

# Specification for Coiled Line Pipe

API SPECIFICATION 5LCP  
SECOND EDITION, OCTOBER 18, 2006

EFFECTIVE DATE: APRIL 18, 2007

ERRATA, JULY 2007

REAFFIRMED, JULY 2020



American  
Petroleum  
Institute

# Specification for Coiled Line Pipe

## Upstream Segment

API SPECIFICATION 5LCP  
SECOND EDITION, OCTOBER 18, 2006

EFFECTIVE DATE: APRIL 18, 2007

ERRATA, JULY 2007

REAFFIRMED, JULY 2020



American  
Petroleum  
Institute

## SPECIAL NOTES

API publications necessarily address problems of a general nature. With respect to particular circumstances, local, state, and federal laws and regulations should be reviewed.

Neither API nor any of API's employees, subcontractors, consultants, committees, or other assignees make any warranty or representation, either express or implied, with respect to the accuracy, completeness, or usefulness of the information contained herein, or assume any liability or responsibility for any use, or the results of such use, of any information or process disclosed in this publication. Neither API nor any of API's employees, subcontractors, consultants, or other assignees represent that use of this publication would not infringe upon privately owned rights.

API publications may be used by anyone desiring to do so. Every effort has been made by the Institute to assure the accuracy and reliability of the data contained in them; however, the Institute makes no representation, warranty, or guarantee in connection with this publication and hereby expressly disclaims any liability or responsibility for loss or damage resulting from its use or for the violation of any authorities having jurisdiction with which the publication may conflict.

API publications are published to facilitate the broad availability of proven, sound engineering and operating practices. These publications are not intended to obviate the need for applying sound engineering judgment regarding when and where the publications should be utilized. The formulation and publication of API publications is not intended in any way to inhibit anyone from using any other practices.

Any manufacturer marking equipment or materials in conformance with the marking requirements of an API standard is solely responsible for complying with all the applicable requirements of that standard. API does not represent, warrant, or guarantee that such products do in fact conform to the applicable API standard.

*All rights reserved. No part of this work may be reproduced, stored in a retrieval system, or transmitted by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior written permission from the publisher. Contact the Publisher, API Publishing Services, 200 Massachusetts Avenue, NW, Suite 1100, Washington, DC 20001-5571.*

## FOREWORD

The bar notations in the margins identify parts of this standard that have been changed from the previous API edition. While efforts have been made to ensure the accuracy of the notations, the user of this standard is responsible for recognizing any differences between this and the previous edition.

Nothing contained in any API publication is to be construed as granting any right, by implication or otherwise, for the manufacture, sale, or use of any method, apparatus, or product covered by letters patent. Neither should anything contained in the publication be construed as insuring anyone against liability for infringement of letters patent.

This document was produced under API standardization procedures that ensure appropriate notification and participation in the developmental process and is designated as an API standard. Questions concerning the interpretation of the content of this publication or comments and questions concerning the procedures under which this publication was developed should be directed in writing to the Director of Standards, American Petroleum Institute, 200 Massachusetts Avenue, NW, Suite 1100, Washington, DC 20001-5571. Requests for permission to reproduce or translate all or any part of the material published herein should also be addressed to the director.

Generally, API standards are reviewed and revised, reaffirmed, or withdrawn at least every five years. A one-time extension of up to two years may be added to this review cycle. Status of the publication can be ascertained from the API Standards Department, telephone (202) 682-8000. A catalog of API publications and materials is published annually and updated quarterly by API, 200 Massachusetts Avenue, NW, Suite 1100, Washington, DC 20001-5571.

Suggested revisions are invited and should be submitted to the Standards and Publications Department, API, 200 Massachusetts Avenue, NW, Suite 1100, Washington, DC 20001-5571, [standards@api.org](mailto:standards@api.org).

## CONTENTS

|  | Page |
|--|------|
| 1 SCOPE.....   | 1    |
| 2 REFERENCES .....   | 1    |
| 3 DEFINITIONS.....   | 2    |
| 4 INFORMATION TO BE SUPPLIED BY THE PURCHASER .....                | 3    |
| 4.1 Purchaser Specification .....                                  | 3    |
| 4.2 Optional Purchaser Requirements .....                          | 4    |
| 4.3 Requirements Subject To Agreement .....                        | 4    |
| 5 PROCESS OF MANUFACTURE AND MATERIAL .....                        | 5    |
| 5.1 Process Of Manufacture .....                                   | 5    |
| 5.2 Type Of Pipe .....   | 5    |
| 5.3 Types Of Welds .....   | 5    |
| 5.4 Welding Processes .....  | 5    |
| 5.5 Heat Treatment.....  | 6    |
| 5.6 Traceability.....  | 6    |
| 6 MATERIAL REQUIREMENTS .....                                      | 6    |
| 6.1 Chemical Properties.....                                       | 6    |
| 6.2 Mechanical Properties .....                                    | 7    |
| 7 DIMENSIONS, MASS PER UNIT LENGTH, DEFECTS, AND END FINISHES .. . | 8    |
| 7.1 General—dimensions And Mass Per Unit Length .....              | 8    |
| 7.2 Diameter.....  | 8    |
| 7.3 Wall Thickness .....   | 8    |
| 7.4 Calculated Mass Per Unit Length .....                          | 13   |
| 7.5 Length .....   | 13   |
| 7.6 Pipe-to-pipe Welds .....                                       | 13   |
| 7.7 Workmanship And Defects .....                                  | 13   |
| 7.8 Pipe Ends .....  | 15   |
| 7.9 Drift Testing.....   | 15   |
| 8 INSPECTION AND TESTING .....                                     | 15   |
| 8.1 Test Equipment .....   | 15   |
| 8.2 Testing Of Chemical Composition .....                          | 15   |
| 8.3 Testing Of Mechanical Properties .....                         | 15   |
| 8.4 Hydrostatic Tests .....  | 17   |
| 8.5 Dimensional Testing .....                                      | 18   |
| 8.6 Nondestructive Inspection.....                                 | 18   |
| 8.7 Test Methods .....   | 23   |
| 8.8 Invalidation Of Tests .....                                    | 23   |
| 8.9 Retests .....  | 24   |
| 9 MARKING .....  | 24   |
| 9.1 General.....   | 24   |
| 9.2 Sequence Of Markings .....                                     | 25   |
| 9.3 Length .....   | 26   |

## CONTENTS

|  | Page |
|--|------|
| 10 COATING AND PROTECTION . . . . .  | 26   |
| 10.1 Coatings . . . . .  | 26   |
| 10.2 Protection From Corrosion . . . . .   | 26   |
| 11 DOCUMENTS . . . . .   | 26   |
| 11.1 Certification . . . . .   | 26   |
| 11.2 Retention Of Records . . . . .  | 27   |
| APPENDIX A REQUIREMENTS FOR PIPE-TO-PIPE<br>WELDING OF COILED PIPE . . . . .         | 29   |
| APPENDIX B SKELP-END AND PIPE-TO-PIPE WELDING PROCEDURE<br>SPECIFICATION . . . . .   | 31   |
| APPENDIX C ELONGATION TABLES . . . . .   | 35   |
| APPENDIX D DIMENSIONS, MASS PER UNIT LENGTH AND TEST PRESSURES<br>SI UNITS . . . . . | 37   |
| APPENDIX E SUPPLEMENTARY REQUIREMENTS . . . . .                                      | 41   |
| APPENDIX F PURCHASER INSPECTION . . . . .  | 43   |
| APPENDIX G API MONOGRAM ANNEX . . . . .  | 45   |
| APPENDIX H COILED PIPE REELS . . . . .   | 47   |
| APPENDIX M SI (METRIC) CONVERSION PROCEDURE . . . . .                                | 49   |
| Figures  |      |
| 1 Tensile Test Full Section Specimen . . . . .                                       | 15   |
| 2 Orientation of Tensile Test Strip Specimen in Pipe . . . . .                       | 16   |
| 3 Tensile Test Strip Specimen . . . . .  | 16   |
| 4 Seam Weld Inspection Reference Standard . . . . .                                  | 22   |
| B-1 Guided-bend Test Specimen . . . . .  | 32   |
| B-2 Jig for Guided Bend Test . . . . .   | 34   |
| Tables   |      |
| 1 Chemical Requirements by Percentage of Mass . . . . .                              | 6    |
| 2 Tensile Requirements . . . . .   | 7    |
| 3 Coiled Line Pipe Dimensions, Mass per Unit Length and Test Pressures . . . . .     | 9    |
| 4 Tolerances for Diameter of Pipe Body . . . . .                                     | 12   |
| 5 Tolerances for Diameter at Pipe Ends . . . . .                                     | 12   |
| 6 Tolerances for Wall Thickness . . . . .  | 12   |
| 7 Maximum Trim Depth . . . . .   | 14   |
| 8 ISO Wire 4 Percent Image Quality Indicators . . . . .                              | 20   |
| 9 ISO Wire 2 Percent Image Quality Indicators . . . . .                              | 20   |
| 10 ASTM Image Quality Indicator . . . . .  | 20   |
| 11 Acceptance Limits . . . . .   | 22   |
| 12 Retention of Records . . . . .  | 27   |
| B-1 Guided-bend Test Jig Dimensions . . . . .  | 34   |
| C-1 Elongation Table . . . . .   | 35   |
| D-1 Dimensions, Mass per unit Length and Test Pressures—SI Units . . . . .           | 37   |

# Specification for Coiled Line Pipe

## 1 Scope

**1.1** The purpose of this Specification is to provide standards for pipe suitable for use in conveying gas, water, and oil in both the oil and natural gas industries.

This Specification covers welded steel continuously milled coiled line pipe in the size range 0.5 in. (12.7 mm) to 6.625 in. (168.3 mm). Pipe that is pipe-to-pipe welded outside the confines of the manufacturing plant is not included within this document.

**1.2** Grades covered by this specification are X52C, X56C, X60C, X65C, X70C, X80C, and X90C. Grades shall not be mixed within a milled length, or a spool.

Note: Grade designations used herein are composed of the letter X followed by the first two digits of the specified minimum yield strength in U.S. customary units, and the letter C is added to indicate coiled pipe.

**1.3** Pipe manufactured as Grade X60C or higher shall not be substituted for pipe ordered for Grade X52C without purchaser approval.

**1.4** Although the coiled line pipe meeting this specification is intended to be suitable for field welding, the manufacturer will not assume responsibility for field welding.

**1.5** The size designations used herein are outside-diameter sizes. Pipe sizes 2-<sup>3</sup>/<sub>8</sub> and larger are expressed as integers and fractions; pipe sizes smaller than 2-<sup>3</sup>/<sub>8</sub> are expressed to three decimal places.

**1.6** US customary units are used in this specification; SI (metric) units are shown in parentheses in the text and in many tables. See Appendix M for specific information about conversion factors and rounding procedures.

**1.7** The suitability of these products for use in environments containing hydrogen sulphide is outside of the scope of this document.

## 2 References

**2.1** This specification includes by reference, either in total or in part, the latest editions of the following API, industry and government standards. In the event there are conflicting requirements, this specification shall govern.

### API

- RP 5C7 *Recommended Practice for Coiled Tubing Operations in Oil and Gas Well Services.*
- Spec 5L *Specification for Line Pipe*
- Std 1104 *Welding Pipelines and Related Facilities.*

### ASME<sup>1</sup>

- Boiler and Pressure Vessel Code*, Section IX, "Welding and Brazing Qualifications"

### ASNT<sup>2</sup>

- SNT-TC-1A *Personnel Qualification and Certification in Nondestructive Testing.*

### ASTM<sup>3</sup>

- A 370 *Methods and Definitions for Mechanical Testing of Steel Products.*
- A 450 *Specification for General requirements for Carbon, Ferritic Alloy, and Austenitic Alloy Steel Tubes*
- A 761 *Test Methods, Practices, and Definitions for Chemical Analysis of Steel Products*
- E 4 *Practices for Force Verification of Testing Machines*
- E 8 *Test methods for Tension Testing of Metallic Materials*
- E 18 *Standard Test Methods for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials*
- E 29 *Practice for Using Significant Digits in Test Data to Determine Conformance With Specifications*

<sup>1</sup>ASME International, 3 Park Avenue, New York, New York 10016-5900, [www.asme.org](http://www.asme.org)

<sup>2</sup>ASNT, 1711 Arlingate Lane, Columbus, Ohio 43228, [www.asnt.org](http://www.asnt.org)

<sup>3</sup>ASTM International, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania, 19428-2959, [www.astm.org](http://www.astm.org)