Technical Information

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Cremophor® A Grades

Nonionic emulsifiers for the manufacture of cosmetic O/W emulsions.

cosmetic SOLUTIONS

- Hair Care
- Skin Care
- Oral Care

BASF
The Chemical Company

Chemical nature

Nonionic emulsifiers produced by reacting higher saturated fatty alcohols with ethylene oxide. Cremophor® A 6 also contains free stearyl alcohol.

INCI name

Cremophor® A 6: Ceteareth-6 (and) Stearyl Alcohol
Cremophor® A 25: Ceteareth-25

CAS-No.

Cremophor® A 6: 68439-49-6, 112-92-5
Cremophor® A 25: 68439-49-6

Description

Cremophor® A 6 is a whitish waxy substance. Cremophor® A 25 is supplied in the form of free-flowing, non-dusting microbeads.

Identity	**Cremophor® A 6**	**Cremophor® A 25**
Appearance	white wax	white microbeads
Degree of ethoxylation	6	25
HLB value	10-12	15-17

Specification

Cremophor® A 6:

Parameter	Specification Limits	Method
Alkalinity	Acc. to Ph.Eur.	07/0137.00
Saponification value	≤ 3.0 mg/g	07/0130.00
Hydroxyl value	115-134 mg/g	07/0131.00
Iodine value	≤ 1.0 g/100g	07/0129.00
Acid value	≤ 1.0 mg/g	07/0134.00
Water (K. Fischer)	≤ 1.0 g/100g	07/0135.00
Ethylene oxide, ppm	≤ 1.0 mg/kg	07/0132.00
1,4-Dioxane, ppm	≤ 10 mg/kg	07/0132.00
Residue on ignition	≤ 0.2 g/100g	07/0138.00
Organic volatile impurity substances (OVIS)	Acc. to Ph.Eur.	07/0132.00
Residual solvents, class 2	Acc: to Ph. Eur.	07/0193.00
Residual solvents, class 3	Acc. to Ph. Eur.	07/0193.00
Appearance of solution (10% in ethanol)	≥ BY5 / BG5	07/0136.00
Identity Test D	Acc. to Ph. Eur.	07/0151.00
Identity Test E	Acc. to Ph. Eur.	07/0133.00
Heavy metal	≤ 10 ppm	06/0183.00

Cremophor® A 25:

Parameter	Specification Limits	Method
Alkalinity	Acc. to Ph.Eur.	07/0137.00
Saponification value	≤ 3.0 mg/g	07/0130.00
Hydroxyl value	36-45 mg/g	07/0131.00
Iodine value	≤ 1.0 g/100g	07/0129.00
Acid value	≤ 1.0 mg/g	07/0134.00
Water (K. Fischer)	≤ 1.0 g/100g	07/0135.00
pH (10% in water)	5–7	07/0139.00
Ethylene oxide, ppm	≤ 1.0 mg/kg	07/0140.00
1,4-Dioxane, ppm	≤ 10 mg/kg	07/0140.00
Residue on ignition	≤ 0.2 g/100g	07/0138.00
Organic volatile impurity substances (OVIS)	Acc. to Ph.Eur.	07/0140.00
Residual solvents, class 2	Acc. to Ph.Eur.	07/0193.00
Residual solvents, class 3	Acc. to Ph.Eur.	07/0193.00
Appearance of solution (10% in ethanol)	≥ BY5 / BG5	07/0136.00
Identity Test D	Acc. to Ph. Eur.	07/0151.00
Identity Test E	Acc. to Ph. Eur.	07/0133.00
Heavy metal	≤ 10 ppm	06/0183.00

Solubility

The Cremophor® A grades dissolve in water and alcohol to form either a colloid or a clear solution. They are soluble in vegetable and mineral fats and oils.

Miscibility

The warm emulsifiers can be mixed with mineral, vegetable, and synthetic fats and oils, as well as with fatty alcohols, fatty acids, mono- and di-stearates, and with polyethylene glycols.

Resistance to electrolytes

In aqueous solution, the Cremophor® A grades are largely resistant to acids, bases and salts. The presence of these electrolytes does not impair the product's efficiency as emulsifying agent.

Application

The Cremophor® A grades are oil-in-water emulsifiers and are used for the production of ointments, creams, liquid emulsions, gels and other cosmetic preparations. They can be used for oils with a wide range of polarities, preferably in combinations of Cremophor® A 6 and Cremophor® A 25. Creams and lotions can be produced without problems.

If Cremophor® A 25 is used together with cetyl or stearyl alcohol or both, homogeneous ointment and cream bases are obtained that can absorb as much as 90% water.

Cremophor® A 25 is a very efficient protective colloid and can increase the stability of dispersed systems.

In concentrations of 21-30%, Cremophor® A 25 forms gel-like, brushable hydrates with water. The consistency of these gels can be varied from solid to liquid by adding small amounts of Luviskol® K 17.

Processing notes

Conventional methods are suitable for preparing emulsions with Cremophor® A grades. The emulsifying agents are melted at 70-80 °C, together with the oils and fats and the oil-soluble additives. The water phase is also heated to 70-80°C, together with all the water-soluble additives. The oil phase is slowly and thoroughly stirred into the water phase.

The time and temperature required for emulsification and homogenization depend on the type of emulsion, the consistency, and the nature of the additives.

Preservation

Emulsion preparations must be preserved. Preservation must take further additives and production conditions into account.

Stability/Storage

The Cremophor® A grades are stable for 2 years if stored in unopened containers at room temperature and protected from light.

Toxicity

An investigation of raw materials gave no indication of harmful effects to health if the substance is used for the stated applications and concentrations. Due to the large variety of applications and possible combinations with other products, users are responsible for their own safety assessment of their products.

Safety data sheet

The respective safety data sheets are available.

Typical formulations

Sun protection lotion, O/W **No. 53/00135**

	%	Ingredients	Supplier	INCI name
A	2.00	Cremophor® A 6	(1)	Ceteareth-6, Stearyl Alcohol
	2.00	Cremophor® A 25	(1)	Ceteareth-25
	3.00	Imwitor 960 K	(11)	Glyceryl Stearate SE
	0.20	Abil 350	(44)	Dimethicone
	2.00	Uvinul® M 40	(1)	Benzophenone-3
	3.00	Uvinul® MC 80	(1)	Ethylhexyl Methoxycinnamate
	0.50	Amphisol K	(25)	Potassium Cetyl Phosphate
B	2.00	D-Panthenol 50 P	(1)	Panthenol, Propylene Glycol
	2.00	Uvinul® P 25	(1)	PEG-25 PABA
	3.00	1,2 Propylene Glycol Care	(1)	Propylene Glycol
	q.s.	Preservative		
	66.40	Water, dem.		Aqua
C	0.30	Carbopol 934	(6)	Carbomer
	12.00	Miglyol 812	(11)	Caprylic/Capric Triglyceride
D	0.40	Triethanolamine Care	(1)	Triethanolamine
E	1.00	Vitamin E Acetate	(1)	Tocopheryl Acetate
	0.20	D,L-Alpha-Tocopherol	(1)	Tocopherol
	q.s.	Perfume		

Production:

Heat phases A and B separately to approx. 80°C.
Stir phase B into phase A whilst homogenizing and continue homogenizing for a while. Stir in phase C, neutralize with phase D and homogenize again. Cool to about 40°C, add phase E and homogenize again.

Properties:

Viscosity: approx. 2000 mPa·s
pH value: approx. 7.0

Sun protection cream, O/W **No. 53/00046**

	%	Ingredients	Supplier	INCI name
A	12.00	Tegin	(44)	Glyceryl Stearate SE
	1.00	Cremophor® A 6	(1)	Ceteareth-6, Stearyl Alcohol
	1.00	Cremophor® A 25	(1)	Ceteareth-25
	0.30	Cremophor® WO 7	(1)	PEG-7 Hydrogenated Castor Oil
	10.00	Miglyol 812	(11)	Caprylic/Capric Triglyceride
	10.00	Witconol APM	(47)	PPG-3 Myristyl Ether
	3.00	Uvinul® M 40	(1)	Benzophenone-3
B	5.00	Uvinul® P 25	(1)	PEG-25 PABA
	3.00	Glycerin 87%	(20)	Glycerin
	q.s.	Preservative		
	54.70	Water, dem.		Aqua
C	q.s.	Perfume		

Production: Heat phases A and B separately to approx. 80°C. Stir phase B into phase A and homogenize. Cool to about 40°C, add phase C and homogenize again.

Properties: Viscosity: approx. 50000 mPa·s
pH value: approx. 7.5

Body lotion **No. 62/00068**

	%	Ingredients	Supplier	INCI name
A	2.00	Cremophor® A 6	(1)	Ceteareth-6, Stearyl Alcohol
	2.00	Cremophor® A 25	(1)	Ceteareth-25
	1.00	Phytantriol		Phytantriol
	8.00	Paraffin Oil		Mineral Oil
	3.00	Imwitor 960 K	(11)	Glyceryl Stearate SE
	1.00	Lanette O	(27)	Cetearyl Alcohol
	0.50	Abil 350	(44)	Dimethicone
B	4.00	D-Panthenol 50 P	(1)	Panthenol, Propylene Glycol
	3.00	1,2 Propylene Glycol Care	(1)	Propylene Glycol
	q.s.	Preservative		
	65.90	Water, dem.		Aqua
C	0.30	Carbopol 934	(6)	Carbomer
	7.00	Luvitol® EHO	(1)	Cetearyl Ethylhexanoate
D	0.30	Triethanolamine Care	(1)	Triethanolamine
E	2.00	Vitamin E Acetate	(1)	Tocopheryl Acetate
	q.s.	Perfume		

Production: Heat phases A and B separately to about. 80°C. Stir phase B into phase A whilst homogenizing and continue homogenizing for a while. Stir in phase C, neutralize with phase D and homogenize again. Cool to about 40°C, add phase E and homogenize again.

Properties: Viscosity: approx. 6000 mPa·s
pH value: approx. 6.5

Vitamin lotion, Type O/W **No. 62/00073**

	%	Ingredients	Supplier	INCI name
A	2.00	Cremophor® A 6	(1)	Ceteareth-6, Stearyl Alcohol
	2.00	Cremophor® A 25	(1)	Ceteareth-25
	3.00	Cutina GMS	(27)	Glyceryl Stearate
	3.00	Lanette 16	(27)	Cetyl Alcohol
	10.00	Luvitol® EHO	(1)	Cetearyl Ethylhexanoate
	10.00	Paraffin Oil		Mineral Oil
	0.50	Abil 350	(44)	Dimethicone
	0.20	Phytantriol		Phytantriol
B	4.00	1,2-Propylene Glycol Care	(1)	Propylene Glycol
	q.s.	Preservative		
	62.20	Water dem.		Aqua
C	3.00	Vitamin E Acetate	(1)	Tocopheryl Acetate
	0.10	D,L-Alpha-Tocopherol	(1)	Tocopherol
	q.s.	Perfume		

Production: Heat phases A and B separately to about 80°C. Stir phase B into phase A and homogenize. Cool to about 40°C, add phase C and homogenize again.

Properties: Viscosity: 4500 mPa·s Brookfield RVD VII+
pH value: 6.0

Suppliers

1. **BASF Aktiengesellschaft**
67056 Ludwigshafen, Germany
Tel.: (0621) 60-0
Fax: (0621) 60-42525

6. **Noveon, Inc.**
a wholly owned subsidiary of the Lubrizol Corporation
9911 Brecksville Road
OH 44141-3287 Cleveland; USA
Phone: (216) 447-5000
1-(800) 331-1144
Fax: (216) 447-5250

11. **Sasol Germany GmbH - Witten**
Arthur-Imhausen-Str. 92
58453 Witten/Ruhr; Germany
P.O. Box: 1269; 584490; Witten/Ruhr
Phone: +49-2302-925-537
Fax: 49-2302-925-358

20. **Merck KGaA**
Frankfurter Straße 250
4119 Darmstadt; Germany
P.O. Box: 64293
Phone: 49 6151 72-7869
Fax: 49 6151 728333
www.merck.com

25. **Givaudan S.A.** 5 chemin de la Parfumerie
CH-1214 Vernier-Geneve; Schweiz
Phone: 41-22-780-9111
Fax: 41-22-780-9595

27. **Cognis Deutschland GmbH - Care Chemicals**
Henkelstraße 67
40191 Düsseldorf-Holthausen; Germany
P.O. Box: 130164; 40551 Düsseldorf-Holthausen
Phone: 0211/7940-2289
Fax: 0211/798-2016
www.cognis.com

44. **Th. Goldschmidt AG / Degussa Care Chemicals**
Goldschmidtstraße 100
45127 Essen; Germany
P.O. Box: 45116 Essen
Phone: 0201/173-01
Fax: 0201/173-3000
www.goldschmidt.com

47. **Witco Corporation**
1 American Way
CT 06831 Greenwich; USA
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Note

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