

**CARBON DIOXIDE REFRIGERATED- carbon dioxide gas  
Messer LLC**

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**Messer LLC - Carbon Dioxide**

MESSER Gases for Life

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 205764 NADA 141362

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 Detection Specification Limit Result

Carbon Dioxide Assay (CO<sub>2</sub>) Speed of Sound 99.99 % 99.0 % 99.99%

Nitrogen Oxide (NO) IMR-MS 0.05 ppm 2.5 ppm ND

Nitrogen Dioxide (NO<sub>2</sub>) IMR-MS 0.1 ppm 2.5 ppm ND

Ammonia (NH<sub>3</sub>) IMR-MS 0.03 ppm 25 ppm ND

Sulfur Dioxide (SO<sub>2</sub>) IMR-MS 0.03 ppm 5 ppm ND

Hydrogen Sulfide (H<sub>2</sub>S) IMR-MS 0.03 ppm 1 ppm ND

Carbon Monoxide (CO) FTIR 0.05 ppm 10 ppm ND

Moisture (H<sub>2</sub>O) 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:

(Signature) (Date)

John Doe  
(Print Name & Title)

On behalf of Messer



## **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 Pharmacopeia (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 205764 NADA 141362**

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.

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### **FOR MEDICAL USE**

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

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Product analyzed using Messer Ultra Guard Suite

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#### **Certified By:**

\_\_\_\_\_  
(Signature) On: \_\_\_\_\_  
(Date)

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

# CARBON DIOXIDE REFRIGERATED

carbon dioxide gas

## Product Information

<b>Product Type</b>	HUMAN PRESCRIPTION DRUG	<b>Item Code (Source)</b>	NDC:52438-014
<b>Route of Administration</b>	RESPIRATORY (INHALATION)		

## Active Ingredient/Active Moiety

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

## Packaging

<b>#</b>	<b>Item Code</b>	<b>Package Description</b>	<b>Marketing Start Date</b>	<b>Marketing End Date</b>
1	NDC:52438-014-20	18770 L in 1 TANK; Type 0: Not a Combination Product	01/01/1965	
2	NDC:52438-014-21	59 L in 1 CYLINDER; Type 0: Not a Combination Product	01/01/1965	12/31/2025

## Marketing Information

<b>Marketing Category</b>	<b>Application Number or Monograph Citation</b>	<b>Marketing Start Date</b>	<b>Marketing End Date</b>
NDA	NDA205764	01/01/1965	

**Labeler** - Messer LLC (001368141)

**Registrant** - Messer LLC (001368141)

## Establishment

<b>Name</b>	<b>Address</b>	<b>ID/FEI</b>	<b>Business Operations</b>
Messer LLC		004830011	manufacture(52438-014) , api manufacture(52438-014)

## Establishment

<b>Name</b>	<b>Address</b>	<b>ID/FEI</b>	<b>Business Operations</b>
Messer LLC		020153345	manufacture(52438-014) , api manufacture(52438-014)

## Establishment

<b>Name</b>	<b>Address</b>	<b>ID/FEI</b>	<b>Business Operations</b>
Messer LLC		833150639	manufacture(52438-014) , api manufacture(52438-014)