MINERAL OIL (MEDIUM VISCOSITY)

Prepared at the 77th JECFA (2013), published in FAO JECFA Monographs 14 (2013), superseding specifications prepared at the 76th JECFA and published in FAO JECFA Monographs 13 (2012). An ADI of 0-10 mg/kg bw was established at the 59th JECFA for mineral oil (medium viscosity).

SYNONYMS Liquid paraffin, liquid petrolatum, food grade mineral oil, white mineral oil, INS No. 905e

DEFINITION A mixture of highly refined paraffinic and naphthenic liquid hydrocarbons with boiling point above 200°; obtained from mineral crude oils through various refining steps (eg. distillation, extraction and crystallisation) and subsequent purification by acid and/or catalytic hydrotreatment; may contain antioxidants approved for food use.

DESCRIPTION Colourless, transparent and odourless oily liquid, without fluorescence in daylight.

FUNCTIONAL USES Release agent, glazing agent

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4) Insoluble in water, sparingly soluble in ethanol, soluble in ether

Burning Burns with bright flame and with paraffin-like characteristic smell

PURITY

Viscosity, 100° (Vol. 4) 8.5-11 mm^2/s

Carbon number at 5% distillation point (Vol. 4) Not less than 5% of molecules with a carbon number less than 25 Boiling point at the 5% distillation point higher than 391°.

Average molecular weight (Vol. 4) 480-500

Acidity or alkalinity To 10 ml of the sample add 20 ml of boiling water and shake vigorously for 1 min. Separate the aqueous layer and filter. To 10 ml of the filtrate, add 0.1 ml of phenolphthalein solution TS. Not more than 0.1 ml of 0.1N sodium hydroxide or 0.1N HCl is required to change the colour.

Readily carbonizable substances Place 5 ml of the sample in a glass-stoppered test tube that has previously been rinsed with hot water, acetone, heptane and finally acetone. Add 5 ml of sulfuric acid TS, and heat in a boiling water bath for 10 min. After the test tube has been in the bath for 30 sec, remove it quickly, and while holding the stopper in place, give three vigorous vertical shakes over an amplitude of about 10 cm. Repeat every 30 sec. Do not keep the test tube out of the bath longer than 3 sec for each shaking period. At the end of 10 min from the time when first placed in the water bath, remove the test tube. The sample remains unchanged in colour, and the acid does not become darker than standard colour

produced by mixing in a similar test tube 3 ml of ferric chloride TSC, 1.5 ml of cobaltous chloride TSC, and 0.5 ml of cupric sulfate TSC, this mixture being overlaid with 5 ml of mineral oil.

Polycyclic aromatic hydrocarbons

Use hexane, dimethyl sulfoxide and trimethylpentane in quality specified for ultraviolet spectrometry.
Transfer 25.0 ml of sample to a 125 ml separating funnel with unlubricated ground-glass parts (stopper, stopcock). Add 25 ml of hexane which has been previously shaken twice with one-fifth its volume of dimethyl sulfoxide. Mix and add 5.0 ml of dimethyl sulfoxide. Shake vigorously for 1 min and allow to stand until two clear layers are formed. Transfer the lower layer to a second separating funnel, add 2 ml of hexane and shake the mixture vigorously. Allow to stand until two clear layers are formed. Separate the lower layer and measure its absorbance between 260 nm and 420 nm, against a blank solution of dimethyl sulfoxide obtained by vigorously shaking 5.0 ml of dimethyl sulfoxide with 25 ml of hexane for 1 min. Prepare a reference solution in trimethylpentane containing 7.0 mg of naphthalene per litre and measure the absorbance of the solution at the maximum at 275 nm, using trimethylpentane as the compensation liquid. The absorbance of the test solution, in the wavelength region between 260 nm and 420 nm, shall not exceed one-third that of the reference solution at 275 nm.

Solid paraffins

Dry a suitable quantity of the substance to be examined by heating at 100° for 2 h and cool in a desiccator over concentrated sulfuric acid. Place in a glass tube with an internal diameter of about 25 mm, close the tube and immerse in a bath of iced water. After 4 h the liquid is sufficiently clear for a black line, 0.5 mm wide against a white background held vertically behind the tube, to be easily seen.

Lead (Vol. 4)

Not more than 1 mg/kg
Determine using an AAS (Electrothermal atomization technique) appropriate to the specified level. The selection of sample size and method of sample preparation may be based on principles of methods described in Volume 4 (under “General Methods, Metallic Impurities”).