

METHYL ACETATE in urine by GC-FID
Code GC02510

BIOCHEMISTRY

The methyl acetate, at room temperature is presented as a volatile liquid and colorless; is a compound very flammable and irritating. Is widely used as a solvent for paints, resins and glues being relatively less toxic than other chlorinated solvents. The proposed method determines the methyl acetate by injecting into a GC / FID aliquot of urine sample previously treated with an appropriate solvent.



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This product fulfills all the requirements of Directive 98/79/EC on in vitro diagnostic medical devices (IVD). The declaration of conformity is available upon request.

N° 002	Methyl Acetate in urine by GC/FID	10/2024
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TECHNICAL FEATURES

Principle of the Method :

This method allows the determination of methyl acetate urinary GC-FID. The sample is treated with an appropriate solvent and then is directly injected into the GC.

Recovery: 95%

Sensitivity: 20 mg/l

Dynamic Range of the Method: 30 – 15.000 mg/l

Reference Values: n.d.

CV%: 7.3% intra serie
10.8% inter serie

Components of the kit :

All Reagents are ready to use and stable 3 years at $\leq 20^{\circ}\text{C}$.

Reagent A – Diluting Solution, 1 x 200 ml

Reagent B – Test Solution / Chemical Standard, 1 x 5 ml

Store at 2-8 °C

For the withdrawal of Reagent B, the cap airtight requires the use of the Hamilton syringe of 100 ul Code ZRE24563

Minimum Instrumental equipment required:

GC/FID
Operational Computer

Optional Equipment:

Autosampler

Urine Collection Procedure:

At the end of the work, collect 10 ml of urine to a suitable tube. The transfer of the sample in the container must be made as soon as possible.

Stable 1 day at 2 – 8 °C and 1 month at -20°C .

IMPORTANT: USE ONLY IN GLASS TUBE EVERY STEP - DO NOT USE PLASTIC TUBES

PREANALYTICAL PROCEDURE

Preparation of Test Solution.

Dispense in a 10ml glass tube:

- 1800 µl of **Reagent A – Diluting Solution**
- 200 µl of **Reagent B – Test Solution**

Vortex for 10 seconds

Centrifuge at 4000 rpm for 5 minutes

The samples are injected directly transferring the supernatant into vials of 2 ml.

Inject 1 µl of solution into gas chromatograph GC. Verify that the Test solution has retention time similar to fig. 1. If the Test is all right you can start with the analytical procedure; if not, check the functionality of the analytical system.

ANALYTICAL PROCEDURE

STEP 1: Preparation of Calibration Standard at **465 mg/l**

Dispense in a **glass tube** of 10ml:

- 200 µl of **H₂O HPLC grade**
- 200 µl of **Reagent B – Test Solution**

Vortex for 10 seconds

Dispense in a **glass tube**:

- 900 µl of **Urine** without Methyl Acetate
- 100 µl of **Test Solution previously diluted**

Vortex for 10 seconds

IMPORTANT: This Calibration Standard Solution is prepared from time to time

To verify that the urine is effectively free from Methyl Acetate, to prepare a Blank:

- 900 µl of **Urine** without Methyl Acetate
- 100 µl of **H₂O HPLC grade**

If the Blank urine presented the peak of Methyl Acetate, proceed to identify the quantitative difference between the areas / heights of the peaks of Methyl Acetate in urine enriched and blank.

Dispense in a **glass tube**:

	Calibration Standard	Control	Sample	Blank
Calibration Standard	200 µl			
Control		200 µl		
Sample			200 µl	
Blank				200 µl
Reagent A – Diluting Solution	1800 µl	1800 µl	1800 µl	1800 µl

Close vials hermetically

Vortex for 10 seconds

- Centrifuge for 5 min at 4000 rpm
- Put all the supernatant in vials of 2 ml. Inject 1 µl in GC-FID.

Prepare work list and start the series according to the system's specifications.

N.B.: at this step the sample is stable 2 hours, therefore must be injected immediately after preparation.

N.B.: at the end of the preparation of Standard close the vial of Test Solution / Standard Chemical with parafilm and stored immediately at 2 - 8 ° C.

METHYL ACETATE - Warnings

REAGENT B : TEST SOLUTION / CHEMICAL STANDARD

METHYL ACETATE	9.300 mg/l
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SET OF GAS-CROMATOGRAPH:

• Rxi-624SilMS Column 30 m x 0,32 mm x 1,80 µm (conditioned) • Injector's Temperature: 180 °C • Splitting Ratio: In: OFF 0' ON split 5 • Temperature 40 °C x 8,9 min + 20 °C/min till up 250 °C x 0 min + 50 °C/min till up 280 °C x 0 min (run 17 min) • He Flow in column: 1 ml/min • Detector's Temperature (FID): 240 °C • Range (sensitivity) Detector: 12 (max)

CONDITIONING OF Rxi-624 SilMS COLUMN:

Follow the manufacturer prescription.

CLEANING OF THE COLUMN AND SYRINGE:

Before injection wash the syringe with ACETONE. Disconnect the detector. Keep the column at the highest temperature for 5 minutes. The column should be stored at room temperature with septa on both ends in order to avoid the entry of air into the column.
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ACCESSORIES AND CONSUMABLES

CODE	DESCRIPTION	PACKAGING
GC02520	Chemical Standard for Methyl Acetate	1 x 2 ml
ZRE13870	Rxi-624 Sil MS (30 m x 0,32 mm – 1,8 µm) Capillary Column	1 Pc
S29057U	Standard glass vials of 2 ml with screw cap	1 x 100 Pcs
S29046U	Caps for Standard glass vials of 2 ml with screw cap	1 x 100 Pcs
S24717	Insert 100 µl for vials of 2 ml	1 x 100 Pcs

METHYL ACETATE IN URINE

(Reference Chromatograms)

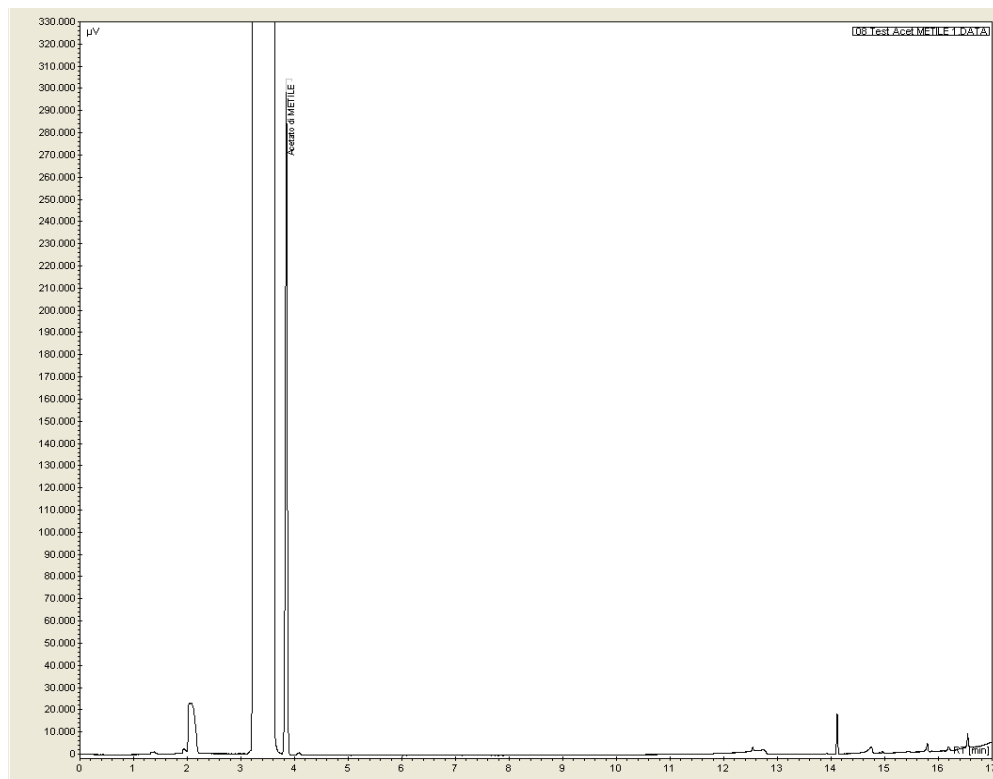


Fig. 1 :	Test Solution
	R.T. 3.7 METHYL ACETATE

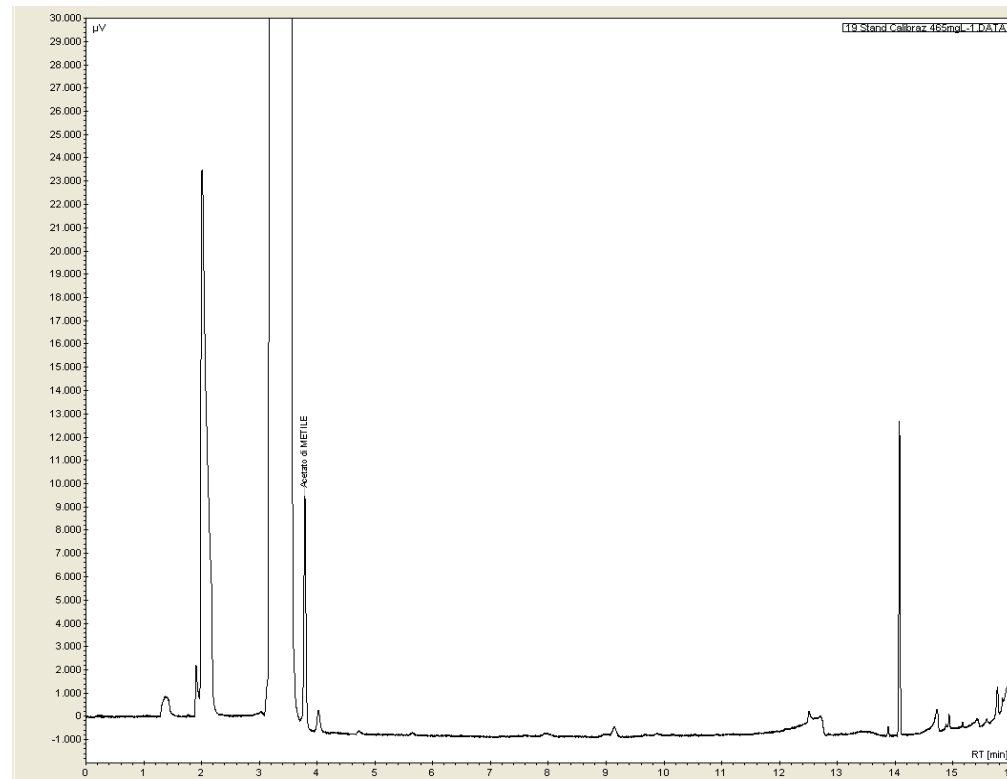


Fig. 2 :	Calibration Standard
	R.T. 3.7 METHYL ACETATE 465 mg/l

METHYL ACETATE IN URINE

(Reference Chromatograms)

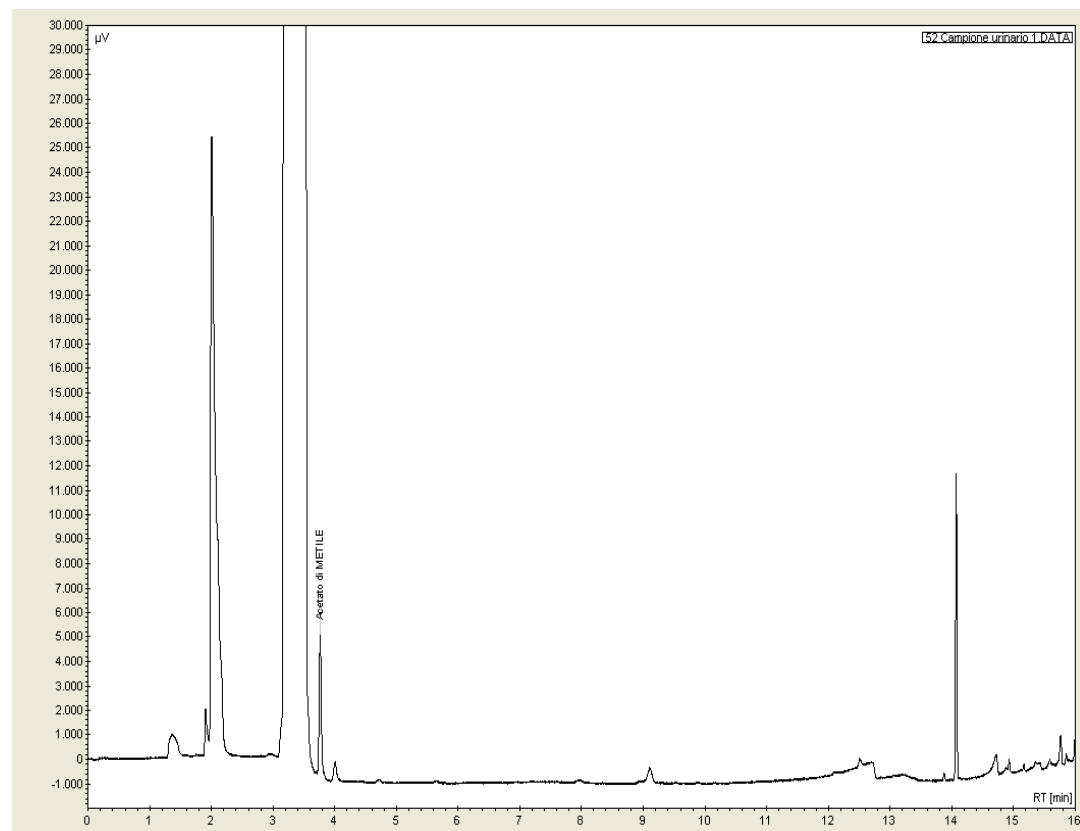


Fig. 3 :	Urine Sample
	R.T. 3.7 METHYL ACETATE 230 mg/l