

## Technical Information

August 2010  
Supersedes issue dated December 2009

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# Emulan<sup>®</sup> types

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**Emulan A**  
**Emulan A Special**  
**Emulan AF**  
**Emulan AT 9**  
**Emulan EL**  
**Emulan EL 40**  
**Emulan ELH 40**  
**Emulan ELH 410**  
**Emulan ELH 60**

**Emulan OC**  
**Emulan OC Solution**  
**Emulan OG**  
**Emulan OP 25**  
**Emulan OU**  
**Emulan P**  
**Emulan TO 2080**  
**Emulan TO 3070**  
**Emulan TO 4070**  
**Emulan TO 40 Flakes**

Nonionic emulsifiers for the chemical and allied industries

**Chemical nature**

Emulan A	Oleic acid ethoxylate
Emulan A Special	Oleic acid ethoxylate
Emulan AF	Fatty alcohol ethoxylate
Emulan AT 9	Fatty alcohol ethoxylate
Emulan EL	Castor oil ethoxylate
Emulan EL 40	Castor oil ethoxylate
Emulan ELH 40	Castor oil ethoxylate
Emulan ELH 410	Castor oil ethoxylate
Emulan ELH 60	Castor oil ethoxylate
Emulan OC	Fatty alcohol ethoxylate
Emulan OC Solution	Fatty alcohol ethoxylate
Emulan OG	Fatty alcohol ethoxylate
Emulan OP 25	Alkylphenol ethoxylate
Emulan OU	Fatty alcohol ethoxylate
Emulan P	Fatty alcohol ethoxylate
Emulan TO 2080	Fatty alcohol ethoxylate
Emulan TO 3070	Fatty alcohol ethoxylate
Emulan TO 4070	Fatty alcohol ethoxylate
Emulan TO 40 Flakes	Fatty alcohol ethoxylate

**PRD-Nos.\***

30043876	Emulan A
30044181	Emulan A Special
30043889	Emulan AF
30043862	Emulan AT 9
30043883	Emulan EL
30058290	Emulan EL 40
30206316	Emulan ELH 40
30361423	Emulan ELH 410
30206333	Emulan ELH 60
30043858	Emulan OC
30043874	Emulan OC Solution
30043868	Emulan OG
30043900	Emulan OP 25
30043897	Emulan OU
30043898	Emulan P
30043905	Emulan TO 2080
30043928	Emulan TO 3070
30043912	Emulan TO 4070
30278194	Emulan TO 40 Flakes

\* BASF's commercial product numbers.

**Properties**

Emulan P, Emulan OC Solution, Emulan TO 2080, Emulan TO 3070 and Emulan TO 4070 are clear, colourless liquids.

Emulan A and Emulan A Special are clear, yellowish or yellow liquids.

Emulan EL, Emulan EL 40, ELH 40, ELH 410 and Emulan ELH 60 are cloudy, yellow liquids.

Emulan AF, Emulan AT 9, Emulan OC, Emulan OP 25 and Emulan OU are colourless, waxy substances.

Emulan OG is supplied in the form of colourless, waxy micronized beads.

Emulan TO 40 Flakes are supplied in the form of white or yellowish flakes.

The most important properties of the Emulan types are listed in the tables below.

Emulan		A	A Special	AF	AT 9	EL	EL 40	ELH 40	ELH 410
Physical form (23 °C)		Liquid	Liquid	Paste	Paste	Liquid	Liquid	Liquid	Liquid
Concentration	%	approx. 100	approx. 100	approx. 100	approx. 100	approx. 97	approx. 100	approx. 100	approx. 90
Water content (EN 13267)	%	–	–	–	–	approx. 3	–	–	approx. 10
Cloud point (EN 1890)*									
Method A	°C	–	–	–	approx. 68	–	>100	approx. 98	approx. 98
Method B	°C	–	–	–	–	approx. 71	approx. 67	approx. 79	approx. 79
Method C	°C	–	–	–	–	approx. 61	approx. 57	approx. 68	approx. 68
Method D	°C	approx. 58	approx. 65	approx. 69	approx. 86	approx. 77	approx. 72	approx. 82	approx. 82
Method E	°C	approx. 52	approx. 59	approx. 65	approx. 88	approx. 79	approx. 72	approx. 85	approx. 85
pH** (EN 1262, Solution B)		approx. 7	approx. 7	approx. 7	approx. 7	approx. 7	approx. 7	approx. 7	approx. 7
Density (DIN 51757, Method A)	g/cm <sup>3</sup>								
(23 °C)		approx. 0.98	approx. 1.0			approx. 1.07	approx. 1.04	approx. 1.04	approx. 1.07
(60 °C)			–	approx. 0.90	approx. 0.95	approx. 0.97			
Bulk density (ISO 697)	g/l	–	–	–	–	–	–	–	–
Dropping point (DIN 51801)	°C	<5	<5	approx. 43	approx. 33	approx. 16	approx. 20	approx. 28	<5
Congeaing point (ISO 2207)	°C	<5	<5	approx. 38	approx. 31	approx. 8	approx. 5	approx. 10	<5
Solidification point (DIN 51583)	°C	approx. -20	approx. -8	–	–	–	approx. 2	–	–
Melting point	°C	–	–	approx. 44	approx. 33	–	–	–	–
Viscosity (EN 12092, Brookfield LVT)	mPa·s								
23 °C		approx. 70	approx. 100			approx. 1500	approx. 600	approx. 800	approx. 1200
60 °C			–	approx. 15	approx. 20				
Acid value (ISO 2114)	mg KOH/g	approx. 0	approx. 0	approx. 0	approx. 0	approx. 1	approx. 0.5	approx. 1	approx. 1
Saponification value (ISO 3681)	mg KOH/g	approx. 110	approx. 95	approx. 0	approx. 0	approx. 60	approx. 68	approx. 55	approx. 50
Surface tension*** (EN 14370, 1 g/l surfactant in distilled water, 23 °C)	mN/m	approx. 33	approx. 33	approx. 39	approx. 35	approx. 40	approx. 41	approx. 41	approx. 41
Hydrophilic-lipophilic balance (W.C. Griffin)		approx. 9	approx. 11	approx. 11	approx. 13	approx. 14	approx. 13	approx. 13	approx. 13

Emulan		ELH 60	OC	OC Solution	OG	OP 25
Physical form (23 °C)		Liquid	Paste	Liquid	Powder	Paste
Concentration	%	approx. 90	approx. 100	approx. 30	approx. 100	approx. 100
Water content (EN 13267)	%	approx. 10	–	approx. 70	–	–
Cloud point (EN 1890)*						
Method A	°C	>100	–	–	–	–
Method B	°C	approx. 85	approx. 90	approx. 90	approx. 92	approx. 88
Method C	°C	approx. 71	approx. 76	approx. 76	approx. 80	approx. 74
Method D	°C	approx. 83	approx. 93	approx. 93	approx. 97	approx. 92
Method E	°C	approx. 86	approx. 96	approx. 96	–	approx. 93
pH** (EN 1262, Solution B)		approx. 7	approx. 7	approx. 7	approx. 7	approx. 7
Density (DIN 51757, Method A)	g/cm <sup>3</sup>					
(23 °C)		approx. 1.07	–	approx. 1.00	–	–
(60 °C)		–	approx. 1.02	–	–	approx. 1.06
Bulk density (ISO 697)	g/l	–	–	–	approx. 600	–
Dropping point (DIN 51801)	°C	approx. 22	approx. 50	<5	approx. 52	approx. 37
Congeaing point (ISO 2207)	°C	approx. 8	approx. 35	<5	approx. 34	approx. 26
Solidification point (DIN 51583)	°C	approx. 11	–	approx. 0	–	–
Melting point	°C	–	approx. 52	–	approx. 50	approx. 37
Viscosity (EN 12092, Brookfield LVT)	mPa·s					
23 °C		approx. 8000	–	approx. 200	–	–
60 °C		–	approx. 60	–	approx. 80	approx. 100
Acid value (ISO 2114)	mg KOH/g	approx. 0.5	approx. 0	approx. 0	approx. 0	approx. 0
Saponification value (ISO 3681)	mg KOH/g	approx. 43	approx. 0	approx. 0	approx. 0	approx. 0
Surface tension*** (EN 14370, 1 g/l surfactant in distilled water, 23 °C)	mN/m	approx. 43	approx. 39	approx. 39	approx. 40	approx. 39
Hydrophilic-lipophilic balance (W.C. Griffin)		approx. 15	approx. 17	approx. 17	approx. 17	approx. 17

Emulan		OU	P	TO 2080	TO 3070	TO 4070	TO 40 Flakes
Physical form (23 °C)		Paste	Liquid	Liquid	Liquid	Liquid	Flakes
Concentration	%	approx. 100	approx. 100	approx. 80	approx. 70	approx. 70	approx. 100
Water content (EN 13267)	%	–	–	approx. 20	approx. 30	approx. 30	–
Cloud point (EN 1890)*							
Method A	°C	–	–	–	–	–	–
Method B	°C	approx. 90	–	approx. 93	approx. 92	approx. 92	approx. 92
Method C	°C	approx. 76	–	approx. 78	approx. 78	approx. 78	approx. 78
Method D	°C	approx. 94	approx. 58	approx. 93	approx. 93	approx. 94	approx. 94
Method E	°C	approx. 97	approx. 52	approx. 93	approx. 93	approx. 94	approx. 94
pH** (EN 1262, Solution B)		approx. 7	approx. 7	approx. 7	approx. 7	approx. 7	approx. 7
Density (DIN 51757, Method A)	g/cm <sup>3</sup>						
(23 °C)		approx. 1.02	approx. 0.92	approx. 1.07	approx. 1.08	approx. 1.09	–
(60 °C)		–	–	–	–	–	approx. 1.06
Bulk density (ISO 697)	g/l	–	–	–	–	–	approx. 500
Dropping point (DIN 51801)	°C	approx. 50	approx. 5	approx. 12	approx. 12	approx. 15	approx. 48
Congeaing point (ISO 2207)	°C	approx. 35	<5	<5	<5	approx. 7	approx. 34
Solidification point (DIN 51583)	°C	–	approx. 6	approx. 3	approx. 0	approx. 2	–
Melting point	°C	approx. 52	–	–	–	–	approx. 44
Viscosity (EN 12092, Brookfield LVT)	mPa·s						
23 °C		–	approx. 30	approx. 400	approx. 1500	approx. 1400	–
60 °C		approx. 60	–	–	–	–	approx. 120
Acid value (ISO 2114)	mg KOH/g	approx. 0	approx. 0	approx. 0	approx. 0	approx. 0	approx. 0
Saponification value (ISO 3681)	mg KOH/g	approx. 0	approx. 0	approx. 0	approx. 0	approx. 0	approx. 0
Surface tension*** (EN 14370, 1 g/l surfactant in distilled water, 23 °C)	mN/m	approx. 39	approx. 28	approx. 35	approx. 39	approx. 41	approx. 44
Hydrophilic-lipophilic balance (W.C. Griffin)		approx. 17	approx. 7	approx. 16	approx. 17	approx. 18	approx. 18

The above figures reflect the situation at the time of going to press and do not necessarily form part of the product specification.

The specified test characteristics are set out in the relevant product specification, which can be requested from the local BASF representative.

\* Cloud point according to EN 1890:

Method A: 1 g of surfactant + 100 g of distilled 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 diethylene glycol monobutyl ether solution (c = 250 g/l)

Method E: 5 g of surfactant + 25 g of diethylene glycol monobutyl ether solution (c = 250 g/l)

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

\*\*\*Applying Harkins-Jordan correction.

## Solubility of 10% solutions of Emulan types at 23 °C

Emulan	A	A Special	AF	AT 9	EL	EL 40	ELH 40	ELH 410	ELH 60	OC
Distilled water	-	-	-	-	+	+	+	+	+	+
Potable water	-	-	-	-	+	+	+	+	+	+
Caustic soda, 5%	-	-	-	-	+	-	-	-	+	+
Hydrochloric acid, 5%	-	-	-	-	+	+	•	•	+	+
Sodium chloride, 5%	-	-	-	-	+	+	+	+	+	+
Mineral oil	+	•	•	-	-/•	-	-	-	-	-
Ethanol	+	+	+	+	+	+	+	+	+	•
Aromatic hydrocarbons	+	+	+	+	•	+	+	+	-	+

Emulan	OC Solution	OG	OP 25	OU	P	TO 2080	TO 3070	TO 4070	TO 40 Flakes
Distilled water	+	+	+	+	-	+	+	+	+
Potable water	+	+	+	+	-	+	+	+	+
Caustic soda, 5%	+	+	+	+	-	+	+	+	+
Hydrochloric acid, 5%	+	+	+	+	-	+	+	+	+
Sodium chloride, 5%	+	+	+	+	-	+	+	+	+
Mineral oil	-	-	-/•	-	+	-	-	-	-
Ethanol	•	-	+	•	+	+	+	+	+
Aromatic hydrocarbons	+	+	+	+	•	-	-	-	-

The above table shows the solubility of 10% solutions of the various Emulan types at 23 °C.

+ = Clear solution  
 • = Cloudy solution  
 - = Insoluble

For transportation and storage of the Emulan types, it is important to know how their viscosity changes with temperature. The tables below show this relationship.

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

Emulan	A	A Special	AF	AT 9	EL	EL 40	ELH 40	ELH 410	ELH 60	OC
0 °C	approx. 290	approx. 350	>10 <sup>5</sup>	>10 <sup>5</sup>	>10 <sup>5</sup>	>10 <sup>5</sup>	solid	solid	Solid	>10 <sup>5</sup>
10 °C	approx. 160	approx. 180	>10 <sup>5</sup>	>10 <sup>5</sup>	>10 <sup>5</sup>	10 <sup>5</sup>	solid	>10 <sup>5</sup>	>10 <sup>5</sup>	>10 <sup>5</sup>
20 °C	approx. 100	approx. 110	>10 <sup>5</sup>	>10 <sup>5</sup>	approx. 5000	approx. 7300	approx. 7500	approx. 2000	>10 <sup>5</sup>	>10 <sup>5</sup>
30 °C	approx. 50	approx. 65	>10 <sup>5</sup>	approx. 3500	approx. 1000	approx. 660	approx. 550	approx. 400	approx. 1400	>10 <sup>5</sup>
40 °C	approx. 30	approx. 45	approx. 3600	approx. 90	approx. 600	approx. 360	approx. 200	approx. 190	approx. 750	approx. 800
50 °C	approx. 25	approx. 30	approx. 20	approx. 40	approx. 200	approx. 190	approx. 100	approx. 90	approx. 430	approx. 100
60 °C	approx. 15	approx. 20	approx. 15	approx. 20	approx. 150	approx. 120	approx. 70	approx. 60	approx. 280	approx. 60



Emulan	OC Solution	OG	OP 25	OU	P	TO 2080	TO 3070	TO 4070	TO 40
<b>Water content</b>									
0%	approx. 200	>10 <sup>5</sup>	approx. 100	>10 <sup>5</sup>	approx. 30	approx. 400	approx. 1500	approx. 1400	fest
10%	approx. 60	>10 <sup>5</sup>	approx. 30	>10 <sup>5</sup>	approx. 50	>10 <sup>5</sup>	>10 <sup>5</sup>	approx. 2300	>10 <sup>5</sup>
20%	approx. 25	>10 <sup>5</sup>	approx. 400	>10 <sup>5</sup>	approx. 200	>10 <sup>5</sup>	>10 <sup>5</sup>	approx. 1800	approx. 100
30%	<10	approx. 15000	approx. 500	>10 <sup>5</sup>	>10 <sup>5</sup>	>10 <sup>5</sup>	>10 <sup>5</sup>	approx. 1500	approx. 2200
40%	<10	approx. 13000	approx. 900	>10 <sup>5</sup>	>10 <sup>5</sup>	>10 <sup>5</sup>	>10 <sup>5</sup>	approx. 800	>10 <sup>5</sup>
50%	<10	approx. 2000	>10 <sup>5</sup>	>10 <sup>5</sup>	>10 <sup>5</sup>	>10 <sup>5</sup>	>10 <sup>5</sup>	approx. 400	>10 <sup>5</sup>
60%	<10	approx. 250	>10 <sup>5</sup>	approx. 1000	>10 <sup>5</sup>	>10 <sup>5</sup>	approx. 160	approx. 150	>10 <sup>5</sup>
70%	<10	approx. 50	approx. 100	approx. 200	>10 <sup>5</sup>	approx. 70	approx. 80	approx. 50	>10 <sup>5</sup>
80%	<10	approx. 35	<10	approx. 60	approx. 3000	approx. 20	approx. 20	approx. 20	approx. 50
90%	<10	approx. 10	<10	approx. 25	approx. 60	approx. 10	approx. 10	<10	<20

## Storage

- The Emulan types should be stored in their original packaging, which should be kept tightly sealed, in a dry place. Storerooms must not be overheated.
- Avoid a humid environment, because the products are hygroscopic and, being readily soluble in water, absorb moisture immediately. For this reason, it is advisable to reseal drums tightly without delay each time material is taken from them.
- The congealing points of the Emulan types must be taken into consideration when determining the storage temperature.
- The Emulan types can become slightly cloudy if they are stored at low temperatures, but this has no effect on the product properties. The cloudiness can be reversed at 50 – 60 °C.
- Product that has solidified or that shows signs of precipitation should be heated to 50 – 70 °C and homogenized before use.
- Product in drums that has solidified or that shows signs of precipitation should be melted or heated gently in a heating cabinet or heated chamber; the temperature should not exceed 50 – 70 °C, depending on the particular congealing or melting point. This also applies if electric drum heaters are used. Internal electrical elements are unsuitable for heating owing to the high heat load in some places.
- If the Emulan types are stored in heated tanks at 50 – 70 °C (depending on the particular congealing or melting point), care must be taken to ensure that they do not come into contact with air (blanket with nitrogen). Constant gentle stirring prevents them from overheating or becoming discoloured as a result of prolonged contact with the heating elements or external heating jacket.
- Emulan OG and TO 40 Flakes should be stored in a dry place at a temperature not exceeding 25 – 30 °C.

## Materials

Tanks made of the following materials are suitable for the storage of Emulan types:

- V2A stainless steel (1.4541 or X6 CrNiTi 1810)
- V4A stainless steel (1.4571 or X10 CrNiMoTi 1810)



**Shelf life**

The Emulan types have a shelf-life of at least 24 months, provided they are stored in their original packaging and kept tightly sealed.

**Applications**

The Emulan types are emulsifiers for the preparation of stable oil-in-water and water-in-oil emulsions.

Some of the Emulan types are also suitable for making or stabilizing water-based dispersions, such as wax, polymer and rubber dispersions, which are used for impregnating, lubricating, cleaning, polishing, protecting surfaces or preventing dust.

The choice of the right emulsifier is extremely important for producing a stable emulsion. Its emulsifying performance and range of applications are determined by the nature of the hydrophilic and lipophilic parts of its molecules. Oil-in-water emulsions are usually obtained if the hydrophilic character predominates and water-in-oil emulsions if the lipophilic character is predominant.

The ratio between the two parts of the molecule can be expressed in figures by the hydrophilic-lipophilic balance (HLB), as defined by W.C. Griffin (Journ. Soc. Cosm. Chemists, 1 [1949], 311; 5 [1954], 249). The hydrophilic-lipophilic balance is thus an aid to choosing the right emulsifier, though it can only be a guideline value in practice. Of crucial importance are practical trials in the particular application system, preceded by appropriate series of emulsification tests in the laboratory.

The usual way for adapting to practical conditions and achieving modified properties is to combine two or more different emulsifiers. Here, the Emulan types have the advantage that they are compatible to a large extent not only with each other, but also with anionic and cationic emulsifiers as well as with auxiliary agents and additives. Furthermore, emulsions made with Emulan types are largely unaffected by dirt and, within certain limits, electrolytes.

The nonionic Emulan types are very compatible with other nonionic, anionic and cationic emulsifiers, surfactants and auxiliary agents. The performance of nonionic emulsifiers can be affected by tannin and a few other groups of substances, e.g. those of a phenolic nature and inorganic complex acids, e.g. phosphotungstic acid and its salts.

**Emulan A, Emulan A Special**

Emulsifying power  
(O/W type)

Mainly used to emulsify mineral oils, fatty oils and mixtures thereof as well as silicone oils. In combination with other emulsifiers also for solid fats, aromatic compounds, chlorinated hydrocarbons and other high-polarity substances. Especially for emulsion concentrates for spontaneous emulsification.

Main application

Drilling oils, rolling oils, drawing oils, release agents, wash-removable oils, cold cleaners, metal polishes and grinding emulsions.

Level of addition

5 – 15%, in relation to the substance to be emulsified.

**Emulan AF**

Emulsifying power  
(O/W type)

Paraffin wax, paraffin oils, mineral oils and silicone oils. Can also be used in combination with other emulsifiers to emulsify fatty oils, solid fats, ester waxes, beeswax, chlorinated hydrocarbons and aromatic compounds.

Main application

Emulsions of silicone oils, paraffin oils and mineral oils. Good resistance to creaming.

Level of addition

5 – 20%, in relation to the substance to be emulsified.

**Emulan AT 9**

Emulsifying power (O/W type)	Paraffin wax, paraffin oil, fatty oils, fats and silicone oils.
Main application	Especially for highly concentrated emulsions.
Level of addition	5 – 20%, in relation to the substance to be emulsified.

**Emulan EL, EL 40 , ELH 40 , ELH 410, ELH 60**

Emulsifying power (O/W type)	Mainly used to emulsify fatty acids, fatty oils, solid fats, ester waxes, many organic solvents and organic substances dissolved therein, e. g. polymers. Also suitable for silicone oils and naphthenic mineral oils. Effective solubilizer for cyclic compounds and dyes.
Main application	All types of emulsions prepared from fatty acids, fatty oils, organic solvents and organic substances dissolved therein, e. g. polymers, resins and dyes. Can be used as emulsion concentrate in combination with calcium dodecylbenzenesulphonate to make crop protection agents.
Level of addition	5 – 10%, in relation to the substance to be emulsified.

**Emulan OP 25**

Emulsifying power (O/W type)	Mainly used to emulsify acrylic esters, styrene and vinyl compounds; also for ester waxes and fatty acids.
Main application	<p>Polymer dispersions. Can be used alone or in combination with anionic emulsifiers such as Emulphor® OPS 25 or with cationic emulsifiers in emulsion polymerization processes for many different types of monomer, such as acrylic esters, styrene and vinyl compounds.</p> <p>Also used to emulsify ester waxes and fatty acids.</p> <p>Can also be used to stabilize emulsions, dispersions and latices against thermal, mechanical and chemical effects.</p>
Level of addition	<p>1 – 5% in emulsion polymerization processes, in relation to the monomers being emulsified.</p> <p>5 – 15% for emulsifying waxes and fatty acids, in relation to the substance to be emulsified.</p> <p>0.5 – 5% for stabilizing disperse systems.</p>

**Emulan OC**

Emulsifying power (O/W type)	Used to emulsify waxes, especially montanic ester waxes and carnauba wax types, fatty acids, many organic solvents, e. g. aromatic compounds, and organic substances dissolved therein.
Main application	Used to manufacture dry-bright wax emulsions with high gloss. Emulan OC can be used to emulsify both the usual ester waxes and also blends of these waxes with paraffin wax, microcrystalline waxes, oxidized microcrystalline waxes, emulsifiable polyethylene waxes (Luwax® OA Pastilles) and Fischer-Tropsch waxes.
Level of addition	5 – 10%, in relation to the wax, depending on the type of wax or wax blend.

**Emulan OG, Emulan OU**

Emulsifying power  
(O/W type)

Used to emulsify fatty acids, waxes, many organic solvents, e.g. aromatic compounds, and organic substances such as polymers dissolved therein.

Main application

Dispersing solids formed by chemical reaction, precipitation or coagulation. Dispersing dyes during milling and grinding processes in water or mixtures of water and organic solvents or in dry milling (edge-runner milled dyes), together with protective colloids.

Can also be used to stabilize emulsions and dispersions against physical and chemical effects which would otherwise have an adverse effect on the stability. Examples include concentrated hydraulic fluids and corrosion inhibitors when they are diluted with extremely hard water; synthetic resin latices when pigments, fillers and additives are incorporated; in cases of soiling or exposure to heat.

Level of addition

As an emulsifier 5 – 15%, in relation to the substance to be emulsified.

As a dispersant and stabilizer 1 – 10%, in relation to the substance to be dispersed or stabilized.

**Emulan P**

Emulsifying power  
(O/W type)

Mainly used to emulsify paraffin oils and other mineral oil fractions such as kerosene, spindle oil and white spirit.

Can also be used in combination with other emulsifiers to emulsify fatty oils and aromatic solvents.

Main application

Emulsions of highly refined mineral oil fractions, e.g. paraffin oil, wash-removable oils, cold cleaners and other solvent-based cleaning agents. Especially for emulsion concentrates for spontaneous emulsification.

Level of addition

5 – 10%, in relation to the substance to be emulsified.

**Emulan TO types**

Emulsifying power  
(O/W type)

Mainly used to emulsify acrylic esters, styrene and vinyl compounds.

Main application

Polymer dispersions. Can be used alone or in combination with anionic surfactants in emulsion polymerization processes for many different types of monomer, such as acrylic esters, vinyl compounds and styrene.

Substitutes for highly ethoxylated alkylphenol derivatives.

Level of addition

1 – 5% in emulsion polymerization processes, in relation to the monomers to be emulsified.

**Safety**

We know of no ill effects that could have resulted from using Emulan 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, Emulan 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 consult the current Safety Data Sheets for information on the classification and labelling of our products and other information relevant to safety.

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August 2010