Recommended Practices for Safe Oxyfuel Gas Heating Torch Operation
Key Words—Heating torch, fuel gas, oxyfuel gas, heating tips and heads, heating procedures

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Supersedes ANSI/AWS C4.3-83

Abstract

The newly revised manual for oxyfuel gas heating torch operation includes the latest procedures to be used in conjunction with oxyfuel gas heating equipment. The manual also includes the latest safety requirements. Complete lists of equipment are available from individual manufacturers.
# Table of Contents

**Personnel** .............................................................................................................................................................. iii

**Foreword** ................................................................................................................................................................. v

**List of Tables** ............................................................................................................................................................ ix

**List of Figures** .............................................................................................................................................................. ix

1. **General** ................................................................................................................................................................. 1
   1.1 Scope ................................................................................................................................................................. 1
   1.2 Units of Measure .............................................................................................................................................. 1

2. **Applicable Documents** ........................................................................................................................................ 1
   2.1 AWS Standards .............................................................................................................................................. 1
   2.2 NFPA Standards ............................................................................................................................................. 1
   2.3 RMA Standards ............................................................................................................................................. 1
   2.4 ISO Standards ............................................................................................................................................... 1
   2.5 CGA Standards ............................................................................................................................................. 2
   2.6 OSHA Standards ......................................................................................................................................... 2

3. **Equipment and Supplies** ................................................................................................................................... 2
   3.1 Oxygen Supply ................................................................................................................................................ 2
   3.2 Fuel Supply .................................................................................................................................................. 3
   3.3 Maximum Acetylene Pressure ....................................................................................................................... 3
   3.4 Pressure Regulators .................................................................................................................................. 3
   3.5 Hoses and Fittings ...................................................................................................................................... 5
   3.6 Heating Torches ......................................................................................................................................... 7
   3.7 Heating Tip/Head ....................................................................................................................................... 7
   3.8 Maintenance of Heating Tips or Heads ....................................................................................................... 9
   3.9 Protective Clothing and Equipment .......................................................................................................... 9
   3.10 Safe Use, Handling, and Storage of Gas Cylinders .................................................................................... 9
   3.11 Safe Working Environment ....................................................................................................................... 10

4. **Start-Up and Shut-Down Procedures** ................................................................................................................ 10
   4.1 Setting Up Equipment ................................................................................................................................. 10
   4.2 Lighting the Torch ...................................................................................................................................... 12
   4.3 Equipment Shutdown ................................................................................................................................. 12
   4.4 Equipment Not in Use ............................................................................................................................... 13
   4.5 Re-Use of Equipment Already Connected ............................................................................................ 13

5. **Flame Adjustment** .............................................................................................................................................. 13
   5.1 Types of Flames ....................................................................................................................................... 13
   5.2 Flashback and Backfire ............................................................................................................................. 14

6. **Flame Heating Procedures** ................................................................................................................................ 14
   6.1 Testing ......................................................................................................................................................... 14
   6.2 Troubleshooting ....................................................................................................................................... 14

7. **Manifolds for Multiple Cylinder and Piping Systems** ....................................................................................... 14
8. Fuel Gas Cylinder Withdrawal Rates ................................................................. 14
   8.1 Fuel Gas ........................................................................................................ 14
   8.2 Liquid Oxygen .............................................................................................. 14

9. Flashback Arrestors and Check Valves ............................................................. 15

10. Safety and Health ............................................................................................. 15

Nonmandatory Annex .......................................................................................... 17
Annex A—Guidelines for Preparation of Technical Inquiries for AWS Technical Committees ........................................ 17
List of AWS Documents on Oxyfuel Gas Welding and Cutting ................................ 19
List of Tables

Table | Page No.
--- | ---
1 Acetylene Withdrawal | 4
2 Methylacetylene–Propadiene Stabilized (MPS) Withdrawal | 4
3 Propylene Withdrawal | 5
4 Propane Withdrawal | 5

List of Figures

Figure | Page No.
--- | ---
1 Oxygen Cylinder | 2
2 Typical Fuel Gas Cylinders | 3
3 Pressure Regulators | 6
4 Hoses and Fittings | 6
5 Manual Heating Torch | 7
6 Multiflame Heating Heads | 8
7 Water Cooled Flame Hardening Head | 8
8 Carburizing Flame | 13
9 Neutral Flame | 13
10 Oxidizing Flame | 13
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1. General

1.1 Scope. This manual describes the equipment, procedures, and safe practices for oxyfuel gas heating torch operation. It is written for the operators of torches using single or multiple heating tips and heads. It is also recommended for management personnel associated with the oxyfuel gas heating torch operation and process.

Oxyfuel heating is an operation whereby various metals are heated in order to perform the following operations:

(1) Straightening and bending with mechanical force
(2) Flame straightening, and cambering
(3) Stress relieving
(4) Preweld and postweld heating
(5) Fusion of coatings
(6) Flame hardening
(7) Flame shrinking

The metal is heated by the direct application of single or multi flames to a desired elevated temperature. The heating process may be applied to all types of metal forms or shapes. An operator can make proper compensation for the effect of the metallurgical conditions, part geometry, and physical changes that may occur during the heating process.

In general, torch heating does not require any lengthy start-up. Operations can be performed in most locations, confined to very limited areas, under almost any conditions and, with relatively low equipment cost. Torch heating can also be performed on completed structures without dismantling them.

1.2 Units of Measure. This standard makes use of both U.S. Customary Units and the International System of Units (SI). The latter are shown within parentheses or in appropriate columns in tables and figures. The measurements may not be exact equivalents; therefore, each system shall be used independently.

2. Applicable Documents

2.1 AWS Standards

(1) ANSI Z49.1, Safety in Welding, Cutting, and Allied Processes
(3) AWS F4.1, Recommended Safe Practices for Preparation for Welding and Cutting of Containers and Piping

2.2 NFPA Standards

(1) NFPA-51, Oxygen-Fuel Gas Systems for Welding and Cutting

2.3 RMA Standards

(1) RMA IP-7, Specifications for Rubber Welding Hose

2.4 ISO Standards

(1) ISO 3821, Gas Welding Equipment—Rubber Hoses for Welding, Cutting, and Allied Processes
(2) ISO 3253, Hose Connections for Welding, Cutting, and Related Processes
(3) ISO 5175, Equipment used in Gas Welding, Cutting, and Allied Processes—Safety Devices for Fuel