

Specifications for Coating Steel Pipe

Cleaning Pipe:

Each section of pipe after all caulking has been completed shall be thoroughly cleaned by means of a sand blast, wire brush, or other suitable apparatus until all grease, dirt, loose scale or rust has been removed.

Heating Pipe:

After pipe has been thoroughly cleaned, it should be uniformly heated to a temperature of about 300° F. by method which will not injure the pipe.

Method of Applying Coating:

The pipe while heated to a temperature of 300° F. should be dipped vertically in a hot bath of "PIONEER" MINERAL RUBBER PIPE COATING produced by THE AMERICAN ASPHALTUM & RUBBER COMPANY (or any other coating equal thereto), the coating maintained at a temperature of between 425° F. and 450° F. The pipe must remain in the bath a sufficient length of time to attain the full temperature of the coating material and then raised from the bath just sufficiently fast enough to allow the coating to solidify evenly over surface of the pipe. It is advisable to avoid any direct currents of air striking the pipe in the course of drawing same from the molten bath and in this way prevent an uneven coating. The same coating must not be "flushed." It must be smooth, glossy, rubbery and strongly adhesive to the metal.

Flux:

Should the pipe coating in tank become hard from continued heating, it may be brought to the proper consistency by the addition of "PIONEER" MINERAL RUBBER PIPE COATING FLUX, produced by the above Company.

Handling of Pipe:

After pipe has been thoroughly coated and cooled, the utmost care must be exercised to avoid any injury to the surface while being handled at the plant, in transportation or in the trench. Any injury to the coating due to this cause must be repaired in the field by the use of same material applied hot with ordinary paint brushes, or "PIONEER" MINERAL RUBBER FIELD PAINT may be used, to be applied cold and to be made of the same basic material as the Pipe Coating material, and produced by the same Company.

Guarantee of Material:

The Engineer must be satisfied that the Pipe Coating to be used will be supplied by a Company who can show that they have been producing it for the past ten years and that it has been successfully used during that time.

Analysis of Pipe Coating:

The chemical analysis of the Pipe Coating must strictly conform to the following specifications:

1. Pipe Coating shall be uniform, homogeneous, free from water, insoluble salts, or any other impurities.

2. Specific gravity at 25° C. (77° F.) shall be not less than .980 nor over 1.0.

3. Melting point (by test recommended by American Society of Civil Engineers) shall be not less than 235° F. nor over 270° F.

4. There shall be not less than 8% nor more than 12% of fixed carbon by method described for coal in Journal of the American Chemical Society, 1899, Vol. 21, page 1116.

5. It shall be soluble in carbon bisulphide to the extent of 99.0% and between 67% and 72% of the bitumen soluble in carbon bisulphide shall be soluble in petroleic ether (88° Beaume).

6. When 20 grammes of the coating are maintained at a uniform temperature of 170° C. for five hours in a cylindrical vessel 2½ inches in diameter, there must not be volatilized more than 3% by weight.

7. The coating must not be so susceptible to changes in temperature that it shall become brittle in winter or soft and sticky in summer and shall not vary more than 5 points from the following penetrations:

No. 2 N. 5 sec. 100 gms., 25° C. . . . 25
 No. 2 N. 1 min. 200 gms., 0° C. . . . 10
 No. 2 N. 5 sec. 50 gms., 45° C. . . . 40

Practical Tests:

With a view of determining whether coating material will withstand the action of acids and alkali salts found in the earth and whether the material will strongly adhere to the metal, the following practical tests are recommended:

Acid Tests:

1. Coat a small steel pipe about two inches in diameter by six inches in length according to the method described above and immerse the same in a 10% hydrochloric acid solution or a 25% ammonia solution for a period of five days. The material must not be affected in any way by this immersion, and must absolutely protect pipe against the action of acid and alkali solutions. Special care must be taken that the pipe is thoroughly soaked.
2. Partially coat a piece of flat steel six inches long and two inches wide with "PIONEER" MINERAL RUBBER PIPE COATING and immerse the whole piece in a 25% solution of hydrochloric acid. The efflorescence of the unprotected steel will be noted, while that protected by the coating is unaffected.

Hammer Test:

Coat a small steel pipe similar to the one used for acid test and immerse in ice cold water. After it has been in the water for about 15 minutes, withdraw and give pipe two or three sharp blows with a hammer. The coating must not crack or show signs of chipping off. Then immerse pipe in water having a temperature of 100° F. and repeat hammer test.