AWS C4.6M:2006 (R2012)
(ISO 9013:2002 IDT)

An American National Standard

Thermal Cutting—Classification of Thermal Cuts—Geometric Product Specification and Quality Tolerances

American Welding Society®

Approved American National Standard
ANSI

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Approved by the
American National Standards Institute
July 10, 2006
Reaffirmed: October 30, 2012

Thermal Cutting—Classification of Thermal Cuts—Geometric Product Specification and Quality Tolerances

1st Edition

Prepared by the
American Welding Society (AWS) C4 Committee on Oxyfuel Gas Welding and Cutting

Under the Direction of the
AWS Technical Activities Committee

Approved by the
AWS Board of Directors

Abstract

This is the U.S. national adoption of ISO 9013:2002, *Thermal cutting — classification of thermal cuts — Geometric product specification and quality tolerances*. It includes three national annexes (Criteria for Describing Oxygen-Cut Surfaces with a photograph of a Surface Roughness Guide, a list of reference documents available for individuals involved with Oxyfuel Gas Welding and Cutting, and a guide for the preparation of technical inquiries to AWS) as well as a list of published AWS documents on Oxyfuel Gas Welding and Cutting.

American Welding Society®

International Standard Book Number: 0-87171-012-9
American Welding Society
8669 Doral Blvd., Suite 130, Doral, FL 33166

Printed in the United States of America
Reaffirmed: October 30, 2012

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Foreword

This foreword is not part of AWS C4.6M:2006 (R2012) (ISO 9013:2002 IDT), *Thermal Cutting—Classification of Thermal Cuts—Geometric Product Specification and Quality Tolerances*, but is included for informational purposes only.

This standard is the U.S. national adoption of ISO 9013:2002, *Thermal cutting—Classification of thermal cuts—Geometric product specification and quality tolerances*. Please note that for the purposes of this standard, the following editorial changes have been made for consistency:

1. the decimal comma has been replaced by the decimal point and
2. the words "this International Standard" have been replaced by "this standard."

This standard includes three national informative annexes which are an integral part of the national adoption of ISO 9013.

Annex C, *Criteria for Describing Oxygen-Cut Surfaces*, was taken from AWS C4.1–77 and is included for informational purposes only. This document comes with a plastic *Surface Roughness Guide for Oxygen Cutting* that is shown in the annex.

Annex D is a bibliography of reference documents recommended to all individuals involved with the oxyfuel gas welding and cutting of sheet, plate, extrusion, pipe, and other forms of materials using manual or mechanized oxyfuel gas torch welding and cutting equipment.

Annex E, *Guidelines for the Preparation of Technical Inquiries*, is the required procedure for sending inquiries to the AWS regarding AWS C4.6M:2006 (ISO 9013:2002 IDT), *Thermal Cutting—Classification of Thermal Cuts—Geometric Product Specification and Quality Tolerances*.

A list of AWS documents on Oxyfuel Gas Welding and Cutting which are available to the public is also included.

This standard makes sole use of the International System of Units (SI).

Safety and health issues and concerns are beyond the scope of this standard, and therefore are not fully addressed herein. Safety and health information is available from other sources, including, but not limited to, ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes* and applicable federal and state regulations.

Comments and suggestions for the improvement of this standard are welcome. They should be sent to the Secretary, AWS C4 Committee on Oxyfuel Gas Welding and Cutting, American Welding Society, 8669 Doral Blvd., Suite 130, Doral, FL 33166.

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1 Scope

This standard applies to materials suitable for oxyfuel flame cutting, plasma cutting and laser cutting. It is applicable to flame cuts from 3 mm to 300 mm, plasma cuts from 1 mm to 150 mm and to laser cuts from 0.5 mm to 40 mm. This standard includes geometrical product specifications and quality tolerances.

The geometrical product specifications are applicable if reference to this standard is made in drawings or pertinent documents, e.g. delivery conditions.

If this standard is also to apply, by way of exception, to parts which are produced by different cutting processes (e.g. high-pressure water jet cutting), this has to be agreed upon separately.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 1101:1983, *Technical drawings — Geometrical tolerancing — Tolerancing of form, orientation, location and run-out — Generalities, definitions, symbols, indications on drawings*

ISO 1302:2002, *Geometrical Product Specifications (GPS) — Indication of surface texture in technical product documentation*

ISO 2553, *Welded, brazed and soldered joints — Symbolic representation on drawings*

ISO 3274, *Geometrical Product Specifications (GPS) — Surface texture: Profile method — Nominal characteristics of contact (stylus) instruments*

ISO 4287:1997, *Geometrical Product Specifications (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters*

ISO 4288:1996, *Geometrical Product Specifications (GPS) — Surface texture: Profile method — Rules and procedures for the assessment of surface texture*

ISO 8015, *Technical drawings — Fundamental tolerancing principle*