



Document Title:

290-0036-00
TMx Verification Bottle Specification

Revision: A

Required	Printed Name and Signature	Date
Purchasing		12/13/2021
	Elizabeth Vile	
Manufacturing		12/13/2021
	Shrey Gupta	
Engineering		12/9/2021
	Desiree Duncan	

Only documents viewed "ELECTRONICALLY" or stamped "CONTROLLED COPY" in **RED** are considered controlled or valid for use. Do not write in any "CONTROLLED COPY". Changes may be made only through Documentation Control. To initiate change, follow the Document Change Notice procedure available from Document Control. If you need a "CONTROLLED COPY" of this document, please see Document Control. For validation that this document is current, or for any other information concerning this document, contact Document Control.

Change Record Sheet

ECN #	DESCRIPTION OF ACTION	INITIATOR	DATE	PAGES	REV
42224	Specification reference copied from 290-0024-xx, modified for C10 Increased water from <1 to <5 due to mixing method	D. Duncan	12/9/21	All	A

Table of Contents

CHANGE RECORD SHEET	2
POLICY	4
SCOPE	4
PURPOSE	4
SPECIFICATIONS	5
GAS CONCENTRATIONS	5
CYLINDER SPECIFICATIONS	5
FINAL PRODUCT SPECIFICATIONS	6
ORIENTATION OF LABEL ON BOTTLE ...	ERROR! BOOKMARK NOT DEFINED.

Policy

This specification must be followed when manufacturing Serveron part **290-0036-00** 8 Gas Verification Cylinder.

Scope

Define the requirements for Serveron part **290-0036-00** 8 Gas Verification Cylinder.

Purpose

The purpose of this document is to list the specifications of Serveron part **290-0036-00** 8 Gas Verification Cylinder:

- Specify Gas Concentrations, Cylinder, and Final Product
- State Acceptance and Labeling criteria

Specifications

Gas Concentrations

Gas	Concentration (v/v)
Hydrogen - H ₂	2,000 ppm
Oxygen - O ₂	1,000 ppm
Methane - CH ₄	500 ppm
Carbon Monoxide - CO	750 ppm
Carbon Dioxide - CO ₂	3,000 ppm
Ethylene - C ₂ H ₄	250 ppm
Ethane - C ₂ H ₆	500 ppm
Acetylene - C ₂ H ₂	100 ppm
Water - H ₂ O	< 5 ppm
Argon - Ar	≤ 50 ppm (Assay from Nitrogen)
Diluent - (Balance)	UHP N ₂ or Better

Cylinder Specifications

Attribute	Specification
Cylinder Size (US)	34 Liter
Gas Content	34 liters = 1.0 cu. ft. at 500 psig
Cylinder Material	Aluminum
Fitting Size (CGA)	C10

Final Product Specifications

Attribute	Specification
NIST Traceability	Analyzed and Certified on a per lot basis
Accuracy of Certification	± 2% of analyzed concentrations for each gas (maximum)
Accuracy of component concentrations	±10% from requested concentrations (maximum)
Certified Expiration Date	5 years from Analysis Date (minimum)
Certificate of Analysis to include, but not limited to	<ol style="list-style-type: none"> 1. Analysis Date 2. Expiration Date (Analysis Date plus 5 years, min.) 3. Lot # and Cylinder # 4. Serveron Part # (290-0036-00_A) 5. Manufacturers Part # 6. Analytical Accuracy of Certification 7. Gases listed individually with: <ol style="list-style-type: none"> a. Certified Concentrations b. Requested Concentrations 8. Description of test methodology and standards used for certification 9. Analysis Lab Name, Address, and Phone Number 10. Signature of Analyst
Cylinder Label	<p>A label will be permanently affixed to each cylinder and will include:</p> <ol style="list-style-type: none"> 1. Gases listed individually with Certified Concentrations 2. Lot # 3. Expiration Date 4. Analytical Accuracy of Certification 5. Cylinder Capacity 6. Cylinder Pressure (psig max.) 7. Serveron Part number and revision 8. Manufacturers Part # 9. Item 1 & 3 will be visible from the bottom of the cylinder to ensure access regardless of the final install rotation of the bottle.

ACETYLENE	99.9 PPM
ETHYLENE	250 PPM
METHANE	501 PPM
ETHANE	500 PPM
CARBON MONOXIDE	756 PPM
OXYGEN	1000 PPM
HYDROGEN	2060 PPM
CARBON DIOXIDE	3000 PPM
ARGON	3.5 PPM
WATER	3 PPM
NITROGEN	BALANCE

EXP DATE: OCT 2024