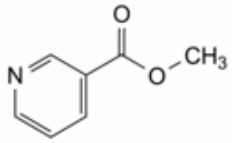
Edition: BP 2025 (Ph. Eur. 11.6 update)

Methyl Nicotinate

General Notices

(Ph. Eur. monograph 2129)



$C_7H_7NO_2$ 137.1 *93-60-7*

Action and use

Vasodilator.

Ph Eur

DEFINITION

Methyl pyridine-3-carboxylate.

Content

99.0 per cent to 101.0 per cent (anhydrous substance).

CHARACTERS

Appearance

White or almost white powder.

Solubility

Very soluble in water, in ethanol (96 per cent) and in methylene chloride.

IDENTIFICATION

First identification: B.

Second identification: A, C, D.

A. Melting point (2.2.14): 40 °C to 42 °C.
B. Infrared absorption spectrophotometry (2.2.24).

Comparison methyl nicotinate CRS.

C. Thin-layer chromatography (2.2.27).

Test solution Dissolve 10 mg of the substance to be examined in methanol R and dilute to 2 mL with the same solvent.

Reference solution Dissolve 10 mg of methyl nicotinate CRS in methanol R and dilute to 2 mL with the same solvent.

Plate TLC silica gel F_{254} plate R.

Mobile phase methanol R, toluene R (10:90 *V/V*).

Application 2 µL.

Development Over 2/3 of the plate.

Drying In air.

Detection Examine in ultraviolet light at 254 nm.

Results The principal spot in the chromatogram obtained with the test solution is similar in position and size to the principal spot in the chromatogram obtained with the reference solution.

D. To 0.5 g add 0.1 g of citric acid monohydrate R and 0.2 mL of acetic anhydride R. Heat cautiously for 1 min. A yellow colour is produced which turns first to orange, then to red and then to violet.

TESTS

Related substances

Liquid chromatography (2.2.29).

Test solution Dissolve 25 mg of the substance to be examined in the mobile phase and dilute to 25.0 mL with the mobile phase.

Reference solution (a) Dissolve 25 mg of nicotinic acid R in the mobile phase and dilute to 25.0 mL with the mobile phase. To 0.5 mL of this solution add 0.5 mL of the test solution and dilute to 100 mL with the mobile phase.

Reference solution (b) Dilute 1.0 mL of the test solution to 100.0 mL with the mobile phase. Dilute 1.0 mL of this solution to 10.0 mL with the mobile phase.

Column:

— *size*: *l* = 0.25 m, Ø = 4 mm,

— *stationary phase*: octadecylsilyl silica gel for chromatography R (5 µm).

Mobile phase *acetic acid R*, *water R*, *acetonitrile R* (1:29:70 *V/V/V*).

Flow rate 1 mL/min.

Detection Spectrophotometer at 261 nm.

Injection 20 µL.

Run time 3 times the retention time of methyl nicotinate.

Retention time Methyl nicotinate = about 3.3 min.

System suitability Reference solution (a):

— *resolution*: minimum 2 between the peaks due to impurity A and methyl nicotinate.

Limits:

— *impurity A*: not more than the area of the principal peak in the chromatogram obtained with reference solution (b) (0.1 per cent),

— *any other impurity*: for each impurity, not more than the area of the principal peak in the chromatogram obtained with reference solution (b) (0.1 per cent),

— *total*: not more than 5 times the area of the principal peak in the chromatogram obtained with reference solution (b) (0.5 per cent),

— *disregard limit*: 0.5 times the area of the principal peak in the chromatogram obtained with reference solution (b) (0.05 per cent).

Chlorides (*2.4.4*)

Maximum 200 ppm.

Dissolve 0.25 g in *water R* and dilute to 15 mL with the same solvent.

Water (*2.5.12*)

Maximum 0.5 per cent, determined on 2.000 g.

Sulfated ash (*2.4.14*)

Maximum 0.1 per cent, determined on 1.0 g.

ASSAY

Dissolve 0.120 g in 50 mL of *glacial acetic acid R*. Titrate with *0.1 M perchloric acid*, determining the end-point potentiometrically (*2.2.20*).

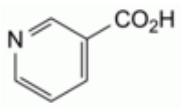
1 mL of *0.1 M perchloric acid* is equivalent to 13.71 mg of $C_7H_7NO_2$.

STORAGE

Protected from light.

IMPURITIES

Specified impurities *A.*



A. pyridine-3-carboxylic acid (nicotinic acid).

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