

CARBON DIOXIDE- carbon dioxide gas
Messer Merchant Production LLC

Messer Production - Carbon Dioxide Refrigerated Liquid USP

Bulk Carbon Dioxide USP Certificate of Analysis

This is to certify that the carbon dioxide tested at MESSER PLANT on 10/27/2025, meets the United States Pharmacopoeia (USP) specifications, the requirements of Federal Specifications BB-C-101 Grade A and QVL E of CGA G6.2. This product was manufactured at a facility registered with the Federal Food and Drug Administration and is approved for prescription drug use. This product is not guaranteed to meet any other specification or intended for pesticide use. NDA 205815 NADA 141371

Furthermore, batch number 5784-A-102725-01, and lot number TCO2002-102725-13, which was loaded on 10/27/2025 and produced at MESSER PLANT comprises this shipment and was analyzed as shown below.

Analytical results are generated using USP monograph or validated equivalent methods.

FOR MEDICAL USE

Requirement

Analytical Method

Limit of Detection¹

Specification Limit

Result

Carbon Dioxide Assay (CO₂)

Speed of Sound

99.99%

99.0%

99.99%

Nitrogen Oxide (NO)

IMR-MS

0.05 ppm

2.5 ppm

ND

Nitrogen Dioxide (NO₂)

IMR-MS

0.1 ppm

2.5 ppm

ND

Ammonia (NH₃)

IMR-MS

0.03 ppm

25 ppm

ND

Sulfur Dioxide (SO₂)

IMR-MS

0.03 ppm

5 ppm

ND

Hydrogen Sulfide (H₂S)

IMR-MS

0.03 ppm

1 ppm

ND

Carbon Monoxide (CO)

FTIR

0.05 ppm

10 ppm

ND

Moisture (H₂O)

Quartz Crystal

0.5 ppm

200 ppm

0.77 ppm

Notes:

Positive Carbon Dioxide Identification is achieved when the Assay results demonstrate meeting the specification.

The limit of detection (LOD) for each test method is the threshold value for results to be reported with certainty in the accuracy of results. A test result outside the detection limit for the test method will be reported as ND.

ND = None Detected

ppm = parts per million by volume, ppb = parts per billion by volume, 1 ppm = 1,000 ppb

Product analyzed using Messer Ultra Guard Suite

Certified By:

On:

(Signature)

(Date)

John Doe

(Print Name & Title)

On behalf of Messer

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Requirement	Analytical Method	Limit of Detection ¹	Specification Limit	Result
Carbon Dioxide Assay (CO ₂)	Speed of Sound	99.99%	99.0%	99.99%
Nitrogen Oxide (NO)	IMR-MS	0.05 ppm	2.5 ppm	ND
Nitrogen Dioxide (NO ₂)	IMR-MS	0.1 ppm	2.5 ppm	ND
Ammonia (NH ₃)	IMR-MS	0.03 ppm	25 ppm	ND
Sulfur Dioxide (SO ₂)	IMR-MS	0.03 ppm	5 ppm	ND
Hydrogen Sulfide (H ₂ S)	IMR-MS	0.03 ppm	1 ppm	ND
Carbon Monoxide (CO)	FTIR	0.05 ppm	10 ppm	ND
Moisture (H ₂ O)	Quartz Crystal	0.5 ppm	200 ppm	0.77 ppm

Notes:

- 1) Positive Carbon Dioxide Identification is achieved when the Assay results demonstrate meeting the specification.
- 2) The limit of detection (LOD) for each test method is the threshold value for results to be reported with certainty in the accuracy of results. A test result outside the detection limit for the test method will be reported as ND.
- 3) ND= None Detected
- 4) ppm= parts per million by volume, ppb=parts per billion by volume, 1 ppm= 1,000 ppb

Product analyzed using Messer Ultra Guard Suite

Certified By:

 (Signature) On: _____
 (Date)

John Doe On behalf of Messer
 (Print Name & Title)

CARBON DIOXIDE
 carbon dioxide gas

Product Information

Product Type	HUMAN PRESCRIPTION DRUG	Item Code (Source)	NDC:45149-014
Route of Administration	RESPIRATORY (INHALATION)		

Active Ingredient/Active Moiety

Ingredient Name	Basis of Strength	Strength
CARBON DIOXIDE (UNII: 142M471B3J) (CARBON DIOXIDE - UNII:142M471B3J)	CARBON DIOXIDE	990 mL in 1 L

Packaging

#	Item Code	Package Description	Marketing Start Date	Marketing End Date
1	NDC:45149-014-01	18770 L in 1 TANK; Type 0: Not a Combination Product	01/01/1965	

Marketing Information

Marketing Category	Application Number or Monograph Citation	Marketing Start Date	Marketing End Date
NDA	NDA205815	01/01/1965	

Labeler - Messer Merchant Production LLC (809567303)

Registrant - Messer Merchant Production LLC (831800201)

Establishment

Name	Address	ID/FEI	Business Operations
Messer Merchant Production LLC		831800201	manufacture(45149-014) , api manufacture(45149-014)

Revised: 11/2025

Messer Merchant Production LLC