

Overview

Useful For

Detecting lead exposure using nail specimens

Special Instructions

- [Collecting Hair and Nails for Metals Testing](#)

Method Name

Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)

NY State Available

No

Specimen

Specimen Type

Nail

Necessary Information

Indicate source of nails (fingernails or toenails), if known

Specimen Required

Supplies: Hair and Nails Collection Kit (T565)

Specimen Volume: 0.2 g

Collection Instructions:

1. Prepare and transport specimen per the instructions in the kit or see [Collecting Hair and Nails for Metals Testing](#) in Special Instructions.
2. Clippings should be taken from all 10 fingernails or toenails.

Reject Due To

All specimens will be evaluated at Mayo Clinic Laboratories for test suitability.

Specimen Minimum Volume

0.05 g

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Nail	Ambient (preferred)		
	Frozen		
	Refrigerated		

Clinical & Interpretive**Clinical Information**

Nail analysis of lead can be used to corroborate blood analysis.

Reference Values

<4.0 mcg/g of nails

Reference values apply to all ages.

Interpretation

Normally, the nail lead content is below 4.0 mcg/g. While nail lead content above 10.0 mcg/g may indicate significant lead exposure, nails are also subject to potential external contamination with environmental lead. Ultimately, the nail lead content needs to be interpreted in addition to the overall clinical scenario including symptoms, physical findings, and other diagnostic results when determining further actions.

Cautions

Blood lead analysis has the strongest correlation with toxicity.

Clinical Reference

1. Strumylaite L, Ryselis S, Kregzdyte R: Content of lead in human hair from people exposed to lead. *Int J Hyg Environ Health*. 2004;207:345-351
2. Barbosa F, Tanus-Santos J, Gerlach R, Parsons P: A critical review of biomarkers used for monitoring human exposure to lead: advantages, limitations, and future needs. *Environ Health Perspect*. 2005;113:1669-1674
3. Sanna E, Liguori A, Palmes L, et al: Blood and hair lead levels in boys and girls living in two Sardinian towns at different risks of lead pollution. *Ecotoxicol Environ Saf*. 2003;500:293-299
4. Strathmann FG, Blum LM: Toxic elements. In: Nader R, Horwath AR, Wittwer CT, eds. *Tietz Textbook of Clinical Chemistry and Molecular Diagnostics*. 6th ed. Elsevier; 2018:chap 42

Performance**Method Description**

Lead in nails is analyzed by inductively coupled plasma-mass spectrometry (ICP-MS) in kinetic energy discrimination (KED) mode using gallium, iridium, and lutetium as internal standards, and a salt matrix calibration.(Unpublished Mayo method)

PDF Report

No

Specimen Retention Time

14 days

Performing Laboratory Location

Rochester

Fees & Codes**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 US Food and Drug Administration.

CPT Code Information

83655

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
PBNA	Lead, Nails	8202-4

Result ID	Reporting Name	LOINC®
2506	Lead, Nails	8202-4
PBNSC	Specimen Source	31208-2