

Polysorbate 60

Polyoxyethylene (20) Sorbitan Monostearate; Sorbitan,
Monooctadecanoate; Poly(oxy-1,2-ethanediyl) Derivative

CAS: [9005-67-8]

DESCRIPTION

Polysorbate 60 is a mixture of stearate and palmitate partial esters of sorbitol and sorbitol anhydrides condensed with approximately 20 moles of ethylene oxide (C₂H₄O) for each mole of sorbitol and its mono- and dianhydrides. It is a lemon- to orange-colored, oily liquid or semi-gel having a faint characteristic odor and a warm, somewhat bitter taste. It is soluble in water, in aniline, in ethyl acetate, and in toluene but is insoluble in mineral oil and in vegetable oils.

Functional Use in Foods Emulsifier; stabilizer.

REQUIREMENTS

Identification

A. To 5 mL of a 1 in 20 solution add 5 mL of 1 *N* sodium hydroxide, boil for a few min, cool, and acidify with 2.7 *N* hydrochloric acid. The solution is strongly opalescent.

B. A mixture of 60 volumes of Polysorbate 60 with 40 volumes of water at 25° or below yields a gelatinous mass.

Assay for Oxyethylene Content Not less than 65.0% and not more than 69.5% of oxyethylene groups ($-\text{C}_2\text{H}_4\text{O}-$), equivalent to between 97.0% and 103.0% of Polysorbate 60, calculated on the anhydrous basis.

Acid Value Not more than 2.

1,4-Dioxane Not more than 10 mg/kg.

Heavy Metals (as Pb) Not more than 10 mg/kg.

Hydroxyl Value Between 81 and 96.

Residue on Ignition Not more than 0.25%.

Saponification Value Between 45 and 55.

Stearic and Palmitic Acids Between 21.5 and 26.0 g/100 g of sample.

Water Not more than 3.0%.

TESTS

Assay for Oxyethylene Content Weigh accurately a 65-mg sample, and proceed as directed in the general method, Appendix VII.

Acid Value Determine as directed for *Acid Value, Method II*, under *Fats and Related Substances*, Appendix VII.

1,4-Dioxane Determine as directed under *1,4-Dioxane* in the monograph for *Polysorbate 20*.

Heavy Metals Prepare and test a 2-g sample as directed in *Method II* under the *Heavy Metals Test*, Appendix IIIB, using 20 μg of lead ion (Pb) in the control (*Solution A*).

Hydroxyl Value Determine as directed under *Method II* in the general method, Appendix VII.

Residue on Ignition Ignite 5 g as directed in the general method, Appendix IIC.

Saponification Value Determine as directed in the general method, Appendix VII, using about 8 g, accurately weighed.

Stearic and Palmitic Acids Isolate the fatty acids as directed under *Lauric Acid* in the monograph for *Polysorbate 20*, and determine the weight of the acids. The product so obtained has an *Acid Value* between 200 and 212 (*Method I*, Appendix VII) and a *Solidification Point*, Appendix IIB, not below 52°.

Water Determine by the *Karl Fischer Titrimetric Method*, Appendix IIB.

Packaging and Storage Store in tight containers.