



UL 252

# Underwriters Laboratories Inc. Standard for Safety

## Compressed Gas Regulators



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UL Standard for Safety for Compressed Gas Regulators, UL 252

Ninth Edition, Dated September 16, 2010

### **SUMMARY OF TOPICS**

***This new edition of ANSI/UL 252 includes revisions to 12.4 to clarify the excess-pressure test by specifying that the air inlet port can be charged with air or nitrogen and to allow an alternate test method.***

The revised requirements are substantially in accordance with Proposal(s) on this subject dated December 18, 2009 and March 12, 2010.

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The requirements in this Standard are now in effect, except for those paragraphs, sections, tables, figures, and/or other elements of the Standard having future effective dates as indicated in the note following the affected item. The prior text for requirements that have been revised and that have a future effective date are located after the Standard, and are preceded by a "SUPERSEDED REQUIREMENTS" notice.

The following table lists the future effective date with the corresponding reference.

| Future Effective Date | Reference                         |
|-----------------------|-----------------------------------|
| September 9, 2011     | Paragraph 7.9, Sections 16 and 17 |

SEPTEMBER 16, 2010

1

UL 252

## Standard for Compressed Gas Regulators



ANSI/UL 252-2010

The first and second editions were titled Standard for Pressure Regulators or Reducing Valves and numbered UL 252C. The third and fourth editions were titled Gas Pressure Regulators.

First Edition – March, 1928  
Second Edition – May, 1951  
Third Edition – August, 1960  
Fourth Edition – May, 1973  
Fifth Edition – December, 1979  
Sixth Edition – June, 1984  
Seventh Edition – April, 1996  
Eighth Edition – October, 2003

### Ninth Edition

**September 16, 2010**

This ANSI/UL Standard for Safety consists of the Ninth Edition.

The most recent designation of ANSI/UL 252 as an American National Standard (ANSI) occurred on September 16, 2010. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page, or effective date information.

The Department of Defense (DoD) has adopted UL 252 on September 26, 1988. The publication of revised pages or a new edition of this Standard will not invalidate the DoD adoption.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at <http://csds.ul.com>.

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## CONTENTS

## INTRODUCTION

|                              |   |
|------------------------------|---|
| 1 Scope .....                | 5 |
| 2 Components .....           | 5 |
| 3 Units of Measurement ..... | 6 |
| 4 Undated References .....   | 6 |
| 5 Glossary .....             | 6 |

## CONSTRUCTION

|                     |   |
|---------------------|---|
| 6 Assembly .....    | 7 |
| 7 Materials .....   | 8 |
| 8 Connections ..... | 8 |
| 9 Accessories ..... | 9 |

## PERFORMANCE

|                                                                                     |    |
|-------------------------------------------------------------------------------------|----|
| 10 General .....                                                                    | 9  |
| 11 Seat- and External-Leakage Test .....                                            | 10 |
| 12 Excess-Pressure Test .....                                                       | 11 |
| 13 Endurance Test .....                                                             | 11 |
| 14 Volume-Change and Weight-Loss Tests .....                                        | 12 |
| 14.1 General .....                                                                  | 12 |
| 14.2 Tests using n-Hexane and IRM 903 Oil .....                                     | 12 |
| 14.3 Tests using liquid MPS .....                                                   | 13 |
| 15 Accelerated-Aging Test .....                                                     | 14 |
| 16 Accelerated Aging Test for Nonmetallic Bonnet Bodies .....                       | 14 |
| 17 Accelerated Hydrogen-Pressure Aging Test .....                                   | 14 |
| 18 Comparative Corrosion Tests .....                                                | 15 |
| 18.1 General .....                                                                  | 15 |
| 18.2 Tests in the presence of salt spray (fog) .....                                | 15 |
| 18.3 Tests in the presence of moist hydrogen sulfide-air mixture .....              | 15 |
| 18.4 Tests in the presence of moist sulfur dioxide-carbon dioxide-air mixture ..... | 16 |

## MANUFACTURING AND PRODUCTION TESTS

|                  |    |
|------------------|----|
| 19 General ..... | 16 |
|------------------|----|

## MARKINGS

|                  |    |
|------------------|----|
| 20 General ..... | 16 |
|------------------|----|

## INSTRUCTIONS

|                  |    |
|------------------|----|
| 21 General ..... | 17 |
|------------------|----|

## SUPPLEMENT SA - OXYGEN AND ACETYLENE WELDING REGULATORS FOR USE UNDER FEDERAL AGENCY REGULATIONS

### INTRODUCTION

|                    |     |
|--------------------|-----|
| SA1 Scope .....    | SA1 |
| SA2 Glossary ..... | SA1 |

### CONSTRUCTION

|                           |     |
|---------------------------|-----|
| SA3 General .....         | SA1 |
| SA4 Connections .....     | SA2 |
| SA5 Relief Valves .....   | SA3 |
| SA6 Pressure Gauges ..... | SA3 |

### PERFORMANCE

|                                            |     |
|--------------------------------------------|-----|
| SA7 General .....                          | SA3 |
| SA8 Performance Characteristics Test ..... | SA4 |
| SA9 Pressure Regulation Test .....         | SA4 |
| SA10 Flow Regulation Test .....            | SA4 |
| SA11 Static Increment (Lock-Up) Test ..... | SA5 |
| SA12 Flow Capacity Test .....              | SA5 |
| SA13 Proof Pressure Test .....             | SA6 |
| SA14 Burst Pressure Test .....             | SA6 |
| SA15 Endurance Test .....                  | SA6 |
| SA16 Immersion Tests .....                 | SA7 |

### APPENDIX A

|                               |    |
|-------------------------------|----|
| Standards for Components..... | A1 |
|-------------------------------|----|

## INTRODUCTION

### 1 Scope

1.1 These requirements cover regulators used to reduce the pressure of compressed industrial gases from a source or storage cylinder pressure of not more than 5500 psig (37.91 MPa) to the use pressure.

1.2 Regulators covered by these requirements are intended for use with compressed gases such as air, carbon dioxide, inert gases, fuel gases, nitrogen, nitrogen oxide, and oxygen.

1.3 Regulators for welding, cutting, and heating operations are intended for use in accordance with the Standard for the Design and Installation of Oxygen-Fuel Gas Systems for Welding, Cutting, and Allied Processes, NFPA 51.

1.4 These requirements do not cover:

- a) LP-Gas pressure regulators for equipment intended for installation and use in accordance with requirements of the Liquefied Petroleum Gas Code, NFPA 58. Such regulators are evaluated under the Standard for LP-Gas Regulators, UL 144.
- b) Regulators for handling liquids under cryogenic temperatures.
- c) The regulating performance flow characteristics of the regulator, and the physiological effects of regulators to be used with medical gases.

### 2 Components

2.1 Except as indicated in 2.2, a component of a product covered by this standard shall comply with the requirements for that component. See Appendix A for a list of standards covering components used in the products covered by this standard.

2.2 A component is not required to comply with a specific requirement that:

- a) Involves a feature or characteristic not required in the application of the component in the product covered by this standard, or
- b) Is superseded by a requirement in this standard.

2.3 A component shall be used in accordance with its rating established for the intended conditions of use.

2.4 Specific components are incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions.

### 3 Units of Measurement

3.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.

3.2 Unless otherwise indicated, all voltage and current values mentioned in this standard are root-mean-square (rms).

### 4 Undated References

4.1 Any undated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.

### 5 Glossary

5.1 For the purpose of this standard the following definitions apply.

5.2 FUEL GAS – Acetylene, hydrogen, natural gas, LP-Gas, methylacetylene-propadiene stabilized, and other liquefied and nonliquefied flammable gases that are stable because of their composition or because of the conditions of storage.

5.3 INERT GAS – Helium, neon, argon, krypton, xenon and radon are evaluated as inert gases.

5.4 REGULATOR, CYLINDER – A regulator provided with inlet fittings complying with the Standard for Compressed Gas Cylinder Valve Outlet and Inlet Connections, CGA Pamphlet V-1 and intended to reduce the pressure from that of the cylinder to the use pressure.

5.5 REGULATOR, LINE, – A regulator that is provided with threaded inlet ports intended to be installed in a compressed gas system to reduce the source pressure to the use pressure.

5.6 REGULATOR, STATION – A regulator that is provided with an inlet connection complying with the Pipeline Regulator Inlet Connection Standards, CGA Pamphlet E-3 and intended to reduce a pressure of less than 200 psi (1380 kPa) to the use pressure.

5.7 REGULATOR CLASS – Defines the maximum end use pressure for the product based on the gas pressure or the CGA connection provided on the compressed gas regulator. See Table 5.1.

**Table 5.1**  
**Regulator class**

| Class | Test pressure, |       | Definition                                                                                                                                          |
|-------|----------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
|       | psi            | (MPa) |                                                                                                                                                     |
| I     | 200            | 1.38  | Station type regulator                                                                                                                              |
| II    | 375            | 2.59  | LP-Gas or MPS regulator                                                                                                                             |
| III   | 500            | 3.45  | CGA Nos. 160, 165, 182, 200, 240, 290, 295, 300, 410, 415, 440, 450, 510, 520, 600, 668, 678, 679                                                   |
| IV    | 1800           | 12.41 | Carbon dioxide regulator                                                                                                                            |
| V     | 3000           | 20.68 | CGA Nos. 110, 170, 180, 280, 296, 320, 326, 330, 346, 350, 500, 540, 555, 580, 590, 660, 670, 705, 860, 870, 880, 890, 910, 930, 940, 950, 960, 965 |
| VI    | 4000           | 27.58 | CGA No. 577                                                                                                                                         |
| VII   | 5500           | 37.92 | CGA Nos. 347, 680, 695, 701                                                                                                                         |

5.8 REMOVABLE – Capable of being removed using ordinary hand tools and an opening created by the removal shall be capable of being plugged using flare fittings or pipe plugs.

5.9 RUPTURE – A fracture in an external component of the product.

## CONSTRUCTION

### 6 Assembly

6.1 A regulator shall include all of the components required for its intended operation and installation, and shall be assembled as a single unit. However, a regulator having an external adjusting screw may be shipped with the adjusting screw unassembled and included in the same box with the regulator.

6.2 An inlet filter shall be provided on all regulators intended for use with oxygen. The filter shall be formed from a noncombustible material.

6.3 A regulator having an external adjusting screw shall be constructed so that turning the screw clockwise increases the regulator outlet pressure.

6.4 A regulator intended to be adjusted by the user shall be constructed so that the diaphragm spring cannot be compressed to its solid height.