# Cryogenic Cooling Gas Standards

(Nitrogen $N_2$, Carbon Dioxide $CO_2$, Helium He)

**YIGAS INTERNATIONAL LIMITED**

## 1. Overview

Cryogenic cooling gases are essential in food freezing, pharmaceutical cold chains, and precision material processing. YIGAS provides liquid nitrogen ($N_2$), carbon dioxide ($CO_2$), and helium (He) with stable purity and reliable delivery for efficient, low-temperature operations.

## 2. Technical Specifications

| Gas | Purity Level | Typical Phase | Temperature Range | Common Pressure |
|---|---|---|---|---|
| $N_2$ | ≥99.999% | Liquid / Gas | -196 °C | 5—200 bar |
| $CO_2$ | ≥99.9% | Liquid / Solid (Dry Ice) | -78.5 °C | 10—60 bar |
| He | ≥99.999% | Gas / Liquid | -269 °C | 5—200 bar |

## 3. Industrial Standards

All gases comply with:
- ISO 14175 – Industrial gases for welding and processing
- EIGA Doc 123/19 – Cryogenic liquid safety standards
- GB/T 8982 2020 – Purity and analytical testing
- DOT/TPED – Cylinder and storage compliance

## 4. Applications

- $N_2$: Food quick-freezing, biopharma cold storage, cryogenic testing
- $CO_2$: Dry ice cooling, transport refrigeration, packaging
- He: Superconducting equipment, cryogenic maintenance, precision cooling

## 5. Packaging & Supply

Cylinder • Dewar Tank • Liquid Bulk • On-site System

## 6. Contact Information

www.yigasgroup.com
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*This document provides reference specifications for YIGAS cryogenic cooling gases. Customized supply and technical support are available upon request.*