
Lab Dept: Chemistry

Test Name: CO2 TOTAL

General Information

Lab Order Codes: TCO2

Synonyms: Bicarb, Bicarbonate, Carbon Dioxide, Total; CO2

CPT Codes: 82374 – Carbon dioxide (bicarbonate)

Test Includes: CO2 concentration in mEq/L. Total CO2 is also included in the following panels: [Electrolyte Panel](#), [Basic Metabolic Panel](#), [Comprehensive Metabolic Panel](#), [Renal Panel](#)

Logistics

Test Indications: Useful for evaluation of acid-base balance and the body's ability to control pH. Bicarbonate ion is the principle transport form for CO2.

Lab Testing Sections: Chemistry

Phone Numbers: MIN Lab: 612-813-6280

STP Lab: 651-220-6550

Test Availability: Daily, 24 hours

Turnaround Time: 30 minutes

Special Instructions: N/A

Specimen

Specimen Type: Whole blood

Container: **Preferred:** Green top (Li Heparin) tube
Alternate: Red, marble or gold top tube

Draw Volume: 0.6 mL blood

Processed Volume: 0.2 mL plasma/serum

Collection: Collect sample anaerobically to minimize exposure to air for TCO2.

Special Processing: Lab Staff: Centrifuge specimen, remove serum/plasma aliquot into plastic sample cup. Analyze sample immediately or store at refrigerated temperatures. Once the sample is opened (uncapped), the sample must be processed within 1 hour for TCO₂.

Patient Preparation: None

Sample Rejection: Mislabeled or unlabeled specimens; sample submitted in incorrect tube

Interpretive

Reference Range:

Alinity C and Architect c4000:		
Age:	Male (mEq/L)	Female (mEq/L)
0 – 14 days	5 – 20	5 – 20
15 days – 364 days	10 – 24	10 – 24
1 – 4 years	14 – 24	14 – 24
5 – 14 years	17 – 26	17 – 26
15 – 18 years	18 – 28	17 -26
19 – 59 years	22 – 29	22 – 29
>60 years	23 – 31	23 – 31

Critical Values: <10 or >40 mEq/L

Limitations:

- CO₂ decreases when uncapped specimens are exposed to air. |
- Underfilling of vacutainer collection tubes may decrease CO₂ results by as much as 3 mEq/L.

Methodology: ABBOTT: PEP Carboxylase

References: Tietz Textbook of Clinical Chemistry (1999) 3rd Edition, W.B. Saunders Company

Architect Carbon Dioxide Pkg Insert, Abbott Laboratories Diagnostic Division, Abbott Park, IL 60064, March 2017

Alinity Carbon Dioxide Pkg Insert, Abbott Laboratories Diagnostic Division, Abbott Park, IL 60064, February 2019

CALIPER pediatric reference range database (2019) Retrieved October 3, 2019 from <https://caliper.research.sidkkids.ca/#/>

Clinical Significance, Dade Behring Inc., Glasgow Business Community,
Mailbox 531, P.O. Box 6101, Newark, Delaware 19714

Jacobs & DeMott Laboratory Test Handbook (2001) Lexi-Comp, Inc,
Hudson, OH, 5th Edition, 2001

Updates:

2/14/2005: Critical values previously listed as <10 to >35 mEq/L.

8/19/2009: Turnaround time previously listed as 2 hours.

4/24/2013: Conversion to enzymatic CO₂ on backup instruments.

2/9/2016: Update alt tube type

10/18/2019: New backup instrumentation and related reference ranges

4/7/2021: Updated reference ranges