CGA

Compressed Gas Association

The Standard For Safety Since 1913

CGA G-14—2017

NITROGEN TRIFLOURIDE

THIRD EDITION

PREFACE

As part of a program of harmonization of industry standards, the Compressed Gas Association (CGA) has issued CGA G-14, *Nitrogen Trifluoride*, jointly produced by members of the International Harmonization Council and originally published by the European Industrial Gases Association (EIGA) as EIGA Doc 92, *Nitrogen Trifluoride*.

This publication is intended as an international harmonized standard for the worldwide use and application of all members of the Asia Industrial Gases Association (AIGA), Compressed Gas Association (CGA), European Industrial Gases Association (EIGA), and Japan Industrial and Medical Gases Association (JIMGA). Each association's technical content is identical, except for regional regulatory requirements and minor changes in formatting and spelling.

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This document is subject to periodic review, and users are cautioned to obtain the latest edition. The Association invites comments and suggestions for consideration. In connection with such review, any such comments or suggestions will be fully reviewed by the Association after giving the party, upon request, a reasonable opportunity to be heard. Proposed changes may be submitted via the Internet at our web site, www.cganet.com.

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Work Item 14-021
Specialty Gases Committee

NOTE—Technical changes from the previous edition are underlined.

THIRD EDITION: 2017
SECOND EDITION: 2010
FIRST EDITION: 2003

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1 Introduction

Nitrogen trifluoride is an oxidizing compressed gas that is used in a number of applications as a fluorinating agent. It is this property that makes it valuable as a nonreactive source of fluorine for etching and cleaning applications. The active fluorine is released only if sufficient energy is applied. Once initiated, the reaction is self-propagating and presents a hazard for materials that are incompatible with fluorine, for example, flammable gas and metals.

Nitrogen trifluoride can be safely handled if equipment is properly designed and handling precautions are taken.

NOTE—This publication shall be used in conjunction with CGA P-63, *Disposal of Gases*, EIGA Doc 80, *Handling Gas Container Emergencies*, and CGA G-4.4, *Oxygen Pipeline and Piping Systems* [1, 2, 3].[1)]

2 Scope and purpose

Because of its widespread use and its potential for mishandling, this publication has been written and is intended for suppliers, distributors, and users of nitrogen trifluoride and its handling equipment. This publication provides a description of the potential hazards involved in handling nitrogen trifluoride and the guidelines to be taken to minimize risk potential.

The manufacture, purification, and analysis of nitrogen trifluoride are beyond the scope of this publication, although the general guidance given is also relevant to these processes.

Appendix A of this publication is an audit checklist.

3 Definitions

For the purpose of this publication, the following definitions apply.

3.1 Publication terminology

3.1.1 Shall
Indicates that the procedure is mandatory. It is used wherever the criterion for conformance to specific recommendations allows no deviation.

3.1.2 Should
Indicates that a procedure is recommended.

3.1.3 May
Indicates that the procedure is optional.

3.1.4 Will
Is used only to indicate the future, not a degree of requirement.

3.1.5 Can
Indicates a possibility or ability.

3.2 Technical definitions

3.2.1 autoignition temperature
Temperature at which a substance will spontaneously ignite in a specified oxidant at a given pressure.

[1] References are shown by bracketed numbers and are listed in order of appearance in the reference section.