

Overview

Useful For

Detection of ethanol (ethyl alcohol) in blood to document prior consumption or administration of ethanol

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

All testing is performed under strict chain of custody

Chain of custody is required whenever the results of testing could be used in a court of law. Its purpose is to protect the rights of the individual contributing the specimen by demonstrating that it was always under the control of personnel involved with testing the specimen; this control implies that the opportunity for specimen tampering would be limited.

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

Additional Tests

Test Id	Reporting Name	Available Separately	Always Performed
COCH	Chain of Custody Processing	No	Yes

Method Name

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

NY State Available

Yes

Specimen

Specimen Type

Whole Blood NaFI-KOx

Specimen Required

**Supplies:** Chain-of-Custody Kit (T282)

**Container/Tube:** Chain-of-Custody Kit (T282) containing the specimen container seals and documentation required.

**Preferred:** Gray top (potassium oxalate/sodium fluoride)

**Acceptable:** Lavender (EDTA) or green top (sodium heparin)

**Specimen Volume:** 2 mL

Collection Instructions:

- Do not use alcohol to clean arm.** Use an alternative, such as Betadine, to cleanse arm before collecting any specimen for volatile testing.

2. Specimen must be sent in original tube. Collect specimen, seal, and submit with the associated documentation to satisfy the legal requirements for chain-of-custody testing.

Forms

1. [Chain of Custody Request](#) is included in the Chain-of-Custody Kit (T282).
2. If not ordering electronically, complete, print, and send a [Therapeutics Test Request](#) (T831) with the specimen.

Specimen Minimum Volume

0.5 mL or amount to fill 1 tube

Reject Due To

Gross lipemia	Reject
Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Whole Blood NaFl-KOx	Refrigerated (preferred)	14 days	
	Ambient	24 hours	
	Frozen	28 days	

Clinical & Interpretive

Clinical Information

Ethanol is one of the most widely abused legal substances in the United States. It is the active agent in beer, wine, vodka, whiskey, rum, and other liquors.

Ethanol acts on cerebral functions 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 becomes progressively increased.

In most jurisdictions in the United States, the level of prima facie evidence of being under the influence of alcohol for purposes of driving a motor vehicle is 80 mg/dL (0.08%) in whole blood.

Chain of custody is a record of the disposition of a specimen to document the personnel who collected it, handled it, and performed the analysis. When a specimen is submitted in this manner, analysis will be performed in such a way that it will withstand regular court scrutiny.

Reference Values

- Not detected (Positive results are quantified.)
- Limit of detection: 10 mg/dL (0.01 g/dL)
- Legal limit of intoxication is 80 mg/dL (0.08 g/dL).
- Toxic concentration is dependent upon individual usage history.

Potentially lethal concentration: > or =400 mg/dL (0.4 g/dL)

**Interpretation**

The presence of ethanol in blood at concentrations greater than 30 mg/dL (>0.03% or g/dL) is generally accepted as a strong indicator of the use of an alcohol-containing beverage.

Blood ethanol levels above 50 mg/dL (>0.05%) are frequently associated with a state of increased euphoria.

Blood ethanol level above 80 mg/dL (>0.08%) exceeds Minnesota's legal limit for driving a motor vehicle. These levels are frequently associated with loss of manual dexterity and with sedation.

A blood alcohol level of 400 mg/dL (> or =0.4%) or more may be lethal as normal respiration may be depressed below the level necessary to maintain life.

The blood ethanol level is also useful in diagnosis of alcoholism. A patient who chronically consumes ethanol will develop a tolerance to the drug and requires higher levels than described above to achieve various states of intoxication. An individual who can function in a relatively normal manner with a blood ethanol level above 150 mg/dL (>0.15%) is highly likely to have developed a tolerance to the drug achieved by high levels of chronic intake.

**Cautions**

Whole blood is required (not serum or plasma).

**Clinical Reference**

Langman LJ, Bechtel LK, Holstege CP. Clinical toxicology. In: Rifai N, Chiu RWK, Young I, Burnham CD, Wittwer CT, eds. Tietz Textbook of Laboratory Medicine. 7th ed. Elsevier; 2023:454

**Performance**

**Method Description**

Specimens are analyzed and quantitated using headspace gas chromatography with flame ionization detection.(Baselt RC. Disposition of Toxic Drugs and Chemicals in Man. 10th ed. Biomedical Publications; 2014:2211)

**PDF Report**

No

**Day(s) Performed**

Monday through Saturday

**Report Available**

1 to 2 days

**Specimen Retention Time**

2 weeks

**Performing Laboratory Location**

Mayo Clinic Laboratories - Rochester Superior Drive

Fees & 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 account representative. 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. It has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information

80320  
G0480 (if appropriate)

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
ALCX	Ethanol, CoC, B	56478-1

Result ID	Test Result Name	Result LOINC® Value
36127	Ethanol, B	56478-1
36161	Chain of Custody	77202-0