®] A 3 TE

Pluriol[®] A 4 TE

Pluriol[®] A 16 TE

Alkylpolyalkylene glycols for the chemical and allied industries

Pluriol® A types

Chemical nature

The Pluriol® A types are alkylpolyalkylene glycols. They can be divided up into five main categories.

Pluriol® A....E types	Methylpolyethylene glycol $\text{CH}_3\text{O}(\text{CH}_2\text{CH}_2\text{O})_n\text{H}$
Pluriol® A....P types	Butylpolypropylene glycol $\text{R-O}[\text{CH}_2(\text{CH}_2\text{CHO})]_n\text{H}$
Pluriol® A....PE types	Butylpolyalkylene glycol copolymers $\text{R-O}[(\text{CH}_2\text{CH}_2\text{O})_n(\text{CH}_2(\text{CH}_3)\text{CHO})]_m\text{H}$
Pluriol® A....R types	Allyl polyalkylene glycol, butynediol polyalkylene glycol or tetramethyldecynediol
Pluriol® A 10 R	Allyl alcohol ethoxylate $\text{CH}_2=\text{CHCH}_2\text{O}(\text{CH}_2\text{CH}_2\text{O})_n\text{H}$
Pluriol® A 46 R, Pluriol® A 750 R,	
Pluriol® A....TE types	Polyfunctional polyalkylene glycols

PRD-Nos.*

30044176	Pluriol® A 350 E
30044166	Pluriol® A 500 E
30142045	Pluriol® A 520 E
30059005	Pluriol® A 750 E
30163262	Pluriol® A 1020 E
30285100	Pluriol® A 2010 E
30240056	Pluriol® A 3010 E
30253870	Pluriol® A 5010 E
30044182	Pluriol® A 1350 P
30233503	Pluriol® A 500 PE
30329463	Pluriol® A 2600 PE plus
30241062	Pluriol® A 6000 PE
30044026	Pluriol® A 10 R
30246839	Pluriol® A 46 R
30279546	Pluriol® A 750 R
30156082	Pluriol® A 3 TE
30255094	Pluriol® A 4 TE
30250163	Pluriol® A 16 TE

* BASF's commercial product numbers.

Pluriol® A...E types

The Pluriol® A...E types consist of methylpolyethylene glycol and conform to the general formula $\text{CH}_3\text{O}(\text{CH}_2\text{CH}_2\text{O})_n\text{H}$. Synonyms are polyethylene glycol mono-methylether and methoxypolyethylene glycol. The various products in the range differ according to their degree of polymerization n , and the average molar mass is indicated by the numeric product designation.

Pluriol® A 350 E and A 500 E are clear, colourless liquids at 23 °C.

Products with a molar mass of approx. 750 or greater have a solid consistency at 23 °C. They are supplied either in liquid form in heated road tankers or as cast solids in drums.

The Pluriol® A...E types are easy to dissolve in water, and hard water has no effect on their solubility. The Pluriol® A...E types with a low molar mass are readily soluble in alcohols, but their solubility gradually decreases as their molar mass increases. Most of the Pluriol® A...E types are soluble in aromatic solvents, but they are virtually insoluble in aliphatic hydrocarbons and mineral oils.

Pluriol® A		350 E	500 E	520 E	750 E	1020 E	A 2010 E	A 3010 E	A 5010 E
Appearance (23 °C)		Liquid	Liquid	Liquid	Solid	Solid	Solid	Solid	Solid
Concentration	%	approx. 100	approx. 100	approx. 100	approx. 100	approx. 100	approx. 100	approx. 100	approx. 100
Average molar mass	g/mol	approx. 350	approx. 500	approx. 500	approx. 750	approx. 1000	approx. 2000	approx. 3000	approx. 5000
Hydroxyl number (DIN 53240)	mgKOH/g	approx. 160	approx. 110	approx. 110	approx. 80	approx. 50	approx. 28	approx. 19	approx. 11
pH-value EN 1262, Soln. B		approx. 7	approx. 7	approx. 7	approx. 7	approx. 7	approx. 7	approx. 7	approx. 7
Viscosity (DIN 51562)	mm ² /s	approx. 30 (20 °C)	approx. 60 (20 °C)	approx. 60 (20 °C)	approx. 30 (50 °C)	approx. 60 (50 °C)	approx. 120 (50 °C)	approx. 130 (70 °C)	approx. 170 (100 °C)
Melting point	°C				approx. 35	approx. 40	approx. 50	approx. 60	approx. 63
Diol content (HPTLC*)	%	max. 1	max. 1	max. 1	max. 1	max. 1	max. 1	max. 1	max. 1
Water content (EN 13267)	%	max. 0.1	max. 0.5	max. 0.5	max. 0.5	max. 0.5	max. 0.2	max. 0.2	max. 0.2
Desalted		Yes	Yes	No	No	No	No	No	No

The above information is correct at the time of going to press. It does not necessarily form part of the product specification.

A detailed product specification is available from your local BASF representative.

* HPTLC = Measured by high-performance thin layer chromatography with PEG 1000 as the standard.

Pluriol® A...P types

The Pluriol® A...P types consist of butylpolypropylene glycol. They have the formula $R-O[CH_2(CH_2)CHO]_nH$.

The Pluriol® A...P types are clear, colourless liquids at 23 °C. They are insoluble in water, but they are soluble to a limited extent in mineral oil

Pluriol® A		1350 P
Concentration	%	approx. 100
Average molar mass	g/mol	approx. 13500
Hydroxyl number (DIN 53240)	mgKOH/g	approx. 40
pH (5% emulsion in water)		approx. 7
Viscosity at 50 °C (DIN 51562)	mm ² /s	approx. 50
Water content (EN 13267)	%	max. 0.5
Salt content		Desalted

Pluriol® A...PE types

The Pluriol® A...PE types are alkylpolyalkylene glycol copolymers that conform to the formula $Bu-O[(CH_2CH_2O)(CH_2(CH_2)CHO)]_nH$.

The Pluriol® A...PE types are clear, colourless liquids. They are soluble in water, alcohols and aromatic solvents but they are virtually insoluble in aliphatic hydrocarbons and mineral oils.

Pluriol® A		500 PE	2600 PE Plus	6000 PE
Appearance (23 °C)		Liquid	Liquid	Liquid
Concentration	%	approx. 100	approx. 100	approx. 100
Average molar mass	g/mol	approx. 500	approx. 3000	approx. 6000
Hydroxyl number (DIN 53240)	mgKOH/g	approx. 115	approx. 18	approx. 10
pH-value EN 1890 Soln. B		approx. 7	approx. 7	approx. 7
Viscosity (DIN 51562, 40 °C)	mm ² /s	<10	approx. 220	approx. 1000
Viscosity (DIN 51562, 100 °C)	mm ² /s	–	approx. 42	approx. 145
Viscosity index		approx. 155	approx. 245	approx. 270
Pour point	°C	approx. -50	approx. -40	<-30
Cloud point (50% in water)	°C	approx. 55	approx. 45	approx. 45
Water content (EN 13267)	%	max. 0.1	max. 0.5	max. 0.2
Surface tension (EN 14370, 1 g/l in water))	mN/m	approx. 54	approx. 46	approx. 46
Desalted		Yes	Yes	Yes

*Viscosity classification for industrial lubricants

Pluriol® A...R types

Allyl alcohol alkoxyates

The Pluriol® A 10 R, Pluriol® A 46 R and Pluriol® A 750 R are reactive alkoxyates of allyl alcohol. They contain one hydroxyl group per molecule. These products are supplied in the form of a clear, colourless liquid. They are soluble in water and alcohols, but they are virtually insoluble in hydrocarbons and mineral oil.

Pluriol® A		10 R	46 R	750 R
Appearance (23 °C)		Liquid	Liquid	Liquid
Concentration	%	approx. 100	approx. 100	approx. 100
Average molar mass	g/mol	approx. 450	approx. 1010	approx. 770
Iodine number (Kaufmann)	gJ ₂ /100 g	approx. 50	approx. 25	approx. 31
Hydroxyl number (DIN 53240)	mgKOH/g	approx. 115	approx. 55	approx. 73
pH-value EN 1890, Soln. B		approx. 7	approx. 7	approx. 7
Viscosity (DIN 51562)	mm ² /s	approx. 55 (20 °C)	approx. 140 (20 °C)	approx. 95 (20 °C)
Density (23 °C, DIN 51757, Meth. 1)	g/cm ³	approx. 1.09	approx. 1.07	approx. 1.06
Desalted		Yes	Yes	Yes

Pluriol® A...TE types

The Pluriol® A...TE types are trifunctional polyethylene glycols based on trimethylolpropane or Glycerine. Each molecule contains three hydroxyl groups that are able to participate in a variety of chemical reactions, especially esterification.

Pluriol® A 3 TE is a clear, virtually colourless liquid at room temperature. Pluriol® A 3 TE is distinguished by its very low monoethylene, diethylene and triethylene glycol content.

Pluriol® A		3 TE	4 TE	16 TE
Feedstock alcohol		TMP	Glycerine	Glycerine
Appearance (23 °C)		Liquid	Liquid	Liquid
Degree of ethoxylation	mol	approx. 3	approx. 3	approx. 15
Concentration	%	approx. 100	approx. 100	approx. 100
Hydroxyl number (DIN 53240)	mgKOH/g	approx. 600	approx. 750	approx. 240
pH-value EN 1262, Soln. B		approx. 7	approx. 7	approx. 7
Viscosity (DIN 51562, 20 °C)	mm ² /s	approx. 800	approx. 480	approx. 240
Pour point (DIN 51583)	°C	approx. -20	approx. -30	<-30
Desalted		No	Yes	No

Storage of Pluriol® A types

- a) The Pluriol® A types should be stored indoors in a dry place. Storerooms must not be overheated.
- b) The Pluriol® A types are hygroscopic, and care needs to be taken to exclude moisture. Drums must be resealed each time they are opened.
- c) The storage temperature should not be allowed to fall substantially below 20 °C, and should not be allowed to fall below the melting point if at all possible.
- d) The Pluriol® A types must be blanketed with nitrogen if they are stored in heated tanks (at 50 – 80 °C) to prevent them from coming into contact with air. Constant, gentle stirring helps to prevent them being discoloured as a result of prolonged contact with electrical elements or external heating coils.

Materials

The following materials can be used for tanks and drums:

- a) AISI 321 stainless steel (X6 CrNiTi 1810)
- b) AISI 316 Ti stainless steel (X6CrNiMoTi17122)

Shelf life

The Pluriol® A types have a shelf life of at least two years in their original packaging, provided they are stored properly and drums are kept tightly sealed.

Safety

We know of no ill effects that could have resulted from using the Pluriol® A types for the purpose for which they are intended and from processing them in accordance with current practice.

According to the experience we have gained over many years and other information at our disposal, the Pluriol® A types do not exert any harmful effects on health, provided that they are used properly, due attention is given to the precautions necessary for handling chemicals, and the information and advice given in our safety data sheets are observed.

Labelling

Please refer to latest Safety Data Sheet for detailed information on product safety.

Note

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