**Lab Dept:** Chemistry  
**Test Name:** COPPER, SERUM

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**General Information**

<table>
<thead>
<tr>
<th>Lab Order Codes:</th>
<th>COPP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonyms:</td>
<td>Cu, blood</td>
</tr>
<tr>
<td>CPT Codes:</td>
<td>82525 - Copper</td>
</tr>
<tr>
<td><strong>Test Includes:</strong></td>
<td>Copper level reported in mcg/mL.</td>
</tr>
</tbody>
</table>

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**Logistics**

**Test Indications:** Useful for diagnosis of Wilson’s disease, primary biliary cirrhosis (PBC) and primary sclerosing cholangitis (PSC).

In normal serum, more than 95% of the copper is incorporated into the enzyme, ceruloplasmin; the remaining copper is loosely bound to albumin. A deficiency in copper results in severe derangement in growth and metabolism and impairment of erythropoiesis.

**Lab Testing Sections:** Chemistry - Sendouts

**Referred to:** Mayo Medical Laboratories (MML Test: CUS)

**Phone Numbers:**  
MIN Lab: 612-813-6280  
STP Lab: 651-220-6550

**Test Availability:** Daily, 24 hours

**Turnaround Time:** 1 - 3 days; performed Monday-Saturday

**Special Instructions:** See Container and Collection and Patient Preparation for special requirements.

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**Specimen**

**Specimen Type:** Blood

**Container:** Dark Blue top with Red Stripe [Metal Free Navy (No additive) tube] – available from the laboratory

**Draw Volume:** 2.4 mL (Minimum: 1.5 mL) blood
Processed Volume: 0.8 mL (Minimum: 0.2 mL) serum

Note: Submission of the minimum volume does not allow repeat analysis.

Collection: Use stainless steel needle or butterfly vacutainer collection. Collect in a royal blue top tube (See Container). Avoid hemolysis.

Special Processing: Lab Staff: Blood specimens for serum testing should be collected in the dark blue-top with red stripe, Trace Element Blood Collection Tube.

1. Allow the specimen to clot for 30 minutes; then centrifuge the specimen to separate serum from the cellular fraction within 4 hours of specimen collection.

2. Remove the stopper and carefully pour serum aliquot into a 7 mL, Mayo metal free, screw-capped, polypropylene vial (Mayo Supply T173), avoiding transfer of the cellular components of blood. Do Not insert a pipet into the serum to accomplish transfer, and Do Not ream the specimen with a wooden stick to assist with serum transfer.

3. Place the cap on the polypropylene vial tightly, attach a specimen label and send specimen to the laboratory refrigerated.

Patient Preparation: Gadolinium is known to interfere with most metal tests. If gadolinium-containing contrast media has been administered, a specimen cannot be collected for 48 hours.

Sample Rejection: Specimens other than serum; mislabeled or unlabeled specimens

Interpretive

<table>
<thead>
<tr>
<th>Reference Range:</th>
<th>Age:</th>
<th>Reference Range (mcg/mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 2 mos.</td>
<td></td>
<td>0.40 – 1.40 mcg/mL</td>
</tr>
<tr>
<td>3 – 6 mos.</td>
<td></td>
<td>0.40 – 1.60 mcg/mL</td>
</tr>
<tr>
<td>7 – 9 mos.</td>
<td></td>
<td>0.40 – 1.70 mcg/mL</td>
</tr>
<tr>
<td>10 – 12 mos.</td>
<td></td>
<td>0.80 – 1.70 mcg/mL</td>
</tr>
<tr>
<td>13 mos. – 10 yrs.</td>
<td></td>
<td>0.80 – 1.80 mcg/mL</td>
</tr>
<tr>
<td>≥11 yrs.</td>
<td></td>
<td>0.75 – 1.45 mcg/mL</td>
</tr>
</tbody>
</table>

Critical Values: N/A
Limitations:  Gadolinium is known to interfere with most metal tests. If gadolinium-containing contrast media has been administered, a specimen cannot be collected for 96 hours.

Methodology:  Dynamic Reaction Cell DRC) II Inductively Coupled Plasma Mass Spectrophotometry (DRC-ICP-MS)

References:  Mayo Medical Laboratories Web Page December 2017

Updates:  11/11/2008: Reference range previously reported as 0.75 - 1.45 µg/mL for all ages. New reference ranges have now been established for pediatrics.
4/6/2010: Method change; previously listed as Inductively Coupled Plasma (ICP) Emission Spectroscopy
9/9/2014: Clarification of tube type.
11/23/2016: Updated minimum volume due to short samples.
2/14/2017: Tube update.