Edition: BP 2025 (Ph. Eur. 11.6 update)

Macrogol Oleyl Ether

General Notices

(Ph. Eur. monograph 1125)

Action and use

Non-ionic surfactant.

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DEFINITION

Mixture of ethers of mixed macrogols with linear fatty alcohols, mainly oleyl alcohol. It contains a variable quantity of free oleyl alcohol and it may contain free macrogols. The number of moles of ethylene oxide reacted per mole of oleyl alcohol is 2 to 20 (nominal value). A suitable antioxidant may be added.

CHARACTERS

— Macrogol oleyl ether with 2 to 5 units of ethylene oxide per molecule.

Appearance

Yellow liquid.

Solubility

Practically insoluble in water, soluble in ethanol (96 per cent), practically insoluble in light petroleum.

— Macrogol oleyl ether with 10 to 20 units of ethylene oxide per molecule.

Appearance

Yellowish-white waxy mass.

Solubility

Dispersible or soluble in water, soluble in ethanol (96 per cent), practically insoluble in light petroleum.

IDENTIFICATION

A. Hydroxyl value (see Tests).
B. Iodine value (see Tests).
C. Saponification value (see Tests).
D. Dissolve or disperse 0.1 g in 5 mL of *alcohol R*, add 2 mL of *water R*, 10 mL of *dilute hydrochloric acid R*, 10 mL of *barium chloride solution R1* and 10 mL of a 100 g/L solution of *phosphomolybdic acid R*. A precipitate is formed.

TESTS

Appearance of solution

The solution is not more intensely coloured than reference solution BY_5 (*2.2.2, Method II*).

Dissolve 5.0 g in *alcohol R* and dilute to 50 mL with the same solvent.

Alkalinity

Dissolve 2.0 g in a hot mixture of 10 mL of *water R* and 10 mL of *alcohol R*. Add 0.1 mL of *bromothymol blue solution R1*. Not more than 0.5 mL of *0.1 M hydrochloric acid* is required to change the colour of the indicator to yellow.

Acid value (*2.5.1*)

Maximum 1.0, determined on 5.0 g.

Hydroxyl value (*2.5.3, Method A*)

See Table 1125.-1.

Iodine value (*2.5.4*)

See Table 1125.-1.

Table 1125.-1

Ethylene oxide units per molecule (nominal value)	Hydroxyl value	Iodine value
2	158 - 178	48 - 74*
5	110 - 125	48 - 56
10	75 - 95	24 - 38
20	40 - 65	14 - 24

* This broad range is needed since 2 different grades of oleyl alcohol may be used for the synthesis. The iodine value does not differ by more than 5 units from the nominal iodine value and is within the limits stated in the table.

Peroxide value (*2.5.5*)

Maximum 10.0.

Saponification value (*2.5.6*)

Maximum 3.0.

Ethylene oxide and dioxan (*2.4.25*)

Maximum 1 ppm of ethylene oxide and 10 ppm of dioxan.

Water (*2.5.12*)

Maximum 3.0 per cent, determined on 2.00 g.

Total ash (*2.4.16*)

Maximum 0.2 per cent, determined on 2.0 g.

STORAGE

In an airtight container, protected from light.

LABELLING

The label states:

— the number of moles of ethylene oxide reacted per mole of oleyl alcohol (nominal value),

— the nominal iodine value for the type with 2 units of ethylene oxide per molecule.

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