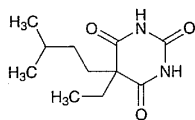


## Amobarbital

アモバルビタール

C<sub>11</sub>H<sub>18</sub>N<sub>2</sub>O<sub>3</sub>: 226.275-Ethyl-5-isopentylpyrimidine-2,4,6(1*H*,3*H*,5*H*)-trione  
[57-43-2]

Amobarbital, when dried, contains not less than 99.0% of C<sub>11</sub>H<sub>18</sub>N<sub>2</sub>O<sub>3</sub>.

**Description** Amobarbital occurs as white crystals or crystalline powder. It is odorless, and has a slightly bitter taste.

It is freely soluble in ethanol (95), in acetone and in diethyl ether, sparingly soluble in chloroform, and practically insoluble in water.

It dissolves in sodium hydroxide TS and in sodium carbonate TS.

The pH of a saturated solution of Amobarbital is between 5.0 and 5.6.

**Identification (1)** Boil 0.2 g of Amobarbital with 10 mL of sodium hydroxide TS: the gas evolved changes moistened red litmus paper to blue.

**(2)** Dissolve 0.05 g of Amobarbital in 2 to 3 drops of ammonia-ammonium chloride buffer solution, pH 10.7, and 5 mL of diluted pyridine (1 in 10). Add 5 mL of chloroform and 0.3 mL of copper (II) sulfate TS to the solution: a red-purple precipitate is produced in the aqueous layer. Shake the mixture: a red-purple color is produced in the chloroform layer.

**(3)** To 0.4 g of Amobarbital add 0.1 g of anhydrous sodium carbonate and 4 mL of water, shake, and add a solution of 0.3 g of 4-nitrobenzyl chloride in 7 mL of ethanol (95). Heat the mixture on a water bath for 30 minutes under a reflux condenser, and allow to stand for 1 hour. Filter the crystals produced, wash with 7 mL of sodium hydroxide TS and a small portion of water, recrystallize from ethanol, and dry at 105°C for 30 minutes: the crystals so obtained melt between 168°C and 173°C or between 150°C and 154°C.

**Melting point** 157 – 160°C

**Purity (1)** Clarity and color of solution—Dissolve 0.5 g of Amobarbital in 5 mL of sodium hydroxide TS: the solution is clear and colorless.

**(2)** Chloride—Dissolve 0.30 g of Amobarbital in 20 mL of acetone, and add 6 mL of dilute nitric acid and water to make 50 mL. Perform the test using this solution as the test solution. Prepare the control solution as follows: take 0.30 mL of 0.01 mol/L hydrochloric acid VS, 20 mL of acetone and 6 mL of dilute nitric acid, and add water to make 50 mL (not more than 0.035%).

**(3)** Sulfate—Dissolve 0.40 g of Amobarbital in 20 mL of acetone, and add 1 mL of dilute hydrochloric acid and water to make 50 mL. Perform the test using this solution as the test solution. Prepare the control solution as follows: take 0.40 mL of 0.005 mol/L sulfuric acid VS, 20 mL of ace-

tone, and 1 mL of dilute hydrochloric acid, and add water to make 50 mL (not more than 0.048%).

**(4)** Heavy metals—Proceed with 1.0 g of Amobarbital according to Method 2, and perform the test. Prepare the control solution with 2.0 mL of Standard Lead Solution (not more than 20 ppm).

**(5)** Readily carbonizable substances—Perform the test with 0.5 g of Amobarbital. The solution has no more color than Matching Fluid A.

**Loss on drying** Not more than 1.0% (1 g, 105°C, 4 hours).

**Residue on ignition** Not more than 0.10% (1 g).

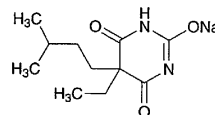
**Assay** Weigh accurately about 0.5 g of Amobarbital, previously dried, and dissolve in 5 mL of ethanol (95) and 50 mL of chloroform. Titrate with 0.1 mol/L potassium hydroxide-ethanol VS until the color of the solution changes from yellow through light blue to purple (indicator: 1 mL of alizarin yellow GG-thymolphthalein TS). Perform a blank determination, and make any necessary correction.

Each mL of 0.1 mol/L potassium hydroxide-ethanol VS = 22.628 mg of C<sub>11</sub>H<sub>18</sub>N<sub>2</sub>O<sub>3</sub>

**Containers and storage** Containers—Well-closed containers.

## Amobarbital Sodium for Injection

注射用アモバルビタールナトリウム

C<sub>11</sub>H<sub>17</sub>N<sub>2</sub>NaO<sub>3</sub>: 248.25

Monosodium 5-ethyl-5-isopentyl-1,4,5,6-tetrahydro-4,6-dioxypyrimidin-2-olate [64-43-7]

Amobarbital Sodium for Injection is a preparation for injection which is dissolved before use. When dried, it contains not less than 98.5% of amobarbital sodium (C<sub>11</sub>H<sub>17</sub>N<sub>2</sub>NaO<sub>3</sub>), and not less than 92.5% and not more than 107.5% of the labeled amount of amobarbital sodium (C<sub>11</sub>H<sub>17</sub>N<sub>2</sub>NaO<sub>3</sub>).

**Method of preparation** Prepare as directed under Injections.

**Description** Amobarbital Sodium for Injection occurs as white crystals or a crystalline powder. It is odorless, and has a bitter taste.

It is freely soluble in water and in ethanol (95), and practically insoluble in diethyl ether and in chloroform.

The pH of its solution (1 in 10) is between 10.0 and 11.0. It is hygroscopic.

**Identification (1)** Dissolve 1.5 g of Amobarbital Sodium for Injection in 20 mL of water, and add 10 mL of dilute hydrochloric acid with stirring: a white precipitate is produced. Collect the precipitate, wash with four 10-mL portions of water, and dry at 105°C for 3 hours: it melts be-

tween 156°C and 159°C. With this precipitate, proceed as directed in the Identification under Amobarbital.

(2) Ignite 0.5 g of Amobarbital Sodium for Injection, cool, and dissolve the residue in 10 mL of water: the solution responds to the Qualitative Tests (1) for sodium salt.

**Purity (1)** Clarity and color of solution—Dissolve 1.0 g of Amobarbital Sodium for Injection in 10 mL of freshly boiled and cooled water: the solution is clear and colorless.

(2) Chloride—Dissolve 1.0 g of Amobarbital Sodium for Injection in 49 mL of water, add 1 mL of acetic acid (100), shake, and filter. Discard the first 10 mL of the filtrate, and to the subsequent 30 mL of the filtrate add 6 mL of dilute nitric acid and water to make 50 mL. Perform the test using this solution as the test solution. Prepare the control solution as follows: to 0.30 mL of 0.01 mol/L hydrochloric acid VS add 0.5 mL of acetic acid (100), 6 mL of dilute nitric acid and water to make 50 mL (not more than 0.018%).

(3) Sulfate—Dissolve 2.0 g of Amobarbital Sodium for Injection in 49 mL of water, add 1 mL of acetic acid (100), shake, and filter. Discard the first 10 mL of the filtrate, and to the subsequent 25 mL of the filtrate add 2.5 mL of dilute hydrochloric acid and water to make 50 mL. Perform the test using this solution as the test solution. Prepare the control solution as follows: to 0.40 mL of 0.005 mol/L sulfuric acid VS add 0.5 mL of acetic acid (100), 1 mL of dilute hydrochloric acid and water to make 50 mL (not more than 0.019%).

(4) Heavy metals—Dissolve 2.0 g of Amobarbital Sodium for Injection in 45 mL of water, add 5 mL of dilute hydrochloric acid, shake vigorously, and warm on a water bath for 2 minutes with occasional shaking. Cool, add 30 mL of water, shake, and filter. Discard the first 10 mL of the filtrate, add 1 drop of phenolphthalein TS to the subsequent 40 mL of the filtrate, add ammonia TS until a slight red color develops, and add 2.5 mL of dilute hydrochloric acid and water to make 50 mL. Perform the test using this solution as the test solution. Prepare the control solution as follows: to 2.5 mL of dilute hydrochloric acid add 1 drop of phenolphthalein TS, add ammonia TS until a pale red color develops, and add 2.5 mL of dilute acetic acid, 2.0 mL of Standard Lead Solution and water to make 50 mL (not more than 20 ppm).

(5) Neutral or basic substances—Dissolve about 1 g of Amobarbital Sodium for Injection, accurately weighed, in 10 mL of water and 5 mL of sodium hydroxide TS, then add 40 mL of chloroform, and shake well. Separate the chloroform layer, wash with two 5-mL portions of water, and filter. Evaporate the filtrate on a water bath to dryness, and dry the residue at 105°C for 1 hour: the mass of the residue is not more than 0.30%.

(6) Readily carbonizable substances—Perform the test with 0.5 g of Amobarbital Sodium for Injection: the solution has no more color than Matching Fluid A.

**Loss on drying** Not more than 1.0% (1 g, 105°C, 4 hours).

**Assay** Weigh accurately the contents of not less than 10 samples of Amobarbital Sodium for Injection. Weigh accurately about 0.5 g of the contents, previously dried, transfer to a separator, dissolve in 20 mL of water, add 5 mL of ethanol (95) and 10 mL of dilute hydrochloric acid, and extract with 50 mL of chloroform, then with three 25-mL portions of chloroform. Combine the chloroform extracts,

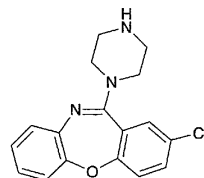
wash with two 5-mL portions of water, and extract the washings with two 10-mL portions of chloroform. Filter the combined chloroform extracts into a conical flask, and wash the filter paper with three 5-mL portions of chloroform. Combine the filtrate and the washings, and add 10 mL of ethanol (95). Titrate with 0.1 mol/L potassium hydroxide-ethanol VS until the color of the solution changes from yellow through light blue to purple (indicator: 2 mL of alizarin yellow GG-thymolphthalein TS). Perform a blank determination with a mixture of 160 mL of chloroform and 30 mL of ethanol (95), and make any necessary correction.

Each mL of 0.1 mol/L potassium hydroxide-ethanol VS = 24.826 mg of  $C_{11}H_{17}N_2NaO_3$

**Containers and storage** Containers—Hermetic containers.

## Amoxapine

アモキサピン



$C_{17}H_{16}ClN_3O$ : 313.78

2-Chloro-11-(piperazin-1-yl)dibenz[*b,f*][1,4]oxazepine  
[14028-44-5]

Amoxapine, when dried, contains not less than 98.5% of  $C_{17}H_{16}ClN_3O$ .

**Description** Amoxapine occurs as white to light yellowish white crystals or crystalline powder.

It is freely soluble in acetic acid (100), slightly soluble in ethanol (95) and in diethyl ether, and practically insoluble in water.

**Identification (1)** Determine the absorption spectrum of a solution of Amoxapine in 0.1 mol/L hydrochloric acid TS (1 in 50,000) as directed under the Ultraviolet-visible Spectrophotometry, and compare the spectrum with the Reference Spectrum: both spectra exhibit similar intensities of absorption as the same wavelengths.

(2) Determine the infrared absorption spectrum of Amoxapine, previously dried, as directed in the potassium bromide disk method under the Infrared Spectrophotometry, and compare the spectrum with the Reference Spectrum: both spectra exhibit similar intensities of absorption at the same wave numbers.

(3) Perform the test with Amoxapine as directed under the Flame Coloration Test (2): a green color appears.

**Melting point** 178 – 182°C

**Purity (1)** Heavy metals—Proceed with 2.0 g of Amoxapine according to Method 2, and perform the test. Prepare the control solution with 3.0 mL of Standard Lead Solution (not more than 15 ppm).

(2) Related substances—Dissolve 0.5 g of Amoxapine in