Absorbance $E^{1\%}_{1cm}$ (242 nm): 321 - 328 (1 mg, methanol, 100 mL).

Optical rotation $[\alpha]^{20}_D$: +40 - +42° (0.2 g, chloroform, 10 mL, 100 mm).

Melting point: 69 - 72°C

Purity Other steroids—Dissolve 0.050 g of metenolone enanthate for assay in chloroform to make exactly 10 mL, and use this solution as the sample solution. Proceed with 10 μL of this solution as directed in the Purity (3) under Metenolone Enanthate: any spot other than the principal spot does not appear.

Methanesulfonic acid CH_3SO_3H Clear, colorless liquid or colorless or white, crystalline mass, having a characteristic odor. Miscible with water, with ethanol (95) and with diethyl ether.

Congealing point: 15 - 20°C

Specific gravity d^{20}_{20}: 1.483 - 1.488

Content: not less than 99.0%. Assay—Weigh accurately about 2 g of methanesulfonic acid, dissolve in 40 mL of water, and titrate with 1 mol/L sodium hydroxide VS (indicator: 2 drops of bromothymol blue TS).

Each mL of 1 mol/L sodium hydroxide VS
= 96.10 mg of CH_3SO_3H

Methanesulfonic acid TS To 35 mL of methanesulfonic acid add 20 mL of acetic acid (100) and water to make 500 mL.

0.1 mol/L Methanesulfonic acid TS To 4.8 g of methanesulfonic acid add water to make 500 mL.

Methanol CH_3OH [K 8891, Special class]

Methanol for Karl Fischer method See the Water Determination under the General Tests, Processes and Apparatus.

Methanol-free ethanol See ethanol (95), methanol-free.

Methanol-free ethanol (95) See ethanol (95), methanol-free.

Methanol, purified Distil methanol before use.

Methionine $C_5H_{11}NO_2S$ [Same as the monograph L-Methionine]

2-Methoxyethanol $CH_3OCH_2CH_2OH$ [K 8895, Special class]

2-Methoxyethanol for Karl Fischer method See the Water Determination under the General Tests, Processes and Apparatus.

4-Methoxybenzaldehyde $C_8H_8O_2$ Clear, colorless to light yellow liquid. Miscible with ethanol (95) and with diethyl ether, and practically insoluble in water.

Specific gravity d^{20}_4: 1.123 - 1.129

Content: not less than 97.0%. Assay—Weigh accurately about 0.8 g of 4-methoxybenzaldehyde, add exactly 7.5 mL of hydroxylamine TS, shake well, allow to stand for 30 minutes, and titrate with 0.5 mol/L hydrochloric acid VS (indicator: 3 drops of bromophenol blue TS) until the color of the solution changes from blue through green to yellow-green. Perform a blank determination.

Each mL of 0.5 mol/L hydrochloric acid VS
= 68.08 mg of $C_8H_8O_2$

4-Methoxybenzaldehyde-acetic acid TS To 0.5 mL of 4-methoxybenzaldehyde add acetic acid (100) to make 100 mL.

4-Methoxybenzaldehyde-sulfuric acid TS To 9 mL of ethanol (95) add 0.5 mL of 4-methoxybenzaldehyde and 0.5 mL of sulfuric acid, and mix thoroughly.

1-Methoxy-2-propanol $C_4H_{10}O_2$ A colorless, clear liquid.

Clarity of solution—To 5 mL of 1-methoxy-2-propanol add 20 mL of water, and mix: the solution is clear.

Specific gravity d^{20}_4: 0.920 - 0.925

Refractive index n^{20}_D: 1.402 - 1.405

Water: not more than 0.5% (5 g).

Content: not less than 98.0% (gas chromatography).

Assay—Proceed as directed under the Gas Chromatography using the area percentage method according to the following conditions:

Operating conditions

Detector: Thermal conductivity detector

Column: A glass column about 3 mm in inside diameter and about 2 m in length, packed with siliceous earth for gas chromatography (150 to 180 μm) coated with polyethylene glycol 20 M for gas chromatography in 20%.

Column temperature: A constant temperature of about 90°C.

Carrier gas: Helium

Flow rate: A constant flow rate of 20 mL per minute.

***p*-Methyl aminophenol sulfate** See 4-methyl animophenol sulfate.

4-Methyl aminophenol sulfate
$(HOC_6H_4NHCH_3)_2.H_2SO_4$ [K 8999: 1961, Special class]

***p*-Methyl aminophenol sulfate TS** See 4-methyl aminophenol sulfate TS.

4-Methyl aminophenol sulfate TS Dissolve 0.35 g of 4-methyl aminophenol sulfate and 20 g of sodium hydrogen sulfite in water to make 100 mL. Prepare before use.

2-Methylaminopyridine $C_6H_8N_2$ A pale yellow liquid.

Specific gravity d^{20}_{20}: 1.050 - 1.065

Boiling point: 200 - 202°C

Water: less than 0.1%.

2-Methylamino pyridine for Karl Fischer method See the Water Determination under the General Tests, Processes and Apparatus.

Methyl behenate $C_{23}H_{46}O_2$ White, odorless and tasteless, scaly crystals or powder. Dissolves in acetone, in diethyl ether and in chloroform.

Melting point: 54°C

Saponification value: 155.5 - 158.5

Methyl benzoate $C_6H_5COOCH_3$ Clear, colorless liquid.

Refractive index n^{20}_D: 1.515 - 1.520

Specific gravity d^{20}_{20}: 1.087 - 1.095

Purity—Dissolve 0.1 mL of methyl benzoate in the mobile phase in the Assay under Thiamine Hydrochloride to

make 50 mL. Perform the test as directed under the Liquid Chromatography with 10 μL of this solution according to the Assay under Thiamine Hydrochloride. Measure each peak area by the automatic integration method in a range about twice the retention time of methyl benzoate, and calculate the amount of methyl benzoate by the area percentage method: it shows the purity of not less than 99.0%.

Methyl benzoate for estriol test $C_8H_8O_2$ Clear, colorless liquid, having a characterisic odor.

Refractive index n_D^{20}: 1.515 - 1.520

Specific gravity d_{20}^{20}: 1.087 - 1.095

Acid value: not more than 0.5.

D-(+)-α-Methylbenzylamine $C_6H_5CH(CH_3)NH_2$ Colorless or pale yellow clear liquid, having an amine like odor. Very soluble in ethanol (95) and in acetone, and slightly soluble in water.

Refractive index n_D^{20}: 1.524–1.529

Optical rotation $[\alpha]_D^{20}$: +37 - +41° (50 mm)

Content: not less than 98.0%. Assay—Perform the test with exact 0.6 μL of D-(+)-α-methylbenzylamine as directed under the Gas Chromatography according to the following conditions. Measure each peak area by the automatic integration method, and calculate the amount of D-(+)-α-methylbenzylamine.

Operating conditions

Detector: Hydrogen flame-ionization detector.

Column: A glass column about 3 mm in inside diameter and about 2 m in length, packed with siliceous earth for gas chromatography (180 to 250 μm in particle diameter) coated with polyethylene glycol 20 M for gas chromatography and potassium hydroxide at the ratio of 10% and 5%, respectively.

Column temperature: A constant temperature of about 140°C.

Carrier gas: Helium

Flow rate: Adjust the flow rate so that the retention time of D-(+)-α-methylbenzylamine is about 5 minutes.

Selection of column: To 5 mL of D-(+)-α-methylbenzylamine add 1 mL of pyridine. Proceed with 0.6 μL of this solution under the above operating conditions, and calculate the resolution. Use a column giving elution of pyridine and D-(+)-α-methylbenzylamine in this order with the resolution between these peaks being not less than 3.

Time span of measurement: About 3 times as long as the retention time of D-(+)-α-methylbenzylamine after the solvent peak.

3-Methyl-1-butanol $C_5H_{12}O$ [K 8051, Special class]

3-Methylbutyl acetate $CH_3COOCH_2CH_2CH(CH_3)_2$ [K 8358, Special class]

Methyl cellosolve See 2-methoxyethanol.

Methyl cellosolve for Karl Fischer method See 2-methoxyethanol for Karl Fischer method.

Methyldopa $C_{10}H_{13}NO_4$ [Same as the namesake monograph]

Methyldopa for assay [Same as the monograph Methyldopa. When dried, it contains not less than 99.0% of methyldopa ($C_{10}H_{13}NO_4$).]

***N,N'*-Methylenebisacrylamide** $CH_2(NHCOCHCH_2)_2$ White crystalline powder.

Content: not less than 97.0%.

Methylene blue See methylene blue trihydrate.

Methylene blue-potassium perchlorate TS To 500 mL of a solution of potassium perchlorate (1 in 1000) add dropwise, with shaking, a solution of methylene blue (1 in 100) until a slight, permanent turbidity results. Allow the solution to stand, and filter the supernatant liquid.

Methylene blue-sulfuric acid-monobasic sodium phosphate TS See methylene blue-sulfuric acid-sodium dihydrogenphosphate TS.

Methylene blue-sulfuric acid-sodium dihydrogenphosphate TS To 30 mL of a solution of methylene blue (1 in 1000) add 500 mL of water, 6.8 mL of sulfuric acid and 50 g of sodium dihydrogenphosphate dihydrate, dissolve, and add water to make 1000 mL.

Methylene blue trihydrate $C_{16}H_{18}ClN_3S.3H_2O$ [K 8897, Special class]

Methylene blue TS Dissolve 0.1 g of methylene blue trihydrate in water to make 100 mL. Filter if necessary.

***dl*-Methylephedrine hydrochloride** $C_{11}H_{17}NO.HCl$ [Same as the namesake monograph]

***dl*-Methylephedrine hydrochloride for assay** [Same as the monograph *dl*-Methylephedrine Hydrochloride]

Methylergometrine maleate for assay $C_{20}H_{25}N_3O_2.C_4H_4O_4$ [Same as the monograph Methylergometrine Maleate. When dried, it contains not less than 99.0% of methylergometrine maleate ($C_{20}H_{25}N_3O_2.C_4H_4O_4$).]

Methyl ethyl ketone See 2-butanone.

Methyl iodide See iodomethane.

Methyl iodide for assay CH_3I Clear, colorless liquid. On exposure to light, it liberates iodine and becomes brown. Miscible with ethanol (95) and with diethyl ether, and sparingly soluble in water. Use the distillate obtained between 42.2°C and 42.6°C.

Specific gravity d_{25}^{25}: 2.27 - 2.28

Purity—Perform the test with 1 μL of methyl iodide for assay as directed under the Gas Chromatography according to the operating conditions in the Assay under Hydroxy propylmethylcellulose 2208. Measure each peak area by the automatic integration method, and calculate the amount of methyl iodide by the area percentage method: it shows the purity of not less than 99.8%. Adjust the detection sensitivity so that the peak height of methyl iodide from 1 μL of methyl iodide for assay is about 80% of the full scale.

Content: not less than 98.0%. Assay—Proceed as directed in the Assay under Isopropyl iodide for assay.

Each mL of 0.1 mol/L silver nitrate VS
= 14.194 mg of CH_3I

Methyl isobutyl ketone See 4-Methyl-2-pentanone.

3-O-Methylmethyldopa for thin-layer chromatography $C_{11}H_{15}NO_4$

Purity Related substances—Dissolve 5 mg of 3-O-Methylmethyldopa for thin-layer chromatography in methanol to make exactly 100 mL. Perform the test with 20 μL of this solution as directed in the Purity (5) under

Methyldopa: any spot other than the principal spot at the *Rf* value of about 0.7 does not appear.

2-Methyl-5-nitroimidazole for thin-layer chromatography $C_4H_5N_3O_2$ White crystalline powder. Slightly soluble in water and in acetone.

Melting point: about 253°C (with decomposition).

Purity Related substances—Dissolve 0.040 g of 2-methyl-5-nitroimidazole for thin-layer chromatography in 8 mL of acetone, and use as the sample solution. Pipet 2.5 mL of the sample solution, add acetone to make exactly 100 mL, and use as the standard solution. Perform the test as directed in Purity (3) under Metronidazole: the spots other than the principal spot from the sample solution are not more intense than the spot from the standard solution.

Methyl orange $C_{14}H_{14}N_3NaO_3S$ [K 8893, Special class]

Methyl orange-boric acid TS Add 0.5 g of methyl orange and 5.2 g of boric acid in 500 mL of water, and dissolve by warming on a water bath. After cooling, wash this solution with three 50-mL portions of chloroform.

Methyl orange TS Dissolve 0.1 g of methyl orange in 100 mL of water, and filter if necessary.

Methyl orange-xylenecyanol FF TS Dissolve 1 g of methyl orange and 1.4 g of xylene cyanol FF in 500 mL of dilute ethanol.

Methyl parahydroxybenzoate $HOC_6H_4COOCH_3$ [Same as the namesake monograph in Part II]

4-Methyl-2-pentanone $CH_3COCH_2CH(CH_3)_2$ [K 8903, Special class]

3-Methyl-1-phenyl-5-pyrazolone $C_{10}H_{10}N_2$ [K 9548, Special class]

Methyl prednisolone $C_{22}H_{30}O_3$ [Same as the namesake monograph]

2-Methyl-1-propanol $(CH_3)_2CHCH_2OH$ [K 8811, Special class]

***N*-Methylpyrrolidine** $C_5H_{11}N$ Colorless, clear liquid, having a characteristic order.

Identification—Determine the spectrum of *N*-methylpyrrolidine in a solution of deuterated chloroform for nuclear magnetic resonance spectroscopy (4 in 50) as directed under the Nuclear Magnetic Resonance Spectroscopy (^1H): it exhibits a big signal, at around δ 2.3 ppm.

Content: not less than 95%. Assay—Put 30 mL of water in a beaker, weigh accurately the beaker, add dropwise about 0.15 g of *N*-methylpyrrolidine, weigh accurately the beaker again, and titrate with 0.05 mol/L sulfuric acid VS (potentiometric titration). Perform a blank determination in the same manner and make any necessary correction.

Each mL of 0.05 mol/L sulfuric acid
= 8.515 mg of $C_5H_{11}N$

Methyl red $C_{15}H_{15}N_3O_2$ [K 8896, Special class]

Methyl red-methylene blue TS Dissolve 0.1 g of methyl red and 0.1 g of methylene blue in ethanol (95) to make 100 mL, and filter if necessary. Preserve in light-resistant containers.

Methyl red TS Dissolve 0.1 g of methyl red in 100 mL of ethanol (95), and filter if necessary.

Methyl red TS, dilute Dissolve 0.025 g of methyl red in 100 mL of ethanol (99.5), and filter if necessary. Prepare before use.

Methyl red TS for acid or alkali test To 100 mg of methyl red add 7.4 mL of 0.05 mol/L sodium hydroxide VS or 3.7 mL of 0.1 mol/L sodium hydroxide VS, triturate to dissolve in a mortar, and add freshly boiled and cooled water to make 200 mL. Preserve in light-resistant, glass-stoppered bottles.

Methylrosaniline chloride See crystal violet.

Methylrosaniline chloride TS See crystal violet TS.

Methyl salicylate $C_8H_8O_3$ [Same as the namesake monograph]

Methylsilicone polymer for gas chromatography Prepared for gas chromatography.

Methyltestosterone $C_{20}H_{30}O_2$ [Same as the namesake monograph]

Methylthymol blue $C_{37}H_{43}N_2NaO_{13}S$ [K 9552]

Methylthymol blue-potassium nitrate indicator Mix 0.1 g of methylthymol blue with 9.9 g of potassium nitrate, and triturate until the mixture becomes homogeneous.

Sensitivity—When 0.02 g of methylthymol blue-potassium nitrate indicator is dissolved in 100 mL of 0.02 mol/L sodium hydroxide VS, the solution is slightly blue in color. On adding 0.05 mL of 0.01 mol/L barium chloride VS to this solution, the solution shows a blue color, then on the subsequent addition of 0.1 mL of 0.01 mol/L disodium ethylenediamineteraacetate VS, it becomes colorless.

Methylthymol blue-sodium chloride indicator Mix 0.25 g of methylthymol blue and 10 g of sodium chloride, and grind to homogenize.

1-Methyl-1*H*-tetrazole-5-thiol $C_2H_4N_4S$ White, crystals or crystalline powder.

Melting point: 125 – 129°C

Identification—(1) Determine the ultraviolet-visible absorption spectrum of a solution of 1-methyl-1*H*-tetrazole-5-thiol (1 in 200,000) as directed under the Ultraviolet-visible Spectrophotometry: it exhibits a maximum between 222 nm and 226 nm.

(2) Determine the infrared absorption spectrum of 1-methyl-1*H*-tetrazole-5-thiol according to the potassium bromide disk method under the Infrared Spectrophotometry: it exhibits absorption at the wave numbers of about 3060 cm^{-1}, 2920 cm^{-1}, 2780 cm^{-1}, 1500 cm^{-1}, 1430 cm^{-1} and 1410 cm^{-1}.

Purity Related substances—Dissolve 0.1 g of 1-methyl-1*H*-tetrazole-5-thiol in exactly 100 mL of water. Perform the test with 1 μL of this solution as directed in the Purity (4) under Cefmetazole Sodium: any spot other than the principal spot at the *Rf* value of about 0.77 does not appear.

Methyl yellow $C_{14}H_{15}N_3$ [K 8494, Special class]

Methyl yellow TS Dissolve 0.1 g of methyl yellow in 200 mL of ethanol (95).

Milk casein See casein, milk.

Milk of lime Place 10 g of calcium oxide in a mortar,

and add gradually 40 mL of water under grinding.

Mixture of petroleum hexamethyl tetracosane branching hydrocarbons (L) for gas chromatography Prepared for gas chromatography.

Molybdenum (III) oxide MoO_3 [K 8436: 1979, First class]

Molybdenum (III) oxide-citric acid TS To 54 g of molybdenum (III) oxide and 11 g of sodium hydroxide add 200 mL of water, and dissolve by heating while stirring. Separately, dissolve 60 g of citric acid monohydrate in 250 mL of water, and add 140 mL of hydrochloric acid. Mix these solutions, filter if necessary, add water to make 1000 mL, and add a solution of potassium bromate (1 in 100) until a yellow-green color appears.

Storage—Preserve in tightly stopered containers, protected from light.

Molybdenum trioxide See molybdenum (III) oxide.

Molybdenum trioxide-citric acid TS See molybdenum (III) oxide-citric acid TS.

Monobasic ammonium phosphate See ammonium dihydrogenphosphate.

Monobasic potassium phosphate See potassium dihydrogenphosphate.

Monobasic potassium phosphate for pH determination See potassium dihydrogenphosphate for pH determination.

0.05 mol/L Monobasic potassium phosphate, pH 3.0 See 0.05 mol/L potassium dihydrogenphosphate, pH 3.0.

0.02 mol/L Monobasic potassium phosphate TS See 0.02 mol/L potassium dihydrogenphosphate TS.

0.05 mol/L Monobasic potassium phosphate TS See 0.05 mol/L potassium dihydrogenphosphate TS.

0.2 mol/L Monobasic potassium phosphate TS See 0.2 mol/L potassium dihydrogenphosphate TS.

0.2 mol/L Monobasic potassium phosphate TS for buffer solution See 0.2 mol/L potassium dihydrogenphosphate TS for buffer solution.

0.05 mol/L Monobasic potassium phosphate TS, pH 4.7 See 0.05 mol/L potassium dihydrogenphosphate TS, pH 4.7.

Monobasic sodium phosphate See sodium dihydrogenphosphate dihydrate.

0.05 mol/L Monobasic sodium phosphate TS See 0.05 mol/L sodium dihydrogenphosphate TS.

0.1 mol/L Monobasic sodium phosphate TS See 0.1 mol/L sodium dihydrogenphosphate TS.

2 mol/L Monobasic sodium phosphate TS See 2 mol/L sodium dihydrogenphosphate TS.

0.05 mol/L Monobasic sodium phosphate TS, pH 2.6 See 0.05 mol/L sodium dihydrogenphosphate TS, pH 2.6.

0.05 mol/L Monobasic sodium phosphate TS, pH 3.0 See 0.05 mol/L sodium dihydrogenphosphate TS, pH 3.0.

0.1 mol/L Monobasic sodium phosphate TS, pH 3.0 See 0.1 mol/L sodium dihydrogenphosphate TS, pH 3.0.

0.02 mol/L Monobasic ammonium phosphate TS See 0.02 mol/L ammonium dihydrogenphosphate TS.

Monoethanolamine See 2-Aminoethanol.

Morphine hydrochloride for assay $C_{17}H_{19}NO_3.HCl.3H_2O$ [Same as the monograph Morphine Hydrochloride. It contains not less than 99.0% of morphine hydrochloride ($C_{17}H_{19}NO_3.HCl$), calculated on the anhydrous basis.]

3-(*N*-Morpholino)propanesulfonic acid $C_7H_{15}NO_4S$ White crystalline powder, freely soluble in water, and practically insoluble in ethanol (99.5).

Melting point: 275 - 280°C

0.02 mol/L 3-(*N*-Morpholino)propanesulfonic acid buffer solution, pH 7.0 Dissolve 4.2 g of 3-(*N*-morpholino)propanesulfonic acid in 900 mL of water, adjust the pH to 7.0 with dilute sodium hydroxide TS, and add water to make 1000 mL.

0.02 mol/L 3-(*N*-Morpholino)propanesulfonic acid buffer solution, pH 8.0 Dissolve 4.2 g of 3-(*N*-morpholino)propanesulfonic acid in 700 mL of water, adjust the pH to 8.0 with dilute sodium hydroxide TS, and add water to make 1000 mL.

0.1 mol/L 3-(*N*-Morpholino)propanesulfonic acid buffer solution, pH 7.0 Dissolve 20.92 g of 3-(*N*-morpholino) propanesulfonic acid in 900 mL of water, adjust the pH to 7.0 with sodium hydroxide TS, and add water to make 1000 mL.

Murexide $C_8H_8N_6O_6$ Red-purple powder. Practically insoluble in water, in ethanol (95) and in diethyl ether.

Purity Clarity of solution—Dissolve 0.01 g of murexide in 100 mL of water: the solution is clear.

Residue on ignition: not more than 0.10% (1 g).

Sensitivity—Dissolve 0.010 g of murexide in 2 mL of ammonia-ammonium chloride buffer solution, pH 10.0, and add water to make 100 mL, and use this solution as the sample solution. Separately, add 2 mL of ammonia-ammonium chloride buffer solution, pH 10.0, to 5 mL of diluted Standard Calcium Solution (1 in 10), add water to make 25 mL, and render the solution to pH 11.3 with sodium hydroxide TS. Add 2 mL of the sample solution and water to this solution to make 50 mL: a red-purple color develops.

Murexide-sodium chloride indicator Prepared by mixing 0.1 g of murexide and 10 g of sodium chloride and grinding to get homogeneous.

Storage—Preserve in ligh-resistant containers.

Myoglobin A hemoprotein obtained from horse heart muscle. White crystalline powder. It contains not less than 95% of myoglobin in the total protein.

Nalidixic acid $C_{12}H_{12}N_2O_3$ [Same as the monograph Nalidixic Acid]

Naphazoline nitrate $C_{14}H_{14}N_2.HNO_3$ [Same as the namesake monograph]

Naphazoline nitrate for assay [Same as the monograph Naphazoline Nitrate. When dried, it contains not less than 99.0% of naphazoline nitrate ($C_{14}H_{14}N_2.NHO_3$).]

Naphthalene $C_{10}H_8$ [K 8690: 1976, Special class]