Technical Information

May 2013

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WF-No. 1635

Dehydol® 100

® = Registered trademark of BASF

Nonionic surfactants for the detergent and cleaner industry

BASF
The Chemical Company

Chemical character

The Dehydol® 100 are nonionic surfactants. They are alkyl polyethylene glycol ethers made from a C_{12}-C_{18}-alcohol and ethylene oxide.

They conform to the following formula:

$$RO(CH_2CH_2O)_xH$$

R = C_{12}-C_{18} Alkyl
Dehydol® 100: x = 9

The numeric code in the product name indicates in general the degree of ethoxilation.

PRD-No.*

30528452

* BASF's commercial product numbers.

Properties

Dehydol® 100 is a solid paste at room temperature and becomes a clear liquid at approx. 40 °C.

Dehydol® 100	Unit	
Physical form (23 °C)		Paste
Degree of ethoxilation		approx. 9
Concentration	%	approx. 100
Cloud points (EN 1890)*		
Method A	°C	approx. 80
Method B	°C	approx. 65
Method C	°C	approx. 54
Method D	°C	approx. 85
Method E	°C	approx. 85
Average Molar mass (from OH number)	g/mol	approx. 600
pH value (EN 1262, solution A)**		approx. 7
Density (DIN 51757, 40 °C)	g/cm³	approx. 0.988
Dropping point (DIN 51801)	°C	approx. 27
Congealing point (ISO 2207)	°C	approx. 20
Viscosity (EN 12092, 30 °C, Brookfield, 60 rpm)	mPa·s	approx. 350
Hydroxyl number (DIN 53240)	mg KOH/g	approx. 94
HLB value		approx. 13
Flash point (ISO 2592)	°C	approx. 225
Wetting (EN 1772, distilled water, 23 °C, 2 g Soda ash/l)		
0.5 g/l	s	approx. 160
1.0 g/l	s	approx. 90
2.0 g/l	s	approx. 55
Foam volume (EN 12728, 40 °C, 2 g/l water at a hardness of 1.8 mmol Ca-ions/l, after 30 s)	cm³	approx. 400
Surface tension (EN 14370, 1 g/l in distilled water, 23 °C)***	mN/m	approx. 31

* *Cloud point EN 1890:*
Method A: 1 g of surfactant + 100 g of dist. Water
Method B: 1 g of surfactant + 100 g of NaCl solution (c = 50 g/l)
Method C: 1 g of surfactant + 100 g of NaCl solution (c = 100 g/l)
Method D: 5 g of surfactant + 45 g of butyldiglycol solution (c = 250 g/l)
Method E: 5 g of surfactant + 25 g of butyldiglycol solution (c = 250 g/l)

** *The pH of the Dehydol® 100 can decrease during storage, but this does not have any effect on their performance.*

*** *Applying Harkins-Jordan correction.*

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.

Solubility

Details on the solubility of Dehydol® 100 in various solvents are given in the table below.

Solubility of the Dehydol® 100 (10% at 23 °C)

	Dehydol® 100
Distilled water	+
Potable water (2.7 mmol Ca^{2+}-Ions/l)	+
Caustic soda (5%)	+
Hydrochloric acid (5%)	+
Salt solution (5%)	+
Solvent naphtha	○
Ethanol, Isopropanol	+
Aromatic hydrocarbons	+

\+ = *clear solution*
± = *sparingly soluble (insoluble sediment)*
– = *insoluble (phase separation)*
○= *forms an opaque soluble, homogeneous emulsion*

Viscosity

The relationship between viscosity and temperature is always an important point to consider when Dehydol® 100 is stored or shipped. This is shown in the following table (mPa·s, Brookfield LVT):

Viscosity at °C	Dehydol® 100
0	Solid
10	Solid
20	Solid
23	$>10^5$
30	350
40	40
50	30
60	20

We would recommend the preparation of 10 – 25% stock solutions of Dehydol® 100 if it is to be used in the form of very dilute solutions, or if it is to be added to other solutions. This makes it very much easier to dilute it later on.

Dehydol® 100 can form fairly stiff gels at certain concentrations when water is added. The figures below were measured using a Brookfield-Viscosimeter at 23 °C and 60 rpm.

The viscosity of Dehydol® 100 at 23 °C as a function of concentration in water (all values in mPa·s)

Water addition in %	Dehydol® 100
0	$>10^5$
10	250
20	8200
30	$>10^5$
40	$>10^5$
50	$>10^5$
60	$>10^5$
70	3500
80	200
90	150

The numbers reported have to be regarded as maximum values; the values measured immediately after mixing will be lower than the numbers reported.

Storage

a) Dehydol® 100 should be stored in a dry room that is not too hot (see flash point).

b) The product must be stored in moisture-free conditions since it is hygroscopic and immediately absorbs moisture due to its high water solubility. It is therefore recommended that opened containers be closed airtight each time product is removed.

c) The storage temperature for Dehydol® 100 should not fall significantly below 20 °C. The solidification point must also be taken into consideration.

d) Solidified or sedimentation-prone product is to be heated to 50 – 70 °C and homogenised prior to processing. Mix well prior to use.

e) Solidified or sedimentation-prone product in drums is to be gently melted or heated in a heating cabinet or thermal chamber, while ensuring that the temperature does not exceed 70 °C. Mix well prior to use. These instructions also apply to the use of an electric drum heater. Electric immersion heaters are not suitable for heating due to the high local heat load.

f) When storing Dehydol® 100 in heated tanks (at 50 – 60 °C), it must be ensured that it does not come into contact with air (use nitrogen as protective gas). Constant gentle stirring ensures that product residing for longer periods of time at the heating elements or external heating jacket does not overheat and change colour.

Materials

The following materials can be used for tanks and drums:
a) AISI 321 stainless steel (X6CrNiTi1810)
b) AISI 316 Ti stainless steel (X6CrNiMoTi17122)

Shelf life

Provided it is are stored properly and drums are kept tightly sealed, Dehydol® 100 have a shelf life of at least two years in its original packaging.

Safety

We know of no ill effects that could have resulted from using Dehydol® 100 for the purpose for which it is intended and from processing it in accordance with current practices.

According to the experience that we have gained over many years and other information at our disposal, Dehydol® 100 does not exert harmful effects on health, provided it is 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.

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

Note

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