

1. Reagents and Test Solutions

Quinaldine Red $C_{21}H_{23}IN_2$ Quinaldine Red occurs as a crystalline powder and is soluble in ethanol. Its solution in methanol (0.005 – 1,000) exhibits absorption maximum at a wavelength of about 526 nm. The absorbance is not less than 0.5 at the absorption maximum.

Quinaldine Red TS

Weigh 0.1 g of quinaldine red, and dissolve in 100 ml of acetic acid. Prepare freshly before use.

Red Litmus Paper See Litmus Paper, Red.

Red Phosphorus P (Red Phosphorus, Extra grade)

Redistilled Water Distill distilled water with a distilling apparatus fully made of hard glass.

Resorcinol $C_6H_4(OH)_2$ (Guaranteed)

Salicylaldehyde HOC_6H_4CHO (Guaranteed)

Salicylic Acid HOC_6H_4COOH (Guaranteed)

Salicylic Acid - Methanol TS Weigh 10 g of salicylic acid, and dissolve in 100 ml of methanol for Water Determination. Prepare freshly before use.

Sea Sand (Guaranteed)

Selenium Dioxide SeO_2 (Guaranteed)

Silica Gel Use JIS packaging silica gel A.

Silica Gel for Thin-Layer Chromatography Use silica gel of high quality prepared for Thin-Layer Chromatography.

Silica Gel for Thin-Layer Chromatography (Fluorescent Material added) Use silica gel prepared for Thin-Layer Chromatography and added with fluorescent material.

Silicone Oil Silicone Oil is a colorless and clear liquid. It is odorless.

Kinematic viscosity: 50 - 100 mm²/s.

Silicone Resin Silicone Resin occurs as a light-gray translucent, viscous liquid or pasty substance. It is almost odorless.

Refractive index and Kinematic viscosity: Transfer 15 g of Silicone Resin in a Soxhlet extractor, extract for 3 hours with 150 ml of carbon tetrachloride. Evaporate the extract on a water bath. Kinematic viscosity of this liquid is 100 - 1100 mm²/s (at 25 °C), and refractive index is 1.400 - 1.410 (at 25 °C).

Specific gravity: 0.98 - 1.02.

Loss on Drying: 0.45 - 2.25 g (100 °C, 1 hour).

Use the residue of extraction directed under Refractive index and Kinematic viscosity.

Silver *N,N*-Diethyldithiocarbamide $C_5H_{10}AgNS_2$ (Silver *N,N*-Diethyldithiocarbamate)

Silver Diethyldithiocarbamate See Silver *N,N*-Diethyldithiocarbamide.

Silver Nitrate $AgNO_3$ (Guaranteed)

Silver Nitrate-Ammonia TS Weigh 1 g of silver nitrate, and dissolve in 20 ml of water. Add dropwise ammonia TS while stirring until the precipitate is almost dissolved, and filter. Store in a light-resistant container, tightly stoppered.

Silver Sulfate Ag_2SO_4 (Guaranteed)

Silylation TS Measure 3 ml of *N,O*-bis (trimethylsilyl) acetamide, and dissolve in 2 ml of dimethylformamide. Prepare freshly before use.

Skimmed Milk Remove almost all of the water from raw milk or cow's milk from which milk fat is previously excluded, and make it into powder.

Soda Lime (Extra grade)

Sodium Acetate $CH_3COONa \cdot 3H_2O$ [Sodium Acetate (Trihydrate), Guaranteed]

Sodium Acetate, Anhydrous CH_3COONa [Sodium Acetate (Anhydrous),

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Guaranteed]

Sodium Borate $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$ [Sodium Tetraborate (Borax), Guaranteed]

Sodium Borate for pH Determination See Sodium Tetraborate for pH Determination.

Sodium Bromide NaBr (Guaranteed)

Sodium Carbonate $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ [Sodium Carbonate (Decahydrate), Guaranteed]

Sodium Carbonate (Standard reagent) Na_2CO_3 [Sodium Carbonate (Anhydrous), (Standard reagent)]

Sodium Carbonate for pH Determination Na_2CO_3 [Sodium Carbonate (Anhydrous) for pH determination]

Sodium Carbonate, Anhydrous Na_2CO_3 [Sodium Carbonate (Anhydrous), Guaranteed]

Sodium Chloride NaCl (Guaranteed)

Sodium Chloride (Standard reagent) NaCl (Standard reagent)

Sodium Citrate See Trisodium Citrate Dihydrate.

Sodium Cobaltinitrite $\text{Na}_3[\text{Co}(\text{NO}_2)_6]$ [Sodium Hexanitrocobaltate () (Sodium Cobaltinitrite), Guaranteed]

Sodium Cobaltinitrite TS Weigh 30 g of sodium cobaltinitrite, and dissolve in water to make 100 ml. Prepare freshly before use.

Sodium De(s)oxycholate $\text{C}_{24}\text{H}_{39}\text{NaO}_4$ Sodium desoxycholate occurs as a white crystalline powder, and is odorless.

Identification: Dry Sodium Desoxycholate, and proceed as directed under the Potassium Bromide Disk Method in Infrared Spectrometry. The absorption bands are observed at wavenumbers of about $3,400\text{ cm}^{-1}$, $2,940\text{ cm}^{-1}$, $1,562\text{ cm}^{-1}$ and $1,408\text{ cm}^{-1}$.

Purity: Related substances Dissolve 0.10 g of Sodium Desoxycholate in 10 ml of methanol, and use this solution as the sample solution. Measure exactly 1 ml of the sample solution, add methanol to make exactly 100 ml, and use this solution as the standard solution. With the sample solution and the standard solution, proceed as directed under Thin-Layer Chromatography. Spot 10 μl each of the sample solution and the standard solution on a thin-layer plate prepared silica-gel for thin-layer chromatography. Develop to the height of about 10 cm using a mixture of 1-butanol - methanol - acetic acid (80 : 40 : 1) as the developing solvent. Air-dry the thin-layer plate, spray uniformly sulfuric acid, and heat for 10 minutes at 105° . The spots other than the main spot from the sample solution are not more intense than the spot from the standard solution.

Sodium 2,6-Dichlorophenolindophenol $\text{C}_{12}\text{H}_6\text{Cl}_2\text{NNaO}_2 \cdot n\text{H}_2\text{O}$ [Sodium 2,6-Dichlorophenolindophenol (Hydrate), Guaranteed]

Sodium 2,6-Dichlorophenolindophenol TS Weigh 0.1 g of sodium 2,6-dichlorophenolindophenol, add 100 ml of water, warm, and filter the solution. Store in a brown bottle and use within 3 days after preparation.

Sodium Diethyldithiocarbamate See Sodium *N,N*-Diethyldithiocarbamate.

Sodium *N,N*-Diethyldithiocarbamate $(\text{C}_2\text{H}_5)_2\text{NCS}_2\text{Na} \cdot 3\text{H}_2\text{O}$ (Guaranteed)

Sodium Fluoride NaF (Guaranteed)

Sodium Formate HCOONa (Guaranteed)

Sodium L-Glutamate $\text{C}_5\text{H}_8\text{NNaO}_4 \cdot \text{H}_2\text{O}$ " Sodium L-Glutamate "

Sodium Hydrogen Carbonate NaHCO_3 [Sodium Hydrogen Carbonate (Sodium Bicarbonate), Guaranteed]

Sodium Hydrogen Carbonate for pH Determination NaHCO_3 [Sodium

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- Hydrogen Carbonate (Sodium Bicarbonate) for pH determination]
- Sodium Hydrogen Sulfate** $\text{NaHSO}_4 \cdot \text{H}_2\text{O}$ [Sodium Hydrogen Sulfate (Sodium Acid Sulfate), Guaranteed]
- Sodium Hydrogen Sulfite** NaHSO_3 [Sodium Hydrogen Sulfite (Sodium Bisulfate), Extra grade]
- Sodium Hydrogen Sulfite TS** Weigh 10 g of sodium hydrogen sulfite, and dissolve in water to make 30 ml. Prepare freshly before use.
- Sodium Hydrogen Tartrate** $\text{HOOCCH}(\text{OH})\text{CH}(\text{OH})\text{COONa} \cdot \text{H}_2\text{O}$ (Sodium Hydrogen Tartrate, Monohydrate, Guaranteed)
- Sodium Hydrosulfite** $\text{Na}_2\text{S}_2\text{O}_4$ [Sodium Hydrosulfite (Hydrosulfite), Extra grade]
- Sodium Hydroxide** NaOH (Guaranteed)
- Sodium Hydroxide TS** Dissolve 4.3 g of sodium hydroxide in water to make 100 ml. Store in a polyethylene bottle.
- 5% Sodium Hydroxide TS, Methanolic** Weigh 5 g of sodium hydroxide, dissolve in 5 ml of water, add methanol to make 100 ml, and allow to stand. Use the supernatant as the test solution.
- Sodium Iodide** NaI (Guaranteed)
- Sodium Lauryl Sulfate** Use Sodium Lauryl Sulfate specified under the Japanese Pharmacopoeia.
- Sodium Lauryl Sulfate - Propylene Glycol TS** Weigh 1 g of sodium lauryl sulfate, dissolve in 80 ml of water, and mix the solution with 20 ml of propylene glycol.
- Sodium Metaperiodate** NaIO_4 (Guaranteed)
- Sodium Metaperiodate TS** Weigh 1.25 g of sodium metaperiodate, dissolve in water to make 100 ml.
- Sodium Molybdate** $\text{Na}_2\text{MoO}_4 \cdot 2\text{H}_2\text{O}$ (Guaranteed)
- Sodium Nitrite** NaNO_2 (Guaranteed)
- Sodium Nitroprusside** See Sodium Pentacyanonitrosylferrate(), .
- Sodium Nitroprusside TS** Weigh 1 g of sodium nitroprusside, and dissolve in water to make 20 ml. Prepare freshly before use.
- Sodium Oxalate (Standard reagent)** NaOCCOONa (Guaranteed)
- Sodium Pentacyanonitrosylferrate ()** $\text{Na}_2[\text{Fe}(\text{CN})_5\text{NO}] \cdot 2\text{H}_2\text{O}$ (Guaranteed)
- Sodium Periodate TS for Glycerol** Add 12 ml of diluted sulfuric acid (3 1,000) to 38 ml of freshly boiled and cooled water. Weigh 6 g of sodium metaperiodate, dissolve in the solution, and add freshly boiled and cooled water to make 100 ml. Filter if necessary.
- Sodium Sulfate** $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$ (Guaranteed)
- Sodium Sulfate, Anhydrous** Na_2SO_4 [Sodium Sulfate (Anhydrous), Guaranteed]
- Sodium Sulfide** $\text{Na}_2\text{S} \cdot 9\text{H}_2\text{O}$ (Guaranteed)
- Sodium Sulfide TS** Weigh 5 g of sodium sulfide and dissolve in a mixture of 10 ml of water and 30 ml of glycerol. Or, weigh 5 g of sodium hydroxide and dissolve in a mixture of 30 ml of water and 90 ml of glycerol, and take a half volume of this solution, saturate with hydrogen sulfide while cooling, and mix the resulting solution with the other half volume of the solution (1 mol/l). Store in a small, light-resistant bottle, almost filled and tightly stoppered. Use within 3 months after preparation.
- Sodium Sulfite, Anhydrous** Na_2SO_3 [Sodium Sulfite (Anhydrous), Guaranteed]
- Sodium Tartrate** $\text{NaOOCCH}(\text{OH})\text{CH}(\text{OH})\text{COONa} \cdot 2\text{H}_2\text{O}$ (Sodium Tartrate, Dihydrate, Guaranteed)
- Sodium Tetraborate for pH Determination** $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$ (Sodium tetraborate, for pH determination)
- Sodium Tetrahydroborate** NaBH_4 (For Atomic absorption)

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Sodium Tetrahydroborate TS Dissolve 5 g of sodium tetrahydroborate to 500 ml of 0.1 mol/l sodium hydroxide.

Sodium Thiosulfate $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$ (Guaranteed)

Sodium Tungstate $\text{Na}_2\text{WO}_4 \cdot 2\text{H}_2\text{O}$ (Guaranteed)

D-Sorbitol $\text{C}_6\text{H}_{14}\text{O}_6$ "D-Sorbitol"

D-Sorbitol for Assay $\text{C}_6\text{H}_{14}\text{O}_6$ Weigh 80 g of "D-Sorbitol," transfer into a 500-ml flask, add 220 ml of 90% methanol, equip with a reflux condenser, and dissolve while warming on a water bath. Cool, transfer into a 500-ml beaker, add 40 mg of "D-Sorbitol" as seed crystals, mix, and allow to stand for 72 hours. Filter the formed crystals by suction, and wash with 50 ml of methanol. Weigh 40 g of the recrystallized product, add 110 ml of 90% methanol, and repeat the process above to obtain a twice-recrystallized product, using a recrystallized product dried under reduced pressure at 80 °C for 5 hours as the seed crystals. Dry the twice-recrystallized product under reduced pressure at 80 °C for 5 hours.

Soybean Peptone See Peptone, Soybean.

Stannous Chloride See Tin (II) Chloride.

Stannous Chloride TS Weigh 10 g of tin (II) chloride, and dissolve in diluted sulfuric acid (3 : 200) to make 100 ml.

Stannous Chloride TS, Acidic Weigh 4 g of tin (II) chloride, dissolve in 125 ml of arsenic-free hydrochloric acid, and add water to make 250 ml. Store in a bottle with a ground-glass stopper, tightly stoppered. Use within 1 month after preparation.

Stannous Chloride – Hydrochloric Acid TS for Water-soluble Annatto Weigh 40 g of tin (II) chloride, and dissolve in hydrochloric acid to make 100 ml. Stopper tightly, and store.

Starch (Guaranteed)

Starch TS Weigh 1 g of starch, triturate with 10 ml of cold water, add slowly into 200 ml of boiling water while stirring, and boil until the mixture becomes translucent. Allow to cool and stand, and use the supernatant as starch TS. Prepare freshly before use.

Strong Cupric Acetate TS See Cupric Acetate TS, Strong.

Strongly Acidic Cation-exchange Resin See Cation-exchange Resin, Strongly Acidic.

Strongly Acidic Cation-exchange Resin (Fine) See Cation-exchange Resin, Strongly Acidic (Fine).

Strongly Acidic Phosphoryl-bridged Cellulose Cation-exchanger See P-bridged Cellulose Cation-exchanger(-O-PO₃H₂ Type), Strongly Acidic.

Strongly Basic Anion-exchange Resin See Anion-exchange Resin, Strongly Basic.

Styrene-Divinylbenzene Resin for Adsorption Porous resin made as adsorbent.

Sulfanilic Acid $\text{NH}_2\text{C}_6\text{H}_4\text{SO}_3\text{H}$ (Guaranteed)

Sulfanilic Acid Azo G Salt Color $\text{C}_{16}\text{H}_9\text{N}_2\text{Na}_3\text{O}_{10}\text{S}$ Sulfanilic Acid Azo G Salt Color is the trisodium salt of 7-hydroxy-8-(4-sulfophenyl azo)-1,3-naphthalene sulfonic acid, and occurs as an orange-red powder.

Specific absorbance: $E_{1\%}^{1\text{cm}}$ (absorption maximum near the 475 nm) = Not less than 303

Dry Sulfanilic Acid Azo G Salt Color 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. 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.

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Purity: Other coloring matters Measure exactly 10 ml of solution A, and add ammonium acetate solution (3 2,000) to make exactly 100 ml. Measure 20 μl of this solution, and perform Liquid Chromatography under the operating conditions directed under Purity (5) for Food Yellow No.5 in the Monographs, JSFA- . Only one peak is observed.

Sulfanilic Acid Azo -Naphthol Color $\text{C}_{16}\text{H}_{11}\text{N}_2\text{NaO}_4\text{S}$ Sulfanilic Acid Azo -Naphthol Color is the monosodium salt of 4-(2-hydroxy-1-naphthyl azo)-benzene sulfonic acid, and occurs as an orange-red powder.

Specific absorbance: $E_{1\text{ cm}}^{1\%}$ (absorption maximum near the 484 nm) = Not less than 640

Dry Sulfanilic Acid Azo -Naphthol Color 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. 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. Measure the absorption of this solution.

Purity: Other coloring matters Measure exactly 10 ml of solution A, and add ammonium acetate solution (3 2,000) to make exactly 100 ml. Measure 20 μl of this solution, and perform Liquid Chromatography under the operating conditions directed under Purity (5) for Food Yellow No.5 in the Monographs, JSFA- . Only one peak is observed.

Sulfanilic Acid Azo R Salt Color $\text{C}_{16}\text{H}_9\text{N}_2\text{Na}_3\text{O}_{10}\text{S}_3$ Sulfanilic Acid Azo R Salt Color is the trisodium salt of 3-hydroxy-4-(4-sulfophenyl azo)-2,7-naphthalene sulfonic acid, and occurs as an orange-red powder.

Specific absorbance: $E_{1\text{ cm}}^{1\%}$ (absorption maximum near the 488 nm) = Not less than 432

Dry Sulfanilic Acid Azo R Salt Color 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. 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. Measure the absorption of this solution.

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 μl of this solution, and perform Liquid Chromatography under the operating conditions directed under Purity (5) for Food Yellow No.5 in Monographs, JSFA- . Only one peak is observed.

Sulfanilic Acid TS Add 20 ml of diluted hydrochloric acid to 0.50 g of sulfanilic acid, warm and dissolve, and add water to make 100 ml.

Sulfur Dioxide SO_2 Sulfur Dioxide is a colorless gas, having a characteristic odor. Prepare by adding dropwise sulfuric acid to a concentrated solution of sodium hydrogen sulfite.

Sulfuric Acid H_2SO_4 (Guaranteed)

Sulfuric Acid, Dilute Measure 5.7 ml of sulfuric acid, add slowly to 10 ml of water, cool, and add water to make 100 ml.

15% Sulfuric Acid - Methanol TS Measure 8.2ml of sulfuric acid, add gradually to 20 ml of methanol, cool, and add methanol to make 100 ml.

Sulfurous Acid H_2SO_3 (Sulfurous Acid Water, Extra grade)