


# **MONTANE™**

## ***Sorbitan esters***

- 
- **Non-ionic lipophilic emulsifiers**
  - **FDA approval**
  - **No labelling**

## 1 - DESCRIPTION

**MONTANE** products are non-ionic lipophilic surfactants.

**MONTANE** are obtained by esterification of sorbitol with a fatty acid.

During reaction, sorbitol is modified into sorbitan through anhydriation. The fatty acid reacts with one or several free hydroxyl groups, depending on the degree of esterification selected.

The **MONTANE** are derived from monoester, sesquiester or triester of the following acids : lauric, palmitic, stearic, isostearic and oleic.

The **MONTANE** emulsifiers are low coloured products, with a faint odour and low impurities content.

The **MONTANE** grades have an HLB (Hydrophilic / Lipophilic Balance) range from 1.8 to 8.6.

TRADE NAME	CHEMICAL NAME	HLB
MONTANE 20	Sorbitan monolaurate	8.6
MONTANE 40	Sorbitan monopalmitate	6.7
MONTANE 60	Sorbitan monostearate	4.7
MONTANE 65	Sorbitan tristearate	2.1
MONTANE 70	Sorbitan isostearate	4.3
MONTANE 80	Sorbitan monooleate	4.3
MONTANE 83	Sorbitan sesquioleate	3.7
MONTANE 85	Sorbitan trioleate	1.8

## 2 - GENERAL PROPERTIES

- **MONTANE** are non-ionic lipophilic emulsifiers.
- They are compatible with all surfactants.

### 3 - APPLICATIONS

The most stable emulsions always require combination of **MONTANE** with a hydrophilic emulsifier such as **MONTANOX** (polysorbate).

The selection of a **MONTANE** appropriate to an emulsion problem can only be made by experimental approach.

The selection process is described in the MONTANOX documentation.

**MONTANE** used with hydrophilic emulsifiers, such as **MONTANOX** (polysorbate) provide very stable oil/water emulsion : the combination of **MONTANE 60** and **MONTANOX 60** or **MONTANE 80** and **MONTANOX 80** are particularly recommended.

**MONTANE 83** used alone or in association with **MONTANOX 85** provides water/oil emulsions.

**MONTANE** are introduced into the oily phase. This oily phase and the aqueous phase, which contains one or several hydrophilic emulsifiers, are heated separately at nearly equal temperatures prior to emulsification.

The aqueous phase is incorporated into the oily phase while stirring. The emulsion thus produced is then cooled, under stirring and homogenised if necessary.

### 4 - TOXICOLOGICAL DATA

**MONTANE** have **perfect innocuity**.

	<b>ORAL TOXICITY LD 50 (rats)</b>	<b>SKIN IRRITATION (concentration %)</b>	<b>EYE IRRITATION (concentration %)</b>
MONTANE 20	41 g/Kg	Non irritating (50%)	Non irritating (30%)
MONTANE 40	> 16 g/Kg	Non irritating (50%)	Non irritating (30%)
MONTANE 60	> 16 g/Kg	Mildly irritating (100%)	Non irritating (100%)
MONTANE 65	> 10 g/Kg	Non irritating (30%)	Non irritating (30%)
MONTANE 80	> 25 g/Kg	Non irritating (100%)	Non irritating (100%)
MONTANE 83	> 16 g/Kg	Non irritating (100%)	Non irritating (100%)
MONTANE 85	> 40 g/Kg	Mildly irritating (100%)	Non irritating (75%)

## 5 - TYPICAL VALUE

	<b>MONTANE 20</b>	<b>MONTANE 40</b>	<b>MONTANE 60</b>	<b>MONTANE 65</b>	<b>MONTANE 70</b>	<b>MONTANE 80</b>	<b>MONTANE 83</b>	<b>MONTANE 85</b>
Appearance at 20°C	Liquid	Flakes	Flakes	Liquid	Liquid	Liquid	Liquid	Liquid
Melting point °C	-	≈ 49°	≈ 55°	≈ 54°				
Viscosity 25°C mPas	4.500 approx	-	-	-	≈ 4 000	≈ 1.000	≈ 1.000	≈ 200
pH	6-7	6.5-7.5	6.5-7.5	6.5-8	7-9	6.5-7.5	6.5-8	7
Iodine value						62-76	80-95	
Acid value	6 max	5 max	10 max	15 max	6 max	6 max	6 max	15 max
Saponification value	158-170	140-150	147-157	176-188	135-150	149-160	150-166	170-190
Hydroxyl value	330-358	275-305	235-260	65-80	235-265	193-209	180-205	65-80
Water content %	1 max	1.5 max	1.5 max	1 max	1 max	1 max	1 max	0.2 max
Colour	5 max	5 max	5 max	5 max	2-7	6 max	7 max	10 max
Peroxide value	2 max	0.5 max	2 max	-	5 max	5 max	3 max	3 max
Ash	0.25 max	0.25 max	0.25 max	0.25 max	0,25 max	0.25 max	0.25 max	0.1 max
<i>Solubilities at 25°C and 10%</i>								
Water	D	I - Gel	I	I	I	I	I	I
Ethanol	S	SH (50°)	SH (50°)	I	I	S	S	SH (50°)
Mineral oil	D	SCH	SCH	D		S	S	S
Vegetale Oil	D	SCH	SCH (50°)	D		S	S	S

**S = Soluble**

**SH = Soluble upon heating**

**SCH = Soluble upon heating, clouding**

**D = Dispersible**

**I = Insoluble**

## **Nota**

The analytical specifications warranted are only those mentioned on the certificate of analysis supplied with each delivery of the product.

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