

Belmont

Bending Tubing and Other Forms using Belmont (158°F) 2505TBA or (255°F) 2562TBA Low Melting Alloys

You often have a need to bend tubes or rolled or extruded shapes; however, the tubes or shapes may kink or bend irregularly rather than form a smooth bend. The use of Belmont (158°F) 2505TBA or (255°F) 2562TBA Low Melting Alloys allows them to be bent or formed to the desired shape without the kinks.

Note that in any of the following directions, satisfactory results are achieved by a) rapid quenching, b) thorough cooling, c) re-warming before bending and d) using a slow uniform pressure.

Directions for bending tubes up to 2-1/2" in diameter

1. Make sure that the tubing is fully annealed.
2. Clean interior of the tube thoroughly with a water-soluble cleaning product. Rinse and dry thoroughly.
3. Coat the inside of tube with a silicone release agent, mineral oil, non-detergent motor oil (most motor oils contain detergents that can cause the Low Melting Alloy to stick to the side of the tube) or similar release agents.
4. Remove any excessive coating, making sure that the entire inside is coated.
5. Plug one end of the tube securely.
6. Fill the tube with (158°F) 2505TBA Low Melting Alloy, pouring down the side of the tilted tube to prevent air pockets. Approximately 1/4-inch diameter and smaller tubes should be filled while in hot water or otherwise heated to prevent the alloy from solidifying before the tubes are completely filled. (Since 2505TBA weighs 0.339 pounds per cubic inch, the weight required to fill a tube can be easily estimated.)
7. IMMEDIATELY put the filled tube into cold circulating water or other quick-chilling medium. Allow the tube to cool until it reaches approximately 70°F. This may take 15 minutes for a 1-inch tube, longer for larger tubes.
8. Remove plug.
9. Re-warm tube and alloy to 95°F.

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10. Bend filled tube with slow, uniform pressure over a forming block or in a bending machine to the desired shape.

11. Immerse formed tube in boiling water. Tilt and shake tube to remove alloy.

12. Flush tube with a suitable cleaner to remove oil film and any remaining alloy. If necessary, use a tight fitting pull-through to complete cleaning.

This method may also be used for tubes greater than 2-1/2" in diameter, but care should be taken when following steps 1 through 10 to only partially bend toward the final shape. Then, steps 1 through 10 should be repeated until the desired shape is attained, finishing the process with steps 11 and 12. A more convenient method for tubes greater than 2-1/2" in diameter is outlined below.

Directions for bending tubes greater than 2-1/2" in diameter

1. Make sure that the tubing is fully annealed.
2. Clean interior of the tube thoroughly with a water-soluble cleaning product. Rinse and dry thoroughly.
3. Coat the inside of tube with a high temperature silicone release agent, oil that can accommodate 225°F temperatures, or similar release agents.
4. Remove any excessive coating, making sure that the entire inside is coated.
5. Plug one end of the tube securely.
6. Fill the tube with (255°F) 2562TBA Low Melting Alloy, pouring down the side of the tilted tube to prevent air pockets. (Since 2562TBA is 0.380 pounds per cubic inch, the weight required to fill a tube can be easily estimated.)
7. Allow the tube to cool until tube and alloy reach approximately 70°F. This may take more than 30 minutes.
8. Remove plug.
9. Re-warm tube and alloy to 95°F.
10. Bend filled tube with slow, uniform pressure over a forming block or in a bending machine to the desired shape.
11. Immerse formed tube in a hot oil bath or an oven. Tilt and shake tube to remove alloy.
12. Flush tube with a suitable cleaner to remove oil film and any remaining alloy. If necessary, use a tight fitting pull-through to complete cleaning.

Bending Solid Forms

Rolled or extruded solid shapes can also be bent and formed using the same basic procedure, except that the entire form is encapsulated in a solid block of TBA Low Melting Alloy. Leaving the formed sections in the TBA alloy block for several hours will help prevent spring-back. Contact Belmont for answers to technical questions and for more information, including cost and availability, on TBA Low Melting Alloys.

Note: The information contained in this data sheet is the most accurate in our possession at the time of publication, and is based on our effort to meet industry references, standards, and specifications. However, Belmont cannot assume responsibility for in-service performance of these products due to our lack of control over, or supervision of, their use.



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