

1. Reagents and Test Solutions

Magnesia TS Weigh 5.5 g of magnesium chloride and 7 g of ammonium chloride, mix, dissolve in 65 ml of water. Add 35 ml of ammonia TS, allow to stand for several days, tightly stoppered, and filter. If not clear, filter the solution before use.

Magnesium Acetate $\text{Mg}(\text{CH}_3\text{COO})_2 \cdot 4\text{H}_2\text{O}$ [Magnesium Acetate (Tetrahydrate) (Magnesium Acetate), Guaranteed]

Magnesium Carbonate Use magnesium carbonate specified under the Japanese Pharmacopoeia.

Magnesium Chloride $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$ (Guaranteed)

Magnesium Dust Mg (Guaranteed)

Magnesium Nitrate $\text{Mg}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ (Guaranteed)

Magnesium Oxide MgO (Guaranteed)

Magnesium Sulfate $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ (Guaranteed)

Magnesium Sulfate TS Weigh 11 g of magnesium sulfate, add 50 ml of water, dissolve and to make 100 ml (0.5mol/l).

Maltol for Assay Weigh 1 g of "Maltol," 10 ml of water and 1 g of active carbon, transfer into a beaker, dissolve by heating at 95 °C, and filter while hot. Cool the filtrate to 10 °C, and collect the formed crystals by filtration. Repeat the procedure for the recrystallized product, and dry the resulting twice-recrystallized product under reduced pressure of not more than 1.3 kPa at 40 °C for 8 hours.

Manganese Sulfate $\text{MnSO}_4 \cdot 4 - 5\text{H}_2\text{O}$ (Guaranteed)

Manganese Sulfate TS Weigh 90 g of manganese sulfate, dissolve in about 200 ml of water, about 175 ml of phosphoric acid, and about 350 ml of diluted sulfuric acid (1 : 2), and add water to make 1,000 ml.

D-Mannitol $\text{C}_6\text{H}_{14}\text{O}_6$ (Guaranteed)

D-Mannitol for Assay Weigh 40 g of "D-Mannitol," transfer into a 300-ml flask, add 100 ml of water, dissolve while warming in a water bath, and cool to 40 °C. Transfer into a 300-ml beaker, add 20 mg of "D-Mannitol," mix, and allow to stand for 24 hours. Filter the formed crystals by suction, and wash with 10 ml of cold water. Dry the resultant recrystallized product under reduced pressure at 105 °C for 4 hours.

Meat Extract Use beef extract or other extracts of the same grade.

Meat Peptone See Peptone, Meat.

Mercuric Acetate See Mercury () Acetate.

Mercuric Acetate TS for Nonaqueous Titration Weigh 6 g of mercury () acetate, and dissolve in acetic acid for nonaqueous titration to make 100 ml.

Mercuric Bromide See Mercury () Bromide.

Mercuric Bromide Test Paper Weigh 5 g of mercury() bromide, add 100 ml of ethanol, and dissolve while heating gently. Cut a filter paper for chromatography into strips of about 3 cm in width and about 10 cm in length, immerse it in the solution, and allow to stand in a dark place for about 1 hour, while shaking occasionally. Remove the filter paper from the solution, dry spontaneously in a dark place while keeping it horizontal, and cut into a circle about 18 mm in diameter. Store in a brown, tightly-stoppered bottle in a dark place. Avoid direct contact with fingers.

Mercuric Chloride See Mercury() Chloride.

Mercuric Nitrate TS Weigh 40 g of yellow mercuric oxide, and dissolve in 32 ml of nitric acid and 15 ml of water. Store in a light-resistant bottle with a ground stopper. (4 mol/l)

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Mercuric Oxide, Yellow See Mercury() Oxide, Yellow.

Mercuric Potassium Iodide TS Weigh 1.358 g of mercury() chloride, dissolve in 60 ml of water, and add 10 ml of potassium iodide solution (1 2), water to make 100 ml.

Mercuric Sulfate TS Weigh 5 g of yellow mercuric oxide, add 40 ml of water, and add slowly 20 ml of sulfuric acid while stirring. Add 40 ml of water, and dissolve by stirring well.

Mercury() Acetate $\text{Hg}(\text{CH}_3\text{COO})_2$ [Mercury() Acetate, Guaranteed]

Mercury() Bromide HgBr_2 [Mercury() Bromide, Guaranteed]

Mercury() Chloride HgCl_2 (Guaranteed)

Mercury() Oxide, Yellow HgO [Mercury() Oxide (Yellow), Guaranteed]

Metaphosphoric Acid HPO_3 (Guaranteed)

Methanol CH_3OH [Methanol (Methyl Alcohol), Guaranteed]

Methanol, Decarbonyl group Add 5 g of Girard reagent P and 0.2 ml of hydrochloric acid to 500 ml of methanol, and reflux for 2 hours. Distill using a short Vigreux column. Store in a glass bottle, stoppered tightly.

Methanol for Water Determination CH_3OH Use methanol containing not more than 0.05% w/v of water. Otherwise, use methanol prepared by the following manner: Measure 1,000 ml of methanol, add 5 g of magnesium dust, and heat in a flask equipped with a reflux condenser with a water absorption tube (calcium chloride for water determination). Add 0.1 g of mercuric chloride to accelerate the reaction if necessary. After the generation of the gas stops, distill protecting from moisture. Store, protecting from moisture.

Methanolic 35% Potassium Hydroxide TS See 35% Potassium Hydroxide TS, Methanolic.

Methanolic 5% Sodium Hydroxide TS See 5% Sodium Hydroxide TS, Methanolic.

4-Methoxy Benzaldehyde $\text{C}_8\text{H}_8\text{O}_2$ 4-Methoxy Benzaldehyde occurs as a colorless to light-yellow clear liquids. It is soluble in ethanol and diethyl ether, but almost insoluble in water.

Content: Not less than 97.0 %.

Specific gravity: $d_4^{20} = 1.123 - 1.129$.

Assay: Weigh accurately about 0.8 g of 4-Methoxy Benzaldehyde, add exactly 7.5 ml of hydroxylamine TS, shake well, and allow to stand for 30 minutes. Titrate with 0.5 mol/l hydrochloric acid (indicator: 3 drops of bromophenol blue TS) until the color of the solution changes from blue to yellow-green through green. Perform a blank test in the same manner.

1 ml of 0.5 mol/l hydrochloric acid = 68.08 mg of $\text{C}_8\text{H}_8\text{O}_2$.

4-Methoxy Benzaldehyde - Sulfuric acid TS To 9 ml of ethanol, add 0.5 ml of 4-methoxy benzaldehyde and 0.5 ml of sulfuric acid, and mix well.

Methyl Benzoate $\text{C}_6\text{H}_5\text{COOCH}_3$ Methyl Benzoate is a colorless clear liquid.

Refractive index: $n_D^{20} = 1.515 - 1.520$.

Specific gravity: 1.087 - 1.095.

Purity: Dissolve 0.1 ml of methyl benzoate in the mobile phase directed under the Assay for "Thiamine Hydrochloride," and make to 50 ml. Measure 10 μl of this solution, perform Liquid Chromatography using the operating conditions directed under the Assay for "Thiamine Hydrochloride." Measure the area of each peak which appears within about twice the retention time of the main peak, using the automatic integration method, and calculate the content of methyl benzoate. The content is not less than 99.0%.

3-Methyl-1-butanol $(\text{CH}_3)_2\text{CHCH}_2\text{CH}_2\text{OH}$ (Guaranteed)

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- 3-Methyl-butyl Acetate** $\text{CH}_3\text{COOC}_5\text{H}_{11}$ (Guaranteed)
- Methyl Ethyl Ketone** $\text{CH}_3\text{COC}_2\text{H}_5$ (2-Butanone, Guaranteed)
- 4-Methyl Imidazol** $\text{C}_4\text{H}_6\text{N}_2$ 4-Methyl Imidazol occurs as light-yellow crystals or a crystalline powder, having slightly characteristic odor. It is soluble in water, ethanol, acetone and chloroform. It is hygroscopic.
Contents: 4-Methyl Imidazol contains not less than 97.0% of 4-methyl imidazol ($\text{C}_4\text{H}_6\text{N}_2$).
Boiling point: 262 - 264 .
Melting point: 46 - 48 .
Assay: Weigh accurately about 0.2 g of 4-Methyl Imidazol, add 50 ml of acetic acid for nonaqueous titration and dissolve. Titrate with 0.1 mol/l perchloric acid. Use a potentiometer for confirming the end point. Perform a blank test in the same manner, and make any necessary correction.
1 ml of 0.1 mol/l perchloric acid = 8.211 mg of $\text{C}_4\text{H}_6\text{N}_2$.
- Methyl Isobutyl Ketone** $\text{CH}_3\text{COCH}_2\text{CH}(\text{CH}_3)_2$ [4-Methyl-2-pentanone (Methyl Isobutyl Ketone), Guaranteed]
- Methyl Orange** $\text{C}_{14}\text{H}_{14}\text{N}_3\text{NaO}_3\text{S}$ (Guaranteed)
- Methyl Orange TS** Weigh 0.1 g of methyl orange, and dissolve in 100 ml of water. Filter if necessary.
- Methyl Orange - Indigo Carmine TS** Weigh 0.1 g of methyl orange and 0.25 g of indigo carmine, mix, and add water to make 100 ml. Store protecting from light, and use it within 15 days after preparation.
- Methyl Orange - Xylene Cyanol FF TS** Weigh 1 g of methyl orange and 1.4 g of xylene cyanol FF, mix, and dissolve in 500 ml of 50% (vol) ethanol.
- 2-Methyl-1-propanol** $(\text{CH}_3)_2\text{CHCH}_2\text{OH}$ (Guaranteed)
- Methyl Red** $\text{C}_{15}\text{H}_{15}\text{N}_3\text{O}_2$ (Guaranteed)
- Methyl Red TS** Weigh 0.1 g of methyl red, and dissolve in 100 ml of ethanol. Filter if necessary.
- Methyl Red - Methylene Blue Mixture TS** Mix equal volumes of methyl red TS and methylene blue TS.
- Methyl Salicylate** $\text{HOC}_6\text{H}_4\text{COOCH}_3$ (Extra grade)
- Methyl Silicone Polymer** Use methyl silicone polymer of high quality prepared for Gas Chromatography.
- Methylene Blue** $\text{C}_{16}\text{H}_{18}\text{ClN}_3\text{S} \cdot n\text{H}_2\text{O}$ [Methylene Blue (Dihydrate, Trihydrate, Tetrahydrate), Guaranteed]
- Methylene Blue TS** Weigh 0.1 g of methylene blue, and dissolve in 100 ml of ethanol. Filter if necessary.
- Methylene Blue TS, Dilute** Measure 1 ml of methylene blue TS, and add water to make 100 ml.
- Microcrystalline Cellulose for Thin-Layer Chromatography** Use microcrystalline cellulose prepared for Thin-Layer Chromatography.
- Milk Casein** See Casein, Milk.
- Molybdenum() Oxide** MoO_3 (Extra grade)
- Molybdenum Trioxide** See Molybdenum() Oxide.
- Monopotassium Phosphate** KH_2PO_4 (Potassium Dihydrogen Phosphate, Guaranteed)
- Monopotassium Phosphate for pH Determination** KH_2PO_4 (Potassium Dihydrogen Phosphate for pH determination)
- Monosodium L-Aspartate** $\text{C}_4\text{H}_6\text{NNaO}_4 \cdot \text{H}_2\text{O}$ " Monosodium L-Aspartate "
- Monosodium Phosphate** $\text{NaH}_2\text{PO}_4 \cdot 2\text{H}_2\text{O}$ (Sodium Dihydrogen Phosphate Dihydrate, Guaranteed)

1. Reagents and Test Solutions

Monosodium Salt of 4-Amino-1-Naphthalenesulfonic Acid

$C_{10}H_8NNaO_3S \cdot 4H_2O$ Monosodium Salt of 4-Amino-1-Naphthalenesulfonic Acid occurs as a white to whitish powder.

Specific absorbance:

$E_{1\text{ cm}}^{1\%}$ (absorption maximum near 319 nm) = not less than 338.

Dry Monosodium Salt of 4-Amino-1-naphthalenesulfonic Acid for 24 hours in a vacuum desiccator, weigh 10.0 mg of it, add ammonium acetate solution (3 2,000), and dissolve to make exactly 100 ml. Use this solution as solution A. Measure exactly 10 ml of solution A, add ammonium acetate solution (3 2,000) to make exactly 100 ml. Measure the absorption of this solution. The solution exhibits absorption maxima at the wavelengths of 237 nm and 319 nm.

Purity: Other aromatic compounds Measure exactly 10 ml of solution A, add ammonium acetate solution (3 2,000) to make exactly 100 ml. Measure 20 μ l of this solution, perform Liquid Chromatography under the operating conditions directed under Purity (6) for Food Red No.2 in the Monographs. Only one peak is observed.

Monosodium Salt of 6-Hydroxy-naphthalenesulfonic Acid $C_{10}H_7NaO_4S$
Monosodium Salt of 6-Hydroxy-naphthalenesulfonic Acid occurs as a whitish powder.

Specific absorbance:

$E_{1\text{ cm}}^{1\%}$ (absorption maximum near 280 nm) = not less than 200.

Dry Monosodium Salt of 6-Hydroxy-naphthalenesulfonic acid for 24 hours in a vacuum desiccator, weigh 10.0 mg of it, dissolve in ammonium acetate solution (3 2,000) to make exactly 100 ml, and use this solution as solution A. Measure exactly 10 ml of solution A, and add ammonium acetate solution (3 2,000) to make exactly 100 ml. The solution exhibits absorption maxima at wavelengths of 280 nm and 330 nm.

Purity: Other aromatic compounds Measure exactly 1.0 ml of solution A, and add ammonium acetate solution (7.7 1,000) to make exactly 100 ml. Measure 20 μ l of this solution, and perform Liquid Chromatography under the operating conditions specified in Purity (8) for Food Red No. 40 in the Monographs, JSFA- . Only one peak of monosodium salt of 6-hydroxy-2-naphthalenesulfonic acid is observed.

Morpholine C_4H_9NO Morpholine is a basic, colorless liquid, having an ammonia-like odor. It is soluble in water, benzene, and carbon tetrachloride.

Refractive index: $n_D^{20} = 1.452 - 1.457$

Specific gravity: $d_{20}^{20} = 0.998 - 1.005$

1. Reagents and Test Solutions

Naphthalene $C_{10}H_8$ (Guaranteed)

-**Naphthol** See 2-naphthol.

2-Naphthol $C_{10}H_7OH$ (Guaranteed) Store, protecting from light.

-**Naphtholbenzein** $C_{27}H_{20}O_3$ (Guaranteed)

-**Naphtholbenzein TS** Weigh 1 g of -naphtholbenzein, and dissolve in acetic acid for nonaqueous titration to make 100 ml.

Naphthoresorcinol $C_{10}H_6(OH)_2$ Naphthoresorcinol occurs as red-brown crystals or as a gray to grayish brown powder. It is freely soluble in water, ethanol, and ether.

Melting point: 122 - 124 (decomposition)

Sensitivity: To 2 drops of tartaric acid solution (1 : 1,000), add 1 ml of a solution of Naphthoresorcinol in sulfuric acid (1 : 10,000), and heat at 90 for 1 hour. A blue-green to green-blue color develops.

-**Naphthylamine** $C_{10}H_9N$ (1-Naphthylamine, Guaranteed)

N-1-Naphthyl-N'-diethyl-ethylenediamine Oxalate $C_{18}H_{24}N_2O_4$ (Guaranteed)

N-1-Naphthylethylenediamine Dihydrochloride $C_{12}H_{14}N_2 \cdot 2HCl$ (Guaranteed)

Nessler's TS Weigh 10 g of potassium iodide, dissolve in 10 ml of water, add slowly mercury() chloride saturated solution until a portion of red precipitate remains undissolved, while stirring, and dissolve 30 g of potassium hydroxide in the mixture. Add 1 ml of mercury() chloride saturated solution and water to make 200 ml. Allow to stand, and use the supernatant as Nessler's TS. Add 2 ml of Nessler's TS to 50 ml of water containing 0.05 mg of ammonia (NH_3). A yellow-brown color develops immediately.

Neutral Red $C_{15}H_{17}N_4Cl$ (Guaranteed)

Neutralized Ethanol See Ethanol, Neutralized.

Ninhydrin $C_9H_4O_3 \cdot H_2O$ [Ninhydrin (Triketohydrinden Hydrate), Guaranteed]

Ninhydrin TS Weigh 1 g of ninhydrin, and dissolve in water to make 1,000 ml.

Ninhydrin - Acetic Acid TS Dissolve 2 g of ninhydrin in 50 ml of water, add 25 ml of acetate buffer (dissolve 32.8 g of sodium acetate in water add 10 ml of acetic acid and water to make 100 ml), and add water to make exactly 100 ml.

Ninhydrin - Ethylene Glycol Monomethyl Ether TS Measure 750 ml of ethylene glycol monomethyl ether, add 250 ml of acetate buffer, and dissolve 20 g of ninhydrin while passing through nitrogen, and 0.38 g of tin() chloride. Allow to stand in a cold, dark place for 24 hours, and use. Store, protecting from light.

Ninhydrin - Hydrindantin TS Weigh 2 g of ninhydrin, dissolve in 75 ml of dimethylsulfoxide, dissolve 62 mg of hydrindantin in the solution, and add lithium acetate buffer to make 100 ml.

Nitric Acid HNO_3 [Nitric Acid (Specific gravity: about 1.42), Guaranteed]

Nitric Acid, Dilute Measure 10.5 ml of nitric acid, and add water to make 100 ml. (10%)

2,2',2''-Nitrilotriethanol $(CH_2CH_2OH)_3N$ (Extra grade)

Nitrobenzene $C_6H_5NO_2$ (Guaranteed)

Nitrogen N_2 Use nitrogen specified under the Japanese Pharmacopoeia.

5-Nitroso-8-hydroxyquinoline $C_9H_6N_2O_2$ (Guaranteed)

Nitrous Oxide N_2O Use nitrogen oxide prepared for Atomic Absorption Spectrophotometry.

NN Indicator Mix 0.5 g of 2-hydroxy-1- (2'-hydroxy-4'-sulfo-1'-naphthylazo) -3 -naphthoic acid and 50 g of potassium sulfate, and triturate thoroughly to be homogeneous.

1. Reagents and Test Solutions

Octane, Iso Octane, Iso occurs as a colorless liquid. Octane, Iso is practically insoluble in water, but miscible with chloroform and ether.

Purity: Perform Spectrophotometry for Octane, Iso using water as a control solution. The absorbances measured at 230 nm, 250 nm, and 280 nm of wavelengths are not more than 0.050, 0.010, and 0.005, respectively.

Orcinol $C_7H_8O_2$ Orcinol occurs as colorless crystals, having an unpleasant sweetness. In air, its color changes to red by oxidation. It is soluble in water, ethanol, and ether.

Melting point: 107 - 108

Osmic Acid OsO_4 Osmic Acid occurs as white to yellow crystals.

Content: Osmic Acid contains not less than 57.0% of OsO_4 .

Clarity of solution: Clear. Weigh 0.5 g of Osmic Acid, transfer into a test tube with a ground stopper, add 15 ml of water, shake, and allow to stand overnight.

Melting point: 40 - 43

Assay: Weigh accurately about 0.2 g of Osmic Acid, dissolve in 10 ml of carbon tetrachloride, 100 ml of water, and 3 ml of diluted hydrochloric acid (2 : 3). Add 1 g of potassium iodide, allow to stand in a dark, cold place for 10 minutes while occasionally shaking vigorously, and titrate with 0.1 mol/l sodium thiosulfate. Confirm the end point, using a potentiometer equipped with a platinum electrode.

1 ml of 0.1 mol/l sodium thiosulfate solution = 6.355mg of OsO_4

Oxalic Acid $HOCCOOH \cdot 2H_2O$ [Oxalic Acid (Dihydrate), Guaranteed]