

## TECHNICAL SPECIFICATIONS

CERTAINTED CORPORATION  
PIPE DIVISIONSPECIFICATIONS CLASSIFICATION:  
Standard Purchasing Specification

PREPARED BY:

TCO REF. NO.:  
11SPEC. NO.:  
532PAGE NO:  
1

APPROVED BY:

SUPERSEDES:  
May 26, 1969DATE OF ISSUE:  
April 27, 1973-----  
DESCRIPTION: Steel Mandrels1. General

This specification has been devised to define the steel mandrel requirements for use in the Mazza type manufacture of asbestos-cement pipe.

2. Material

Type A - Cold drawn, seamless mechanical steel tubing, nominal carbon content 0.25%, unannealed, chamfered ends.

Type B - Centrifugally cast 1025 carbon steel tubing, stress relieved. O.D. (outside diameter) machined to 125 micro finish, I.D. (inside diameter) as cast, ends faced and radiused. Finish per ASA B 46.1.

Pulling Ring - Flat bar stock, 1040 or 1045 carbon steel.

Pulling Bar - Round bar stock, 1010 min. carbon steel or 1025 carbon steel.

3. Straightness

Maximum curvature per foot not to exceed +0.010" in sizes up to 5" and +0.015" in sizes over 5", tubing only. Cast steel mandrels shall have a T.I.R. (Total Indicator Reading) not to exceed 0.050" at center.

4. Marking

The pulling ring of each mandrel 7.51" and larger shall be identified with the nominal outside mandrel diameter applied as follows.

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4. Marking - (Cont'd.)

Use small stainless steel manual electrode to provide numbers at least 3/4" high, raised approximately 1/8", and completed in a neat, legible manner.

Mandrels below 7.50" having smaller pulling rings are to be identified as above, except numbers shall be reduced in size according to the pulling ring "Y" dimension.

5. Shipping Instructions

Protective Coating - All surfaces of each mandrel shall be lightly coated with a protective material which will prohibit the formation of rust during transportation and initial storage and yet be capable of being readily removed at the plant site.

Packaging - Mandrels shall be suitably packaged to prevent damage in transit and to allow for handling at the plant site by fork lift trucks.

Delivery - Delivery time shall be arranged by the vendor to avoid unnecessary delays at the plant site.

6. Static Balance

Each Type "B" mandrel shall be statically balanced. Mandrels of 12.00" O.D. and less shall be balanced to within 0.25 pounds. Above 12.00" O.D., the mandrels shall balance within 0.50 pounds. If the total weight is greater than one pound, it shall be divided equally between each end. Weight distribution tolerance is plus or minus 1 pound. Weights shall clear the pull bar and pull ring by minimum of 6.0 inches. Installation of the weights inside the mandrel shall not distort the outer surface of the mandrel. The recommended method is to tack weld bar stock having a width to thickness ratio of approximately 4 to 1.

CTD012694

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PREPARED BY:

TCO REF. NO.:  
10

SPEC. NO.:  
532

PAGE NO.:  
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APPROVED BY:

SUPERSEDES:  
December 26, 1968

DATE OF ISSUE:  
May 26, 1969

DESCRIPTION:

Steel Mandrels

## Dimensions

| Mandrel O.D.     | Type | Wall Thickness  | Wall Tolerance   | O.D. Tolerance     | D      | Y    |
|------------------|------|-----------------|------------------|--------------------|--------|------|
| Up to 4.49"      | A    | 0.250"          | ± 10%            | +0.015"<br>-0.000" | 5/8"   | 5/8" |
| 4.50" to 4.99"   | A    | 0.250"          | ± 10%            | +0.015"<br>-0.000" | 5/8"   | 3/4" |
| 5.00" to 7.50"   | A    | 0.313"          | ± 10%            | ±0.015"            | 5/8"   | 3/4" |
| 7.51" to 7.99"   | A    | 0.313"          | ± 10%            | ±0.015"            | 1"     | 1"   |
| 8.00" to 8.99"   | A    | 0.313"          | ± 10%            | ±0.023             | 1"     | 1"   |
| 9.00" to 14.50"  | B    | 0.500"          | +0.120", -0.000" | ±0.010"            | 1"     | 1"   |
| 14.51" to 16.99" | B    | 0.563"          | +0.120", -0.000" | ±0.010"            | 1"     | 1"   |
| 17.00" to 23.99" | B    | 0.625"          | +0.120", -0.000" | ±0.010"            | 1-1/2" | 1"   |
| 24.00" to 29.99" | B    | 0.800"<br>Min.* | +0.160", -0.000" | ±0.010"            | 1-1/2" | 1"   |

\*1/4 inch may be removed from each side of I.D. for fabrication of pull rings and pull bars.

For Mandrel Size to be ordered, refer to General Standards Manual, Section G, Part B. Unless otherwise directed, the preferred mandrel is to be ordered.

CTD012695

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Standard Purchasing Specification

PREPARED BY:

TCO REF. NO.:  
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APPROVED BY:

SUPERSEDES:  
December 26, 1968

DATE OF ISSUE:  
May 26, 1969

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DESCRIPTION:

Steel Mandrels  
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Pull  
Ring

Pull  
Bar

1/4" Fillet  
Cont.

Weld

Wall

1/8" R. Type-A Both Ends

1/4" R. Type-B Both Ends

Break Edge and Corner

Marking  
Example

Pull  
Ring

Pull  
Bar

STEEL  
MANDREL

\*Or may be square shouldered.

CTD012696

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PREPARED BY: TCO REF. NO.: SPEC. NO.: PAGE NO:  
10 532 5

APPROVED BY: SUPERSEDES: DATE OF ISSUE:  
November 4, 1968 May 26, 1969

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DESCRIPTION: Steel Mandrels  
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### NOT TO BE DISTRIBUTED TO VENDORS

Distribution: As this specification represents a special purchasing situation not connected with the normal use of this type of document, the standard distribution list is expanded to include:

Director of Manufacturing and Engineering (2)  
Each Plant Engineer (1)

Additional copies of the specification may be secured from Technical Service as needed.

Approved Vendors: Purchase of mandrels will normally be accomplished through bids extended by Division Purchasing Agent.

Receiving Inspection: Plant Engineer is responsible for acceptance or rejection of mandrels purchased through this specification. Mandrels are to be delivered to plant sites complete and ready for use except for the removal of protective coating. While it is intended that mandrels are to be delivered ready for use, circumstances may require that installation of pull bar and pull ring, chamfering, and static balance be accomplished at the plant.

Special Note: Type A mandrels are available in diameters greater than 9.01" but probably with greater O.D. tolerances. Since Type A mandrels are less costly initially, this alternative should be investigated each time in the 9.01" to 14.00" O.D. range.

The machining of a radius on the mandrel ends may be prohibitive. Therefore, this requirement may be waived and the following substituted: 1/8"  $\pm$  1/32" x 45 degrees  $\pm$  5 degrees chamfer both ends.

Type B Mandrels: Type B mandrels may be made from used steel pipe providing that all the conditions as specified in this specification in reference to wall thickness, straightness, surface finish, O.D., and tolerances are strictly adhered to.

CTD012697