

1. Reagents and Test Solutions

Caffeine $C_8H_{10}N_4O_2 \cdot H_2O$ Use caffeine in the Japanese Pharmacopoeia.

Calcium Acetate $Ca(CH_3COO)_2 \cdot H_2O$ (Guaranteed)

Calcium Carbonate $CaCO_3$ (Guaranteed)

Calcium Chloride $CaCl_2 \cdot 2H_2O$ [Calcium Chloride (Dihydrate), Guaranteed]

Calcium Chloride for Water Determination $CaCl_2$ [Calcium Chloride (for water determination)]

Calcium Hydroxide $Ca(OH)_2$ (Extra grade)

Calcium Hydroxide for pH Determination $Ca(OH)_2$ (Calcium Hydroxide, Extra grade) Use calcium hydroxide saturated solution prepared at 23 - 27 °C, whose pH is 12.45 at 25 °C.

Calcium Hydroxide TS Weigh 10 g of calcium oxide, add 40 ml of freshly boiled and cooled water, and allow to stand for a while. Add 1,000 ml of freshly boiled and cooled water, stopper tightly, shake, and allow to stand. Discard the supernatant by decantation, and add 1,000 ml of freshly boiled and cooled water to the residue. Stopper tightly, and allow to stand for 1 hour with occasionally shaking vigorously. Collect the supernatant by decantation or filtration before use.

Calcium Oxide CaO [Calcium Oxide (Quick Lime), Extra grade]

Camphor $C_{10}H_{16}O$ Use *d*-camphor in the Japanese Pharmacopoeia.

Carbon Dioxide CO_2 "Carbon Dioxide"

Carbon Disulfide CS_2 (Guaranteed)

Carbon Tetrachloride CCl_4 (Guaranteed)

Carob Bean Gum "Carob Bean Gum"

Casein, Milk (Guaranteed)

Casein Peptone See Peptone, Casein Origin

Casein TS (pH 2.0) Weigh accurately about 1 g of Milk Casein, dry at 105 °C for 2 hours, and measure the loss on drying. Weigh exactly 1.2 g of Milk Casein on dried base, add 12 ml of lactic acid TS and 150 ml of water. Warm and dissolve in a water bath. Cool, add 1 mol/l hydrochloric acid to adjust at pH 2.0, and add water to make exactly 200 ml. Prepare freshly before use.

Casein TS (pH 7.0) Weigh accurately about 1 g of Milk Casein, dry at 105 °C for 2 hours, and measure the loss on drying. Weigh exactly 0.6 g of Milk Casein on dried base, add 80 ml of 0.05 mol/l disodium phosphate and 80 ml of water. Warm for 20 minutes in a water bath and dissolve. Cool with flowing water, add 1 mol/l hydrochloric acid to adjust at pH 7.0, and add water to make exactly 100 ml. Prepare freshly before use.

Casein TS (pH 8.0) Weigh accurately about 1 g of Milk Casein, dry at 105 °C for 2 hours, and measure the loss on drying. Weigh exactly 1.2 g of Milk Casein on dried base, add 160 ml of 0.05 mol/l disodium phosphate, and warm and dissolve in a water bath. Cool with flowing water, add 0.1 mol/l sodium hydroxide to adjust at pH 8.0, and add water to make exactly 200 ml. Prepare freshly before use.

Catechol $C_6H_4(OH)_2$ [Catechol (Pyrocatechine), Extra grade]

Cation-exchange Resin, Strongly Acidic Strongly Acidic Cation-exchange Resin is sodium salt of strongly acidic polystyrene sulfonic acid and occurs as a light yellow to yellow-brown powder. It passes a 590- μ m standard sieve and hardly pass a 420- μ m sieve.

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Weigh about 50 g of Strongly Acidic Cation-exchange Resin, immerse in water, allow to stand for 30 minutes, and pour the resin with water into a glass tube for chromatography (about 2.5 cm internal diameter) to prepare the resin column. Pour 250 ml of diluted hydrochloric acid (1 : 4) into the column, and flow at the rate of about 4 ml per minute. Then, pour water to wash the column until the color of the washings changes to green to blue with bromocresol green TS, and perform the following test:

Measure 10 ml of the resin, pour it with water into a glass tube for chromatography (1.5 cm in internal diameter), and flow 80 ml of 0.1 mol/l sodium hydroxide at the rate of about 2 ml per minute. The pH of the outflow is 5.0 - 6.5.

Cation-exchange Resin, Strongly Acidic (Fine) Cation-exchange Resin, Strongly Acidic (Fine) is hydrogen ion type of strongly acidic polystyrene sulfonic acid and occurs as a light yellow to yellow-brown powder. It passes a 150- μm standard sieve and hardly pass a 75- μm sieve.

Weigh about 50 g of Cation-exchange Resin, Strongly Acidic (Fine), immerse in water, allow to stand for about 1 hour, and decant 2 or 3 times until the supernatant becomes clear. Pour the resin with water into a glass tube for chromatography (about 2.5 cm in internal diameter) to prepare the resin column. Pour 250 ml of diluted hydrochloric acid (1 : 4) into the column, and flow at the rate of about 4 ml per minute. Then, pour water to wash the column until the color of the washings changes to green to blue with bromocresol green TS, and perform the following test:

Measure 10 ml of the resin, pour it with water into a glass tube for chromatography (1.5 cm in internal diameter), and flow 80 ml of 0.1 mol/l sodium hydroxide at the rate of about 2 ml per minute. The pH of the outflow is 4.0 - 6.5.

Cation-exchange Resin, Weakly Acidic (Fine) Cation-exchange Resin, Weakly Acidic (Fine) is hydrogen ion type of weakly acidic methacrylic carboxylic acid and occurs as a white powder. It passes a 150- μm standard sieve and hardly pass a 75- μm sieve.

Weigh about 50 g of Cation-exchange Resin, Weakly Acidic (Fine), immerse in water, allow to stand for about 1 hour, and decant 2 or 3 times until the Supernatant becomes clear. Pour the resin with water into a glass tube for chromatography (about 2.5 cm in internal diameter) to prepare the resin column. Pour 250 ml of diluted hydrochloric acid (1 : 4) into the column, and flow at the rate of about 4 ml per minute. Then, pour water to wash the column until the color of the washings changes to green to blue with bromocresol green TS, and perform the following test:

Measure 10 ml of the resin, pour it with water into a glass tube for chromatography (1.5 cm in internal diameter), and flow 80 ml of 0.1 mol/l sodium hydroxide at the rate of about 2 ml per minute. The pH of the outflow is 4.0 - 6.5.

Cerium Ammonium Nitrate $(\text{NH}_4)_2\text{Ce}(\text{NO}_3)_6$ [Cerium() Ammonium Nitrate, Guaranteed]

Cerium() Ammonium Sulfate $\text{Ce}(\text{SO}_4)_2 \cdot 2(\text{NH}_4)_2\text{SO}_4 \cdot 4\text{H}_2\text{O}$ [Cerium() Ammonium Sulfate (Tetrahydrate), Guaranteed]

Chloral Hydrate $\text{CCl}_3\text{CHO} \cdot \text{H}_2\text{O}$ (Extra grade)

Chloramine T $\text{C}_7\text{H}_7\text{ClNNaO}_2\text{S} \cdot 3\text{H}_2\text{O}$ [Sodium p-Toluenesulfonchloroamide

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Trihydrate (Chloramine T), Guaranteed]

Chloramine T TS Weigh 1.25 g of chloramine T, and dissolve in water to make 100 ml. Prepare freshly before use.

Chloramphenicol $C_{11}H_{12}N_2O_5$ Use Chloramphenicol in the Japanese Pharmacopoeia.

Chloroform $CHCl_3$ (Guaranteed)

Chloroform, Dehydrated $CHCl_3$ Measure 20 ml of chloroform, add 20 ml of water, shake well and gently for 3 minutes, and separate the chloroform layer from the mixture. Repeat twice the above procedure with 20 ml of water each time. Filter the chloroform layer through a dry filter paper. To the filtrate, add 5 g of anhydrous potassium carbonate freshly ignited, stopper tightly, and allow to stand overnight, protecting from light. Filter through a dry filter paper, and distill the filtrate, protecting from light as much as possible.

Chloroform, Ethanol-free $CHCl_3$ Measure 20 ml of chloroform, add 20 ml of water, shake well and gently for 3 minutes, and separate the chloroform layer from the mixture. Repeat twice the above procedure with 20 ml of water each time. Filter the chloroform layer through a dry filter paper. To the filtrate, add 5 g of anhydrous sodium sulfate, and shake well for 5 minutes. Allow to stand for 2 hours, and filter through a dry filter paper.

Choline Chloride $[(CH_3)_2NCH_2CH_2OH]^+ Cl^-$ (Guaranteed)

Chromium Oxide Cr_2O_3 (JIS Industrial Chemical No. 1)

Chromium() Oxide CrO_3 (Guaranteed)

Chromium Trioxide See Chromium() Oxide

Chromotropic Acid $C_{10}H_6Na_2O_8S_2 \cdot 2H_2O$ [Chromotropic Acid, Disodium Salt (Dihydrate) (Disodium Chromotropate), Guaranteed]

Chromotropic Acid TS Weigh 0.5 g of chromotropic acid, add diluted sulfuric acid (10 15) to 50 ml, and shake. Centrifuge the mixture, and use the supernatant as Chromotropic Acid TS. Prepare freshly before use.

Citrate Buffer

Solution 1: Weigh 21 g of citric acid, and dissolve in water to make 1,000 ml.

Solution 2: Weigh 28.4 g of disodium phosphate, and dissolve in water to make 1,000 ml.

Mix 11 parts of Solution 1 and 389 parts of Solution 2 by volume.

Citrate Buffer (pH 2.2) Weigh 1.4 g of sodium citrate, 13 g of citric acid, and 10.9 g of sodium chloride, mix, and dissolve in water to make 1,000 ml.

Citrate Buffer (pH 3.0)

Solution 1: Weigh 21 g of citric acid, and dissolve in water to make 1,000 ml.

Solution 2: Weigh 71.6 g of disodium phosphate, and dissolve in water to make 1,000 ml.

Mix 159 parts of Solution 1 and 41 parts of Solution 2 by volume.

Citrate Buffer (pH 5.0)

Solution 1: Weigh 21 g of citric acid, and dissolve in water to make 1,000 ml.

Solution 2: Weigh 71.6 g of disodium phosphate, and dissolve in water to make 1,000 ml.

Mix 97 parts of Solution 1 and 103 parts of Solution 2 by volume.

Citrate Buffer (pH 5.28) Weigh 34.3 g of sodium citrate, dissolve in 400 ml of water,

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and add 7.5 ml of hydrochloric acid, 5 ml of benzyl alcohol, and water to make 1,000 ml. Adjust the pH to 5.28 ± 0.03 with diluted hydrochloric acid (1 : 4) or sodium hydroxide solution (1 : 25).

Citric Acid $\text{H}_3\text{C}_6\text{H}_5\text{O}_7 \cdot \text{H}_2\text{O}$ (Guaranteed)

Citrinin $\text{C}_{13}\text{H}_{14}\text{O}_5$ Citrinin occurs as yellow crystals. It is odorless, and very soluble in water.

Content: Citrinin, when dried, contains not less than 99.0% of citrinin ($\text{C}_{13}\text{H}_{14}\text{O}_5$).

Identification: Proceed as directed in the Potassium Bromide Disk Method under Infrared Spectrophotometry on Citrinin. Absorptions are observed at about 1634 cm^{-1} , 1492 cm^{-1} , 1266 cm^{-1} , 1018 cm^{-1} and 818 cm^{-1} .

Assay: Weigh accurately about 10 mg of Citrinin, dissolve in methanol to make exactly 100 ml. Use this solution as the test solution. Use 5 μl each of the test solution and methanol, proceed as directed in Liquid Chromatography under the conditions below. Determine peak areas by an automatic integrator, calculate the content by the following formula:

$$\frac{\text{Content of Citrinin (C}_{13}\text{H}_{14}\text{O}_5) \text{ in the test solution}}{\text{Total peak areas} - \text{Peak area of methanol}} \times 100 (\%).$$

Operating conditions

Detector: Spectrophotofluorometric detector.

Column packing materials: 5- μm octadecylsilanized silica gel.

Column: Stainless steel tube 3.9 - 4.6 mm in internal diameter and 25 - 30 cm in length.

Column temperature: 30 $^{\circ}\text{C}$.

Mobile phase: Mixture of acetonitrile - water - trifluoroacetic acid (100 : 100 : 0.1).

Flow rate: 1.0 ml/min.

Cobalt() Chloride $\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$ [Cobalt() Chloride, Guaranteed]

Cobalt Chloride TS Weigh 2.0 g of cobalt() chloride, add 1 ml of hydrochloric acid and water and dissolve it. Add water to make exactly 100 ml.

Cobalt Nitrate $\text{Co}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ [Cobalt() Nitrate (Hexahydrate) (Cobalt Nitrate), Guaranteed]

Cobaltous Chloride See Cobalt() Chloride.

Copper() Acetate $\text{Cu}(\text{CH}_3\text{COO})_2 \cdot \text{H}_2\text{O}$ (Copper() Acetate Monohydrate, Guaranteed)

Copper() Chloride $\text{CuCl}_2 \cdot 2\text{H}_2\text{O}$ (Guaranteed)

Copper Disodium Ethylenediaminetetraacetate, Tetrahydrate

$\text{C}_{10}\text{H}_{12}\text{CuN}_2\text{Na}_2\text{O}_8 \cdot 4\text{H}_2\text{O}$ Copper Disodium Ethylenediaminetetraacetate occurs as a blue powder.

Content: Not less than 98.0%.

Purity: pH 7.0 - 9.0

Solubility Blue, clear (0.10 g, newly distilled and cooled water 10 ml)

Assay: Accurately weigh about 0.45 g of Copper Disodium

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Ethylenediaminetetraacetate, dissolve in water, and make it to exactly 1,000 ml. Measure exactly 10 ml of this solution, add water and diluted nitric acid to adjust pH about 1.5. Add 5 ml of methanol solution of 1,10-phenanthroline (1 : 10), and titrate with 0.01 mol/l bithmus nitrate (indicator: xylenol orange TS) until the yellow color of the solution change to red.

Copper Fragment Cu (Copper, Guaranteed) Use fragmentary copper.

Copper Sulfate, Anhydrous CuSO_4 [Copper () Sulfate, (Extra Grade)]

***p*-Cresidine** $\text{C}_8\text{H}_{11}\text{NO}$ (2-Methoxy-5-methyl aniline) *p*-Cresidine occurs as a white-gray crystraline powder. It is soluble in methanol and ethanol, but insoluble in water.

Melting Point: 47 - 54 °C.

Identification: (1) Dissolve *p*-Cresidine in a methanol - 0.01 mol/l ammonium acetate mixture (1 : 1). The solution exhibits an adsorption maximum at wavelength of about 290 nm.

(2) Perform Infrared Spectrophotometry as directed in the Potassium Bromide Disk Method. *p*-Cresidine exhibits absorbances at about $3,410\text{ cm}^{-1}$, $2,950\text{ cm}^{-1}$, $1,630\text{ cm}^{-1}$, $1,520\text{ cm}^{-1}$, $1,230\text{ cm}^{-1}$, $1,030\text{ cm}^{-1}$ and 780 cm^{-1} .

Cresidine Azo Schaeffer's Salt $\text{C}_{18}\text{H}_{15}\text{N}_2\text{NaO}_5\text{S}$ Cresidine Azo Schaeffer's Salt is the sodium salt of 6-hydroxy-5-[(2-methoxy-5-methylphenyl)-azo]-2-naphthalene-sulfonic acid, and occurs as a red powder.

Specific absorbance: $E_{1\text{ cm}}^{1\%}$ (absorption maximum near the 500 nm) = Not less than 597

Weigh 10.0 mg of Cresidine Azo Schaeffer's Salt, previously dried for 24 hours in a desiccator under a reduced pressure, 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 an absorption maximum at a wavelength of 498 - 502 nm.

Purity: Other coloring matters Measure exactly 1.0 ml of solution A, and add ammonium acetate solution (7.7 : 1,000) to make exactly 100 ml. Measure 20 μl of this solution, and proceed as directed in Liquid Chromatography under the operating conditions specified in Purity (6) for Food Red No. 40 as specified in the Monographs, JSFA- . Only one peak of cresidine azo Schaffer's salt is observed.

Cresidine Sulfonic Acid Azo G Salt $\text{C}_{18}\text{H}_{13}\text{N}_2\text{Na}_3\text{O}_{11}\text{S}_3$ Cresidine Sulfonic Acid Azo G Salt is the trisodium salt of 7-hydroxy-8-[(2-methoxy-5-methyl-4-sulfophenyl)azo]-1,3-naphthalene disulfonic acid, and occurs as a orangish red powder.

Specific absorbance: $E_{1\text{ cm}}^{1\%}$ (absorption maximum near the 500 nm) =Not less than 461.

Weigh 10.0 mg of Cresidine Sulfonic Acid Azo G Salt, previously dried for 24 hours in a desiccator under a reduced pressure, 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

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solution (3 2,000) to make exactly 100 ml. The solution exhibits an absorption maximum at a wavelength of 498 - 502 nm.

Purity: Other Coloring Matters Measure exactly 1.0 ml of solution A, and add ammonium acetate solution (7.7 1,000) to make 100 ml. Measure 20 μ l of this solution and proceed as directed under Liquid Chromatography under the operating conditions as specified in Purity (6) for Food Red No. 40 in the Monographs, JSFA- . Only one peak of cresidine sulfonic acid azo G salt is observed.

Cresidine Sulfonic Acid Azo -Naphthol $C_{18}H_{15}N_2NaO_5S$ Cresidine Sulfonic Acid Azo -Naphthol is the sodium salt of 4-{{(2-hydroxy-1-naphthyl) azo}-5-methoxy-2-methylbenzen sulfonic acid, and occurs as a reddish brown powder.

Specific absorbance: $E_{1\text{ cm}}^{1\%}$ (absorption maximum near the 500 nm) =Not less

than 644

Weigh 10.0 mg of Cresidine Sulfonic Acid Azo -Naphthol, previously dried for 24 hours in a desiccator under a reduced pressure, 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 an absorption maximum at a wavelength of 499 - 503 nm.

Purity: Other coloring matters Measure exactly 1.0 ml of solution A, and add ammonium acetate solution (7.7 1,000) to make 100 ml. Measure 20 μ l of this solution, and proceed as directed under Liquid Chromatography under the operating conditions specified in Purity (6) for Food Red No. 40 specified in the Monographs, JSFA- . Only one peak of cresidine sulfonic acid azo -naphthole is observed.

Cresidine Sulfonic Acid Azo R Salt $C_{18}H_{13}N_2Na_3O_{11}S_3$ Cresidine Sulfonic Acid Azo R Salt is the trisodium salt of 3-hydroxy-4-{{(2-methoxy-5-methyl-4-sulfophenyl) azo}-2,7-naphthalene disulfonic acid, and occurs as a reddish brown powder.

Specific absorbance: $E_{1\text{ cm}}^{1\%}$ (absorption maximum near the 500 nm) =Not less

than 494.

Weigh 10.0 mg of Cresidine Sulfonic Acid Azo R Salt, previously dried for 24 hours in a desiccator under a reduced pressure, 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 an absorption maximum at a wavelength of 513 - 517 nm.

Purity: Other Coloring Matters Measure exactly 1.0 ml of solution A, and add ammonium acetate solution (7.7 1,000) to make 100 ml. Measure 20 μ l of this solution, and proceed as directed under Liquid Chromatography under the operating conditions specified in Purity (6) for Food Red No. 40 specified in the Monographs, JSFA- . Only one peak of cresidine sulfonic acid azo R salt is observed.

***o*-Cresol** $CH_3C_6H_4OH$ (Extra grade)

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p-Cresol $\text{CH}_3\text{C}_6\text{H}_4\text{OH}$ (Extra grade)

Cresol Red $\text{C}_{21}\text{H}_{18}\text{O}_5\text{S}$ (Guaranteed)

Cresol Red - Thymol Blue TS Weigh 0.1 g of cresol red and 0.3 g of thymol blue, mix, dissolve in 100 ml of ethanol, and add water to make 400 ml. Filter if necessary.

Crystal Violet $\text{C}_{25}\text{H}_{30}\text{ClN}_3 \cdot 9\text{H}_2\text{O}$ (Extra grade)

Crystal Violet - Acetic Acid TS Weigh 50 mg of crystal violet, and dissolve in 100 ml of acetic acid.

Cu - PAN Mix 1 g of 1-(2-pyridyl azo)-2-naphthol (free acid) and 11.1 g of copper disodium ethylenediaminetetraacetate, tetra-hydrate. Cu - PAN occurs as a grayish-orange-yellow, grayish-red-brown or light grayish-purple powder.

Specific absorption: Weigh 0.50 g of Cu - PAN, dissolve in diluted dioxane (1 : 2) and make exactly 50 ml. Measure exactly 1 ml of this solution, add methanol to make exactly 100 ml, and use this solution as the test solution. Use the test solution, proceed the test directed under Spectrophotometry using water as reference. the specific absorption is not less than 0.48 at a wavelength of 470 nm.

Purity: Clarity and color of solution Dissolve 0.5 g of Cu - PAN in 50 ml of diluted dioxane (1 : 2), the solution is tellow-brown color and clear.

Cu - PAN TS Dissolve 1 g of Cu-PAN in 100 ml of diluted dioxane (1 : 2).

Cupferron $\text{C}_6\text{H}_9\text{N}_3\text{O}_2$ [Cupferron (N-Nitrosophenylhydroxylamine Ammonium Salt), Guaranteed]

Cupferron TS Weigh 6 g of cupferron, and dissolve in water to make 100 ml. Prepare freshly before use.

Cupric Acetate See Copper(II) Acetate.

Cupric Acetate TS, Strong Weigh 13.3 g of copper(II) acetate, and dissolve in 5 ml of acetic acid and 195 ml of water.

Cupric Citrate TS, Alkaline Weigh 173 g of sodium citrate and 117 g of sodium carbonate, add 100 ml of water, and dissolve while heating. Filter if necessary. Add slowly this solution, while stirring, to the solution prepared by weighing 17.3 g of cupric sulfate and dissolving in 700 ml of water, cool, and add water to make 1,000 ml.

Cupric Sulfate $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ [Copper(II) Sulfate Pentahydrate, Guaranteed]

Cupric Sulfate, Anhydrous CuSO_4 [Copper(II) Sulfate, Extra grade]

Cupric Sulfate - Ammonia TS Weigh 0.4 g of cupric sulfate, and dissolve in 50 ml of a citric acid solution (1 : 5) - ammonia TS mixture (3 : 2).

Cyanogen Bromide TS for Thiamine Assay Measure 100 ml of ice-cold water, add 2 ml of bromine, and shake vigorously. Add dropwise ice-cold potassium thiocyanate solution (1 : 10) until the color of bromine disappears. Prepare in a draft chamber, and use within a month after preparation. As cyanogen bromine vapor is highly poisonous, do not inhale it while handling.

-Cyclodextrin for Determination -Cyclodextrin occurs as white crystals or a crystalline powder. It is odorless and has a slightly sweet taste.

Content: -Cyclodextrin ($\text{C}_{42}\text{H}_{70}\text{O}_{35}$), when dried, contains not less than 99.0 %.

Identification: Add 2 ml of iodine TS to 0.2 g of -Cyclodextrin, warm and dissolve in a water bath. Stand to cool at room temperature, yellow-brown

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precipitate is formed.

Specific rotation: $[\alpha]_D^{20} = +160 - +164^\circ$.

Dry α -Cyclodextrin, weigh accurately about 1 g, add water to make exactly 100 ml and measure angular rotation.

Loss on Drying: Not more than 14.0 % (1.0 g, 105 °C, 0.67 kPa, 4 hours).

Assay: Weigh about 1.5 g of α -Cyclodextrin, add water and dissolve to make exactly 100 ml. Use this solution as a test solution. Use 20 - 100 μ l of the test solution, and proceed as directed under Liquid Chromatography under the following conditions. Measure peak areas using automatic integrator.

$$\text{Content of } \alpha\text{-Cyclodextrin (\%)} = \frac{\text{Peak area of } \alpha\text{-Cyclodextrin in the test solution}}{\text{Total peak areas}} \times 100$$

Operating conditions

Detector: Differential refractometer.

Column: Stainless steel tube 20 - 50 cm in length and 10 mm in internal diameter.

Column packing material: Cation-exchange resin combined sulfonic group with copolymers of styrene and divinylbenzene.

Column temperature: 65 ± 10 °C.

Mobile phase: Water.

Flow rate: 0.3 - 1.0 ml/min.

Cyclohexane C_6H_{12} (Guaranteed)

Cysteine Hydrochloride $C_3H_7NO_2S \cdot HCl$ [L-Cysteine Monohydrochloride, (Monohydrate), Guaranteed]

L-Cysteine Hydrochloride (L-Cysteine Monohydrochloride Monohydrate, Guaranteed)

Cysteine - sulfuric acid TS Weigh 0.30 g of L-cysteine hydrochloride, add 10 ml of water and dissolve. Measure 25 ml of 86% (vol) sulfuric acid to this solution, mix. Prepare freshly before use.