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Issued
April, 1972

Supplement 2

to

API Std 5AC (Seventh Edition)

SPECIFICATION

for

GRADE C-75 & C-95 CASING AND TUBING

OFFICIAL PUBLICATION

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AMERICAN PETROLEUM INSTITUTE
Washington, D. C.

Issued by
AMERICAN PETROLEUM INSTITUTE
Division of Production
300 Corrigan Tower Bldg.
Dallas, Texas 75201

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Foreword

This supplement covers changes in API Std 5AC (Seventh Edition, April 1970): *Specification for Grade C-75 & C-95 Casing and Tubing*, adopted at the 1970 and 1971 Standardization Conferences. It also includes the correction of errors listed in an errata issued August, 1970.

Page 3, Heading
Change heading to read:
Suggestions for Ordering API Grade C-75 and C-95 Casing and Tubing.

Page 4, Heading
Change heading to read:
API Specification for Grade C-75 and C-95 Casing and Tubing.

Page 7, Par. 2.1; *Replace existing subparagraph b with the following:*

b. Electric Weld (C-95 Casing only)
Electric welded pipe is defined as pipe having one longitudinal seam formed by electric-flash welding or electric-resistance welding, without the addition of extraneous metal.

Page 7, Table 3.1; *Change the maximum carbon content in column 2 for Type 3 Grade C-75 casing and tubing from 0.43 to 0.48, and delete all requirements for Type 4 Grade C-75.*

Page 8, Par. 4.1; *Add the following:*
The tensile properties of the upset ends of upset pipe shall comply with the requirements given for the pipe body. In case of dispute the tensile properties, except elongation, shall be determined from a tensile test cut from the upset.

Page 9, Table 4.2; *Replace existing table with the following:*

TABLE 4.2
DISTANCE BETWEEN PLATES FOR FLATTENING TESTS

1	2	3
Grade	*D/t* Ratio	Distance Between Plates, max., in. or mm
C-75	16 and over	0.7D
	9.33 to 16	D(1.18—0.03 D/t)
	Less than 9.33	D(1.027—0.0136 D/t)
C-95	16 and over	0.75D
	11 to 16	D(1.23—0.03 D/t)
	Less than 11	D(1.022—0.011 D/t)

D = outside diameter of pipe, in inches or mm.
t = wall thickness of pipe, in inches or mm.

Page 12, Table 5.2
Delete the word "METRIC" from table heading.

Page 12, Table 5.2; *For 8⅝ in. OD — 36.00 lb. pipe change the test pressure in Col 7 from* 5000 *to* 5600.

Page 19, Table 6.3, Col 16
Line 10: Change 5.879 *to* 6.151
Line 11: Change 5.795 *to* 6.059
Line 12: Change 6.151 *to* 5.969
Line 13: Change 6.059 *to* 5.879
Line 14: Change 5.969 *to* 5.795

Page 14, Par. 6.3; *Replace existing paragraph with the following:*

6.3 Wall Thickness. Each length of pipe shall be measured for conformance to wall-thickness requirements. The wall thickness at any place shall not be less than the specified thickness minus the permissible under-tolerance specified in Table 6.6. Wall-thickness measurements shall be made with a mechanical caliper or with a properly calibrated nondestructive testing device of appropriate accuracy. In case of dispute, the measurement determined by use of the mechanical caliper shall govern. The mechanical caliper shall be fitted with contact pins having circular cross sections of ¼ in. (6,35 mm) diameter. The end of the pin contacting the inside surface of the pipe shall be rounded to a maximum radius of 1½ in. (38,10 mm) for pipe 6⅝ in. and larger, a maximum radius of d/4 for pipe less than 6⅝ in. with a minimum radius of ⅛ in. The end of the pin contacting the outside surface of the pipe shall be either flat or rounded to a radius of not less than 1½ in. (38,10 mm).

Page 24, Table 6.7; *Add the following under OUTSIDE DIAMETER, D:*

For 2⅜ in. and larger external-upset tubing the following tolerances shall apply to the outside diameter at distance L_a from the end of the pipe. The measurements shall be made with snap-gages or calipers. Changes in diameter between L_a and L_b shall be smooth and gradual. Pipe body tolerances do not apply for a distance of L_b from the end of the pipe.

Pipe Size, OD, in.	*Tolerance, in.*
2⅜-3½	+3/32 −1/32
4	+7/64 −1/32
4½	+7/64 −0.75% D

Page 25, Par. 8.1; *Replace existing paragraph with the following:*

8.1 Material. Couplings for grade C-75 casing and tubing shall be seamless. Couplings for grade C-95 casing shall be seamless, except that electric-flash welded couplings may be furnished on electric welded casing. Couplings shall be of the same grade and type as the pipe and shall be given the same heat treatment as the pipe.

Page 29, Par. 10.6; *Replace existing paragraph with the following:*

10.6 Injurious Defects. Any imperfection having a depth greater than 12½ per cent of the specified wall thickness, measured from the surface of the pipe, shall be considered an injurious defect. Pipe containing an injurious defect must be given one of the following dispositions:

1. The defect may be removed by grinding provided the remaining wall thickness is not less than 87½ per cent of the specified wall thickness. When the depth of grind exceeds 10 per cent of the specified wall thickness, the remaining wall thickness shall be verified in accordance with Par. 6.3.
2. The section of pipe containing the defect may be cut off within the limits of requirements on length.
3. Rejected.

Page 30, Par. 11.1; *Replace existing paragraph with the following:*

11.1 Pipe and couplings, manufactured in conformance with this specification, shall be marked by the manufacturer, as specified hereinafter. Additional paint-stenciled, hot-rolled or hot-stamped markings as desired by the manufacturer or as requested by the purchaser are not prohibited. Cold die-stamped marking of pipe or couplings is prohibited, except for the make-up triangle on buttress thread casing which may be cold die-stamped with rounded or blunt dies. Markings shall not overlap and shall be applied in such a manner as not to injure the pipe.

Page 30, Par. 11.4f; *Replace existing paragraph with the following:*

f. Pipe with Non-API Threads or End Finish Casing and tubing furnished with plain ends or end finish not detailed herein, but having the body of the pipe manufactured in accordance with the requirements specified herein, shall be marked with the symbol UF immediately following the API monogram.

Page 30, Par 11.4 h; *Replace existing paragraph with the following:*

h. Length[1], in feet and tenths of a foot, unless otherwise specified on the purchase order.

Page 30, Par 11.4; *Replace existing example at end of paragraph with the following:*

7 26 ⌀ C-75-1 AB CO (length) (total weight) (type thread)

Page 30, Par. 11.5; *Replace existing paragraph with the following:*

11.5 Die-Stamped Marking. Cold die-stamped marking of pipe or couplings is prohibited, except for the make-up triangle on buttress thread casing which may be cold die-stamped with rounded or blunt dies. When additional marking is desired hot-rolled marking or hot-stamped markings may be used. For bundled tubing in sizes 1.050 and 1.315 in., when paint-stenciled marks are omitted, die-stamped markings shall be applied to a metal tag affixed to each bundle.

Page 30, Par 11.6; *Replace existing paragraph with the following:*

11.6 Color Identification. In addition to the required markings as specified above, each length of casing and tubing shall be color coded by one or more of the following methods.

a. A paint band encircling the pipe at a distance not greater than 2 ft (0.61 m) from the coupling or box.
b. A paint band or bands encircling the center of the coupling.
c. Paint entire outside surface of coupling. The color shall be as follows:
   Grade C-75....Blue
   Grade C-95....Brown

Special-clearance couplings shall be painted the color indicative of the steel grade from which the couplings are manufactured, and shall also be painted with a black band around the center.

Page 31, Par 11.9; *Change first sentence to read as follows:*

11.9. Coatings. Unless otherwise ordered, pipe and couplings shall be given a mill coating for protection from rust while in transit.

Page 32, Table 5.1, Col 5;

Line 4: *Change* 612 *to* 569
Line 6: *Change* 555 *to* 520
Line 7: *Change* 640 *to* 520
Line 10: *Change* 605 *to* 562
Line 13: *Change* 492 *to* 485
Line 14: *Change* 548 *to* 485
Line 15: *Change* 598 *to* 485
Line 16: *Change* 654 *to* 485

Page 45, Par. SR1.3; *Replace existing subparagraph b with the following:*

b. Reference Standards. A reference standard having the same nominal diameter and thickness as the product being inspected shall be used to demonstrate the effectiveness of the inspection equipment and procedures at least once every working turn. The reference standard may be of any convenient length as determined by the manufacturer. It shall be scanned by the inspection unit in a manner simulating the inspection of the product. The reference standard shall contain an artificial imperfection of the size and shape specified in Fig. SR1.1. The notch shall be in the outer surface of the reference standard and shall be parallel to the longitudinal axis of the pipe, except for seamless pipe and at the option of the manufacturer the notch may be oriented at such an angle as to optimize detection of anticipated defects. The inspection equipment shall be adjusted to produce a well-defined indication when the reference standard containing the specified notch is scanned by the inspection unit.

Page 46, Fig. SR2.1; *change length requirements to read:*

LENGTH: FOR EDDY CURRENT—1.5 in. (38mm) MAX. TOTAL LENGTH
FOR DIVERTED FLUX AND ULTRASONIC—2 in. (50mm) MIN. AT FULL DEPTH

Page 46, Par. SR2.3; *Replace existing subparagraph b with the following:*

b. Reference Standards. A reference standard having the same nominal diameter and thickness as the product being inspected shall be used to demonstrate the effectiveness of the inspection equipment and procedures at least once every working turn. The reference standard may be of any convenient length as determined by the manufacturer. It shall be scanned by the inspection unit in a manner simulating the inspection of the product. For ultrasonic inspection, the reference standard shall contain a machined notch as specified in Fig. SR2.1. For electromagnetic inspection, the reference standard shall contain either a machined notch as specified in Fig. SR2.1 or a 1/16 in. (1,6 mm) drilled hole. The notch shall be in the outer surface of the reference standard and parallel to the longitudinal axis of the pipe, except for seamless pipe and at the option of the manufacturer the notch may be oriented at such an angle as to optimize detection of anticipated defects. The 1/16 in. (1,6 mm) hole shall be drilled radially through the wall of the reference standard. The inspection equipment shall be adjusted to produce a well-defined indication when the reference standard is scanned by the inspection unit.

Page 48, Appendix D, List of Authorized Manufacturers:

Change
Mannesmann Tube Company, Ltd.
to
The Algoma Steel Corporation, Limited
Sault Ste. Marie, Canada

Pipe Coupling Manufacturers, Inc.
to
PICOMA Industries, Inc., Martins Ferry, Ohio.

Add to listing under **PIPE and COUPLINGS**

Armco Steel Corp., Ambridge, Pa.
Compagnie Des Tubes De Normandie, Paris, France.
Kawasaki Steel Corporation, Tokyo, Japan

Add to listing under **COUPLINGS**

Capitol Manufacturing Co., Div. of Harsco Corp., Columbus, Ohio.
Kashiwara Machine Manufacturing Co., Ltd., Osaka, Japan.
The Pipe Machinery Company, Wickliffe, Ohio

Page 22, Table 6.5 and Fig. 6.5; *Replace existing table and drawing with the following:*

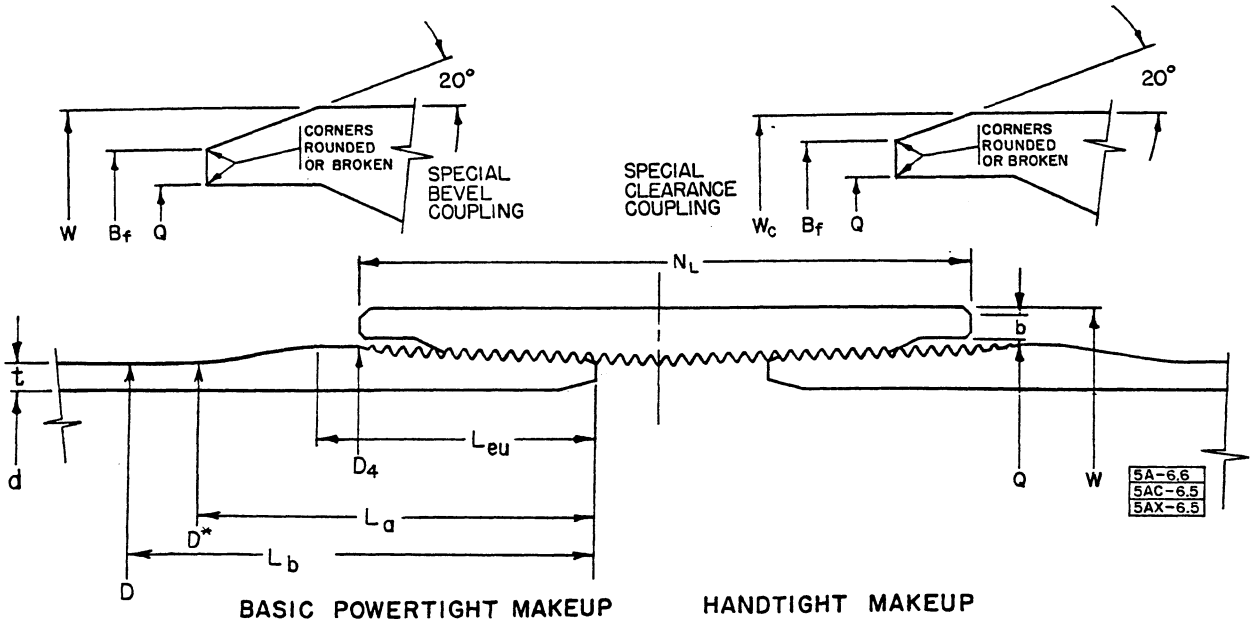
TABLE 6.5
EXTERNAL-UPSET TUBING
DIMENSIONS AND WEIGHTS

See Fig. 6.5

See Appendix A for Metric Tables

1	2	3	4	5	6	7	8	9	10	11
				Calculated Weight			Upset			
					Threads and Coupling[3]					
Size: Outside Diameter, Pipe Body, in. D	Nominal Weight:[1] Threads and Coupling, lb. per ft.	Wall Thickness, in. t	Inside Diameter, in. d	Plain End lb/ft w_{pe}	Regular lb e_w	Special Clearance lb e_w	Outside[2] Diameter, in. +0.0625 D_4	Length, End of Pipe to start of Taper, in. +0, −1 L_{eu}	Length, End of Pipe to end of Taper, in. L_a	Length, End of Pipe to start of Pipe Body, in. max. L_b
1.050	1.20	0.113	0.824	1.13	1.40	...	1.315	2⅜	...	...
1.315	1.80	0.133	1.049	1.68	1.40	...	1.469	2½	...	...
1.660	2.40	0.140	1.380	2.27	1.60	...	1.812	2⅝	...	...
1.900	2.90	0.145	1.610	2.72	2.00	...	2.094	2 11/16	...	...
2⅜	4.70	0.190	1.995	4.43	4.00	2.96	2.594	4	6	10
2⅜	5.95	0.254	1.867	5.75	3.60	2.56	2.594	4	6	10
2⅞	6.50	0.217	2.441	6.16	5.60	3.76	3.094	4¼	6¼	10¼
2⅞	8.70	0.308	2.259	8.44	5.00	3.16	3.094	4¼	6¼	10¼
3½	9.30	0.254	2.992	8.81	9.20	5.40	3.750	4½	6½	10½
3½	12.95	0.375	2.750	12.52	8.20	4.40	3.750	4½	6½	10½
4	11.00	0.262	3.476	10.46	10.60	...	4.250	4½	6½	10½
4½	12.75	0.271	3.958	12.24	13.20	...	4.750	4¾	6¾	10¾

[1]Nominal weights, threads and coupling (Col. 2), are shown for the purpose of identification in ordering.
[2]The minimum outside diameter of upset, D_4, is limited by the minimum length of full-crest threads. See API Std 5B.
[3]Weight gain due to end finishing. See Par. 6.5.



*See Table 6.7 for tolerance on outside diameter at distance L_a from end of pipe.

FIG. 6.5
EXTERNAL-UPSET TUBING AND COUPLING

See Table 6.5 for pipe dimensions
See Table 8.6 for coupling dimensions
See API Std 5B for thread details

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Note:

This edition supersedes the 6th edition dated April 1969. It includes changes adopted at the 1969 meeting.

This specification was originally adopted June 1962. The first edition was titled "Specification for Casing and Tubing for Sulfide Service" and issued as a tentative standard March 1963. Subsequent tentative editions were issued in 1964, 1965, 1967, and 1968.

This specification contains requirements on buttress and extreme-line casing. Acknowledgment is hereby given to the United States Steel Corporation for dedicating to the public all patents covering buttress casing, and to the Armco Division, Armco Steel Corporation for dedicating to the public all patents covering extreme-line casing.

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SUGGESTIONS FOR ORDERING API GRADE C-75 CASING AND TUBING

In placing orders for casing, tubing, or couplings to be manufactured in accordance with API Std 5AC, the purchaser should specify the following on the purchase order.

Specification	API Std 5AC
Quantity	.....
Type of pipe or couplings:	
Casing:	
Threaded or plain-end	Table 1.1, Par. 7.1a
Round, buttress, or extreme-line threads	Table 1.1, Par. 7.1a
With or without couplings	Par. 7.1a
Tubing:	
Non-upset or external-upset	Table 1.2
Threaded, plain-end, or special end	Par. 7.1b
With or without couplings	Par. 7.1b
Special-bevel couplings	Table 1.2, Par. 8.6
Special-clearance couplings	Table 1.2, Par. 8.5
Size (outside diameter)	Tables 1.1, 1.2
Weight per foot or wall thickness	Tables 1.1, 1.2
Grade and type	Par. 2.2, Table 3.1
Range length	Par. 6.6, Table 6.8
Electric-furnace, open-hearth, or basic-oxygen	Par. 2.3, 3.1, Table 3.1
Delivery date and shipping instructions	.....
Mill inspection by purchaser	Par. 10.1, 10.2

The purchaser should also state on the purchase order his requirements concerning the following stipulations, which are optional with the purchaser:

Supplementary ladle and check analyses	Par. 3.2, 3.3, 3.5
Couplings shipped separately	Par. 7.4
Coupling make-up (other than power-tight)	Par. 7.4
Pipe coatings	Par. 11.9
Marking in metric units	Par. 11.3

Attention is called to the following stipulations which are subject to agreement between the purchaser and the manufacturer:

Hydrostatic pressure test for handling-tight make-up	Par. 5.1
Hydrostatic test pressures	Par. 5.2
Thread compound	Par. 7.4
Thread protectors	Sect. 9
Marking requirements	Par. 11.1
Nondestructive Inspection	Par. 10.8, Appendix C

SPECIAL NOTE:

NOTHING IN THIS SPECIFICATION SHOULD BE INTERPRETED AS INDICATING A PREFERENCE BY THE COMMITTEE FOR ANY MATERIAL OR PROCESS OR AS INDICATING EQUALITY BETWEEN THE VARIOUS MATERIALS OR PROCESSES. IN THE SELECTION OF MATERIALS AND PROCESSES, THE PURCHASER MUST BE GUIDED BY HIS EXPERIENCE AND BY THE SERVICE FOR WHICH THE PIPE IS INTENDED.

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API SPECIFICATION FOR GRADE C-75 CASING AND TUBING

Foreword

a. This specification is under the jurisdiction of the API Committee on Standardization of Tubular Goods.

b. The purpose of this specification is to provide standards for casing and tubing with restricted yield strength ranges for use in drilling and producing operations.

c. The tables on tubing were prepared in cooperation with the API Committee on Standardization of Production Equipment.

d. In the dimensional tables herein, pipe is designated by outside diameter size. The outside diameter size of external-upset pipe is the outside diameter of the body of the pipe, not the upset portion.

e. Metric conversions of English units are provided throughout the text of this specification in parentheses, e.g., 6 in. (152,4 mm). Note use of comma instead of period for decimal point in metric values. Metric equivalents of English values are also included in all tables and figures, except the tables in Sect. 5, 6 and 8 which are reproduced in the metric system in Appendix A. The factors used for conversion of English units to metric values are:

1 inch (in.)	= 25,4 millimeters (mm) exactly
1 square inch (sq in.)	= 645,16 square millimeters (mm^2) exactly
1 foot (ft)	= 0,3048 meters (m) exactly
1 pound (lb)	= 0,454 kilograms (kg)
1 pound per foot (lb/ft)	= 1,4895 kilograms per meter (kg/m)
1 pound per square inch (psi)	= 0,0703 kilograms per square centimeter (kg/cm^2)
1 foot-pound (ft-lb)	= 0,138 kilogram meters (kgm)

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SECTION 1

SCOPE

1.1 Coverage. This specification covers Grade C-75 casing and tubing and C-95 casing in the sizes and wall thicknesses shown in the standard lists (Tables 1.1 and 1.2), and the dimensional tables (Tables 6.1 through 6.6). It also includes requirements for couplings and thread protectors.

1.2 Dimensional requirements on threads and thread gages, stipulations on gaging practice, gage specifications and certification, as well as instruments and methods for inspection of threads are given in API Std 5B and are applicable to products covered by this specification.

1.3 Although this specification, in conjunction with API Std 5B, permits manufacturers authorized to use the API monogram on round-thread casing to manufacture and apply the monogram to buttress and extreme-line casing, considerable skill and know-how is required for the tooling for, and machining of, these joints. Therefore, any manufacturer who desires to produce these joints is advised to consult with manufacturers who have produced these joints before attempting their manufacture.

1.4 Policy. American Petroleum Institute (API) specifications are published as an aid to procurement of standardized equipment and materials. These specifications are not intended to inhibit purchasers and producers from purchasing or producing products made to specifications other than API, and nothing in any API specification is intended to in any way inhibit the purchase of products from companies not authorized to use the API monogram.*

1.5 Nothing contained in any API specification is to be construed as granting any right, by implication or otherwise, for the manufacture, sale, or use in connection with any method, apparatus or product covered by letters patent, nor as insuring anyone against liability for infringement of letters patent.

1.6 API specifications may be used by anyone desiring to do so, and 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 the publication of any API specification and hereby expressly disclaims any liability or responsibility for loss or damage resulting from their use, for any violation of any federal, state or municipal regulation with which an API specification may conflict, or for the infringement of any patent resulting from the use of an API specification.

1.7 The use of the API monogram is a warranty by the manufacturer to the purchaser that the manufacturer has obtained a license to use the monogram and, further, that the product which bears the monogram conforms to the applicable API specification. However, the American Petroleum Institute does not represent, warrant or guarantee that products bearing the API monogram do in fact conform to the applicable API standard or specification.

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