

SCOPE

- I 1.1 This practice covers the specification of materials application and inspection of shop or field applied cement linings for pipe and fittings by the appropriate ANSI / AWWA Standards.
- I 1.2 This practice also covers the shipping and handling of cement lined pipe and fittings.
- I 1.3 **An asterisk (*)** indicates that a decision by the purchaser is required or that additional information is furnished by the purchaser.

SUMMARY OF ADDITIONAL REQUIREMENTS

- I 2.1 **Table 1** lists the standards which shall be used with this practice.

TABLE 1

STANDARDS	
ANSI / AWWA STANDARDS	
C104	Cement-Mortar Lining for Ductile Iron Pipe and Fittings
C205	Cement-Mortar Protective Lining and Coating for Water Pipe - 4 in. (100 mm) and Larger - Shop Applied
C602	Cement-Mortar Protective Lining and Coating for Water Pipe - 4 in. (100 mm) and Larger - In-place

- I 2.2 Other National standards or codes may be substituted for those listed in **Table 1** as directed by the Purchaser.
- I * 2.3 **IP 3-18-1**, Piping Fabrication - Shop or Field, shall be used with this practice as directed by the Purchaser.

MATERIALS AND APPLICATION

- O,R 3.1 The selection of cement types for cement mortar exposed to sulfate shall be governed by the following:

Sulfate Exposure [ppm (mg/L) in Solution]	Tricalcium Aluminate in Cement (wt% max)
Moderate 150-1500	8
Severe > 1500	5

- O,R 3.2 Water quality. Use fresh, clean and potable mixing water.
- O,R 3.3 Hand patching or the application of additional slurry after initial spinning shall not be permitted at other than the ends of pipe unless approved by the Inspector. Hand application of lining at pipe ends is permitted within two hours of initial spinning.

INSPECTION AND TESTING

- I 4.1 The term Inspector, used in this practice, refers to the Owner's Representative.
- R 4.2 Linings shall be visually examined by the Inspector after curing. The finished lining shall be uniform, smooth and shall not have:
 - a. Spalled or loose ends.
 - b. Cracks more than 1/16 in. (1.5 mm) wide. See AWWA Specifications for repair guidelines. Do not vee out areas to be repaired.
 - c. Defects which indicate imperfect proportioning, mixing, molding or curing.
- R 4.3 Compressive strength of the mortar lining shall be as specified in the applicable standard.

IP 3-10-3		Cement Lined Pipe and Fittings	
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(This practice is appropriate for attachment to Inquiry or Purchase Document)

SHIPPING AND HANDLING CEMENT LINED PIPE AND FITTINGS

- R 5.1 Bending of cement lined piping sections during shipping, handling and stacking shall not exceed five degrees, as measured between a chord and tangent.

Revision Memo

9/68	Original Issue of Basic Practice	1/84	Revision 4
6/70	Revision 1	12/92	Revision 5
1/73	Revision 2		
1/80	Revision 3		
12/94	Revision 0 - Original Issue of International Practice		
3/98	Revision 1		

This is a reaffirmation of previous Revision 0, December, 1994. Deleted old **Table 2**, covered by **Par. 2.3**.

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