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## Technical Information

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May 2009  
Supersedes issue dated June 2008

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EMV 080658e-00/Page 1 of 4

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® = Registered trademark of BASF SE

# Lutensol® A N types

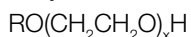
## Lutensol A 7 N

Nonionic surfactant for detergents and cleaners, and for the chemical and allied industries

**Chemical nature**

The Lutensol A N types are nonionic surfactants. They are alkylpolyethylene glycols made from a saturated, 100% linear C<sub>12</sub>C<sub>14</sub> fatty alcohol of vegetable origin.

They conform to the following formula.



$R = C_{12}C_{14}$  fatty alcohol

$x = 7$

**Properties**

Lutensol		A 7 N
Physical form (23 °C)		Clear or cloudy, colourless liquids
Degree of ethoxylation		approx. 7
Concentration	%	approx. 100
Water content (EN 13267)	%	–
Cloud point (EN 1890)*		
Method A	°C	approx. 56
Method B	°C	approx. 41
Method C	°C	approx. 32
Method D	°C	approx. 80
Method E	°C	approx. 79
Molar mass (calculated from OH number)	g/mol	approx. 500
pH (EN 1262, solution B)**		approx. 7
Density (DIN 51757 23 °C)	g/cm <sup>3</sup>	approx. 0.98
Dropping point (DIN 51801)	°C	approx. 19
Congeaing point (ISO 2207)	°C	approx. 13
Viscosity (EN 12092, Brookfield, 60 rpm) 23 °C	mPa·s	approx. 200
Hydroxyl number (DIN 53240)	mg KOH/g	approx. 112
HLB value		approx. 12
Flash point (DIN 51376)	°C	>100
Wetting power (EN 1772, in distilled water at 23 °C, 2 g/l soda ash)		
0.5 g/l	s	approx. 90
1.0 g/l	s	approx. 40
2.0 g/l	s	approx. 10
Foam formation (EN 12728; 40 °C, 2 g/l water containing, 1.8 mmol/l, Ca ions, after 30 s)	cm <sup>3</sup>	approx. 440
Surface tension (EN 14370, 20 °C 1 g/l in distilled water)***	mN/m	approx. 28

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.

\* Cloud point EN 1890:

Method A: 1 g of surfactant + 100 g dist. Water

Method B: 1 g of surfactant + 100 g NaCl solution (c = 50 g/l)

Method C: 1 g of surfactant + 100 g NaCl solution (c = 100 g/l)

Method D: 5 g of surfactant + 45 g butyldiglycol solution (c = 250 g/l)

Method E: 5 g of surfactant + 25 g butyldiglycol solution (c = 250 g/l)

\*\* The pH of the Lutensol A N types can decrease during storage, but this does not have any effect on their performance

\*\*\* Applying Harkins-Jordan correction

**The solubility of 10% solutions at 25 °C**

Lutensol	A 7 N
Distilled water	+
Potable water	+
Caustic soda (5%)	+
Hydrochloric acid (5%)	+
Sodium chloride solution (5%)	+
Petroleum oils	+/o
Ethanol	+
Aromatic solvents	+

+ = *Clear solution*

o = *Cloudy solution*

- = *Insoluble*

**Viscosity (mPa·s) as a function of temperature**

Lutensol	A 7 N
0°C	> 10 <sup>5</sup>
10°C	> 10 <sup>5</sup>
20°C	> 10 <sup>5</sup>
30°C	approx. 50
50°C	approx. 20

**Viscosity (mPa·s) as a function of concentration**

Lutensol	A 7 N
90% Surfactant/10% Water	approx. 100
80% Surfactant/20% Water	> 10 <sup>5</sup>
70% Surfactant/30% Water	approx. 60000
60% Surfactant/40% Water	> 10 <sup>5</sup>
50% Surfactant/50% Water	> 10 <sup>5</sup>
40% Surfactant/60% Water	> 10 <sup>5</sup>
30% Surfactant/70% Water	> 10 <sup>5</sup>
20% Surfactant/80% Water	approx. 60
10% Surfactant/90% Water	approx. 20

**Storage**

- The Lutensol A N types should be stored indoors in their original packaging, which should be kept tightly sealed.
- The Lutensol A N types are hygroscopic and soluble in water, with the result that they absorb moisture very quickly. Drums should be tightly resealed each time material is taken from them.
- The storage temperature should not be allowed to fall substantially below 20 °C, and storerooms must not be overheated.
- The Lutensol A N types can become cloudy if they are stored at low temperatures, but this has no effect on their performance.  
The cloudiness can be dissipated by heating them to 40 – 50 °C.
- Liquid that has solidified or that shows signs of precipitation should be heated to approx. 50 °C before it is processed.
- Drums that have solidified or that have begun to precipitate should be reconstituted by gentle heating, preferably in a heating cabinet. The temperature must not be allowed to exceed 60 °C. This also applies if drums are heated by external electrical elements.  
Internal electrical elements should not be used because of the localized anomalies in temperature that they cause.
- The Lutensol A N types must be blanketed with nitrogen if they are stored in heated tanks (at 50 – 60 °C) to prevent them from coming into contact with air. Gentle, constant 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 316 Ti stainless steel
- b) AISI 321 stainless steel
- c) Iron coated with a phenolic resin

**Shelf life**

Provided they are stored properly and the drums are kept tightly sealed, the Lutensol A N types have a shelf life of at least two years in their original packaging.

**Applications**

The Lutensol A N types belong to a group of nonionic surfactants that have established themselves in the detergents and cleaners industry, and in other branches of industry, by virtue of the high levels of surface activity they display. Their detergency and soil-dispersing capacity are also very pronounced, with the result that they perform particularly well in household, industrial and institutional laundry detergents.

Because they are nonionic, they can be combined with anionic, cationic and nonionic surfactants and auxiliaries. They are fully compatible with alkylaryl sulfonates (Lutensit® TC-ALB types), ether sulfates and other sulfated and sulfonated products. Their versatility enables them to be used in a wide range of detergent and cleaner formulations. Their compatibility with the other nonionic surfactants in our Lutensol, Plurafac® and Pluronic® ranges is also very good.

**Safety**

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

According to the experience that we have gained over many years and other information at our disposal, the Lutensol A N 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.

**PRD-No.\***

Lutensol A 7 N      30043951

\* BASF's commercial product numbers.

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May 2009