

Overview

Useful For

Detection and quantitation of acetone, methanol, isopropanol, and ethanol in whole blood

Quantification of the concentration of ethanol in blood that correlates with the degree of intoxication

Evaluation of toxicity to the measured volatile substances

This test is **not intended for use** in employment-related testing.

Testing Algorithm

This test includes analysis of methanol, ethanol, isopropanol, and acetone.

Method Name

Headspace Gas Chromatography-Flame Ionization Detector (HSGC-FID)

NY State Available

Yes

Specimen

Specimen Type

Whole blood

Advisory Information

This test is not performed using chain of custody. For chain of custody testing order VLTBX / Volatile Screen, Chain of Custody, Blood.

Additional Testing Requirements

Ethylene glycol requires a separate request. See ETGL / Ethylene Glycol, Serum.

Specimen Required

Container/Tube:

Preferred: Grey top (potassium oxalate/sodium fluoride)

Acceptable: Any anticoagulant

Specimen Volume: 1 mL

Collection Instructions: **Do not use alcohol to clean arm.** Use alternatives such as Betadine to cleanse arm before collecting any specimen for volatile testing.

Specimen Minimum Volume

0.5 mL or amount to fill 1 tube

Reject Due To

Gross hemolysis	OK
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Gross lipemia	Reject
Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Whole blood	Refrigerated (preferred)	14 days	
	Frozen	28 days	
	Ambient	24 hours	

Clinical and Interpretive

Clinical Information

Volatile substances in the blood include ethanol, methanol, isopropanol, and acetone. Acetone is generally elevated in metabolic conditions such as diabetic ketoacidosis. Methanol and isopropanol are highly toxic and result from exogenous ingestion.

Ethanol is the single most important substance of abuse in the United States. It is the active agent in beer, wine, vodka, whiskey, rum, and other liquors. Ethanol acts on cerebral function as a depressant similar to general anesthetics. This depression causes most of the typical symptoms such as impaired thought, clouded judgment, and changed behavior. As the level of alcohol increases, the degree of impairment progressively increases.

In most jurisdictions in the United States, the per se blood level for being under the influence of alcohol (ethanol) for purposes of driving a motor vehicle is 80 mg/dL.

Reference Values

METHANOL

Not detected (Positive results are quantitated.)

Toxic concentration: > or =10 mg/dL

ETHANOL

Not detected (Positive results are quantitated.)

Toxic concentration: > or =400 mg/dL

ISOPROPANOL

Not detected (Positive results are quantitated.)

Toxic concentration: > or =10 mg/dL

ACETONE

Not detected (Positive results are quantitated.)

Toxic concentration: > or =10 mg/dL

Interpretation

Methanol:

The presence of methanol indicates exposure which may result in intoxication, central nervous system (CNS) depression, and metabolic acidosis. Ingestion of methanol can be fatal if patients do not receive immediate medical treatment.

Ethanol:

The presence of ethanol indicates exposure which may result in intoxication, CNS depression, and metabolic acidosis.

Isopropanol:

The presence of isopropanol indicates exposure which may result in intoxication and CNS depression. Ingestion of isopropanol can be fatal if patients do not receive immediate medical treatment.

Acetone:

The presence of acetone may indicate exposure to acetone; it is also a metabolite of isopropanol and may be detected during ketoacidosis.

Cautions

This test does not detect ethylene glycol.

Clinical Reference

1. Langman LJ, Bechtel LK, Meier BM, Holstege C: Chapter 41: Clinical Toxicology. In: Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. Edited by N Rifai, AR Horvath, CT Wittwer. Sixth edition. Elsevier; 2018. pp. 832-87
2. Mihic SJ, Koob GF, Mayfield J, Harris RA: Ethanol. In: Goodman & Gilman's: The Pharmacological Basis of Therapeutics, 13th edition. Edited by LL Brunton, R Hilal-Dandan, BC Knollmann. McGraw-Hill Education; 2017
3. Olson KR, Anderson IB, Benowitz NL, et al: Specific Poisons and Drugs: Diagnosis and Treatment. In Poisoning and Drug Overdose, Seventh edition. McGraw-Hill Education; 2017

Performance

Method Description

Specimens are analyzed and quantified by headspace gas chromatography- flame ionization detection.(Baselt RC. Disposition of Toxic Drugs and Chemicals in Man, 10th edition, Biomedical Publications; 2014. pp 2211)

PDF Report

No

Day(s) and Time(s) Test Performed

Monday through Sunday; Varies

Analytic Time

Same day/1 day

Maximum Laboratory Time

1 day

Performing Laboratory Location

Rochester

Fees and Codes**Fees**

- Authorized users can sign in to [Test Prices](#) for detailed fee information.
- Clients without access to Test Prices can contact [Customer Service](#) 24 hours a day, seven days a week.
- Prospective clients should contact their Regional Manager. For assistance, contact [Customer Service](#).

Test Classification

This test was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Code Information

80320

G0480 (if appropriate)

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
VLTB	Volatile Scrn, B	41266-8

Result ID	Test Result Name	Result LOINC Value
89190	Volatile Scrn, B	41266-8
30921	Methanol, B	9334-4
30922	Ethanol, B	5640-8
30923	Acetone, B	9425-0
30924	Isopropanol, B	5667-1
34377	Chain of Custody	77202-0