Calculate the content of $C_{26}H_{34}O_8$ taking the specific absorbance to be 316.

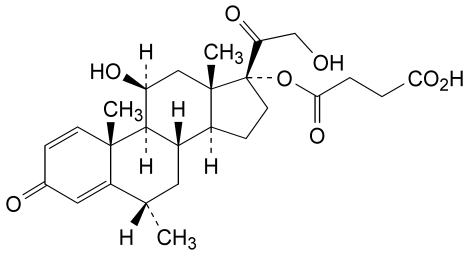
STORAGE

In an airtight container, protected from light.

IMPURITIES

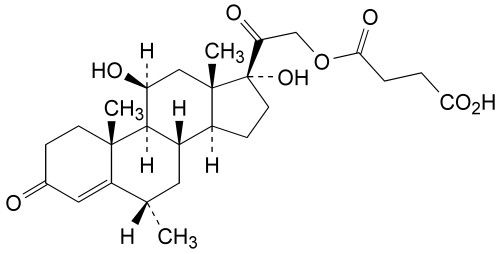
Specified impurities: A, B, C, D.

A. methylprednisolone,



B. 4-[(11β,21-dihydroxy-6α-methyl-3,20-dioxopregna-1,4-dien-17-yl)oxy]-4-oxobutanoic acid (methylprednisolone 17-(hydrogen succinate)),

C. methylprednisolone acetate,

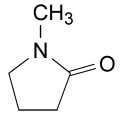


D. 4-[(11β,17-dihydroxy-6α-methyl-3,20-dioxopregn-4-en-21-yl)oxy]-4-oxobutanoic acid (methylhydrocortisone 21-(hydrogen succinate)).

01/2008:1675

N-METHYLPYRROLIDONE

N-Methylpyrrolidonum



C_5H_9NO M_r 99.1
[872-50-4]

DEFINITION

1-Methylpyrrolidin-2-one.

CHARACTERS

Appearance: clear, colourless liquid.

Solubility: miscible with water and with alcohol.

bp: about 204 °C.

Relative density: about 1.034.

Refractive index: about 1.469.

IDENTIFICATION

Infrared absorption spectrophotometry (*2.2.24*).

Preparation: films.

Comparison: *Ph. Eur. reference spectrum of N-methylpyrrolidone.*

TESTS

Appearance. The substance to be examined is clear (*2.2.1*) and colourless (*2.2.2, Method II*).

Alkalinity. Dissolve 50 ml of the substance to be examined in 50 ml of *water R* previously adjusted with *0.02 M potassium hydroxide* or *0.02 M hydrochloric acid* until a yellow colour is obtained using 0.5 ml of *bromothymol blue solution R1* as indicator. Titrate with *0.02 M hydrochloric acid* to the initial coloration. Not more than 8.0 ml of *0.02 M hydrochloric acid* is required.

Related substances. Gas chromatography (*2.2.28*): use the normalisation procedure.

Test solution. The substance to be examined.

Reference solution. To 1 ml of the substance to be examined, add 1 ml of *2-pyrrolidone R* and dilute to 20 ml with *methylene chloride R.*

Column:

– *material*: fused silica,
– *size*: *l* = 30 m, Ø = 0.32 mm,
– *stationary phase*: *poly(dimethyl)siloxane R* (5 µm).

Carrier gas: *nitrogen for chromatography R.*

Linear velocity: 20 cm/s.

Split ratio: 1:100.

Temperature:

	Time (min)	Temperature (°C)
Column	0	100
	0 - 23.3	100 → 170
	23.3 - 53	170
Injection port		280
Detector		280

Detection: flame ionisation.

Injection: 1 µl.

System suitability: reference solution:

– *resolution*: minimum 2.0 between the peaks due to *N*-methylpyrrolidone and impurity G.

Limits:

– *any impurity*: maximum 0.1 per cent,
– *total*: maximum 0.3 per cent,
– *disregard limit*: 0.02 per cent.

Heavy metals (*2.4.8*): maximum 10 ppm.

Dissolve 4.0 g in *water R* and dilute to 20.0 ml with the same solvent. 12 ml of the solution complies with limit test A. Prepare the standard using *lead standard solution (2 ppm Pb) R.*

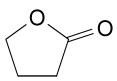
Water (*2.5.32*): maximum 0.1 per cent, determined on 1.000 g.

STORAGE

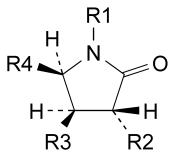
Protected from light.

IMPURITIES

A. $H_3C\text{-}NH_2$: methanamine (methylamine),



B. dihydrofuran-2(3*H*)-one (γ-butyrolactone),



and enantiomer

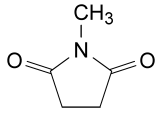
C. R1 = R2 = CH_3, R3 = R4 = H: (3*RS*)-1,3-dimethylpyrrolidin-2-one,

D. R1 = R3 = CH_3, R2 = R4 = H: (4*RS*)-1,4-dimethylpyrrolidin-2-one,

E. R1 = R4 = CH_3, R2 = R3 = H: (5*RS*)-1,5-dimethylpyrrolidin-2-one,

G. R1 = R2 = R3 = R4 = H: pyrrolidin-2-one (2-pyrrolidone),

F. HO-$[CH_2]_4$-OH: butane-1,4-diol,



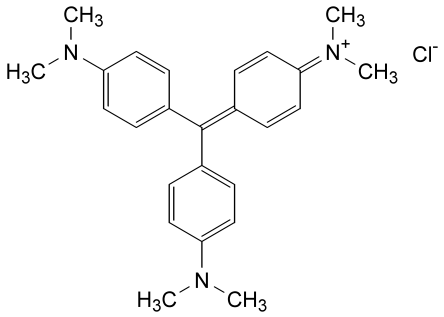
H. 1-methylpyrrolidine-2,5-dione (*N*-methylsuccinimide),

I. propylene glycol.

01/2008:1990

METHYLROSANILINIUM CHLORIDE

Methylrosanilinii chloridum



$C_{25}H_{30}ClN_3$ M_r 408.0
[548-62-9]

DEFINITION

N-[4-[Bis[4-(dimethylamino)phenyl]methylene]cyclohexa-2,5-dienylidene]-*N*-methylmethanaminium chloride (hexamethyl-*p*-rosanilinium chloride). It contains not more than 10 per cent of pentamethyl-*p*-rosanilinium chloride and is also known as crystal violet and gentian violet.

Content: 95.0 per cent to 103.0 per cent (anhydrous substance).

CHARACTERS

Appearance: dark green, shiny powder, hygroscopic.

Solubility: sparingly soluble in water, freely soluble in ethanol (96 per cent) and in methylene chloride.

IDENTIFICATION

First identification: A.

Second identification: B, C.

A. Infrared absorption spectrophotometry (*2.2.24*).
Comparison: *methylrosanilinium chloride CRS*.

B. Thin-layer chromatography (*2.2.27*).
Test solution. Dissolve 10 mg of the substance to be examined in *methanol R* and dilute to 10 ml with the same solvent.
Reference solution. Dissolve 10 mg of *methylrosanilinium chloride CRS* in *methanol R* and dilute to 10 ml with the same solvent.
Plate: *TLC silica gel G plate R*.
Mobile phase: *glacial acetic acid R, water R, butanol R* (17:17:66 *V/V/V*).
Application: 2 µl.
Development: over 2/3 of the plate.
Drying: in air.
Detection: examine in daylight.
Results: the principal spot in the chromatogram obtained with the test solution is similar in position, colour and size to the principal spot in the chromatogram obtained with the reference solution. In the chromatogram obtained with the test solution, a secondary spot may be observed.

C. Dissolve 50 mg in *water R* and dilute to 5 ml with the same solvent; add 3 ml of *dilute sulphuric acid R*, 1 g of *zinc powder R* and heat gently. The mixture decolourises. Filter. To 3 ml of the filtrate add 0.5 ml of *silver nitrate solution R1*. A white turbidity is produced which slowly forms a dark, coagulating precipitate.

TESTS

***N,N*-Dimethylaniline** (*2.4.26, Method A*): maximum 100 ppm.

Test solution. Dissolve in a ground-glass-stoppered tube 0.50 g of the substance to be examined in 30.0 ml of *water R*. Add 1.0 ml of the internal standard solution. Adjust the solution to 26-28 °C. Add 1.0 ml of *strong sodium hydroxide solution R* and mix for 2 min. Add 2.0 ml of *trimethylpentane R*. Shake for 2 min and centrifuge. Use the upper layer.

Reference solution. Dissolve 50.0 mg of *N,N-dimethylaniline R* in 4.0 ml of *0.1 M hydrochloric acid* and dilute to 50.0 ml with *water R*. Dilute 1.0 ml of this solution to 100.0 ml with *water R*. To 0.50 g of the substance to be examined add 5.0 ml of this solution and dilute to 30.0 ml with *water R*. Add 1.0 ml of the internal standard solution and 1.0 ml of *strong sodium hydroxide solution R*. Add 2.0 ml of *trimethylpentane R*. Shake for 2 min and centrifuge. Use the upper layer.

Limit:

– calculate the ratio (*R*) of the area of the peak due to *N,N*-dimethylaniline to the area of the peak due to the internal standard from the chromatogram obtained with the reference solution; from the chromatogram obtained with the test solution, calculate the ratio of the area of the peak due to *N,N*-dimethylaniline to the area of the peak due to the internal standard: this ratio is not greater than 0.5 *R*.

Pentamethyl-*p*-rosanilinium. Liquid chromatography (*2.2.29*): use the normalisation procedure.

Test solution. Dissolve 30.0 mg of the substance to be examined in *ethanol (96 per cent) R* and dilute to 100.0 ml with the same solvent.

Reference solution (a). Dissolve 3.0 mg of *methylrosanilinium for system suitability CRS* in *ethanol (96 per cent) R* and dilute to 10.0 ml with the same solvent.

Reference solution (b). Dilute 1.0 ml of the test solution to 20.0 ml with *ethanol (96 per cent) R*. Dilute 1.0 ml of this solution to 100.0 ml with *ethanol (96 per cent) R*.