
Standard Specification for

Basic Lead Silico-Chromate, Ready-Mixed Primer

AASHTO Designation: M 229-91 (2000)¹



1. SCOPE

- 1.1. This specification covers basic lead silico-chromate-base, ready-mixed primer for use on iron and steel surfaces.
- 1.2. *Intended use of the primer:*
- 1.2.1. *Types I, II, and V*—Types I, II, and V primer are intended for use in bridges, similar structural steel, and other ferrous metal surfaces. They are suitable for priming and body coats, either in the shop or field, where good resistance to the corrosive effects of usual atmospheric environments is required. Types II, III, and V have excellent weathering properties, chalk resistance, and color retention. If so desired, they could be used in top coats. Types I and V primer may be used wherever priming schedules do not demand recoatings in less than 36 hours. The vehicle solids being principally linseed oil offer the best opportunity to wet the metal surface primed and therefore to obtain an intimate bond of the primer with the surface despite the presence of small amounts of corrosion products found impractical to remove.
- 1.2.1.1. The pigment in Types I and V are essentially the same except for the inclusion of a small amount of red iron oxide in Type V. A greater amount of alkyd resin in Type V improves the drying and handling under adverse atmospheric conditions. Type II primer is designed for use where primary schedules require handling and recoating in 16 hours. The presence of the specified amount of free linseed oil in this type of primer is desirable for the purpose of obtaining intimate bonding with the metal surface due to the wetting characteristics of the oil.
- 1.2.2. *Type III*—Type III primer is intended for use in priming thoroughly clean iron and steel surfaces and for touch-up work where drying within an eight-hour period is desired. It is intended for use on smooth steel particularly, as an industrial primer for priming articles fabricated at the factory such as railroad cars, window sashes, air-conditioning conduits, etc. It may be used as a general maintenance primer for touch-up work on thoroughly cleaned steel where rapid drying is essential and where the application of two coats within a day is desired. It is essential that primer of this type be applied to exceptionally clean surfaces since due to its fast drying properties it does not have the surface wetting properties which characterize paints containing free linseed oil. Thus, because structural steel (bridges, tanks, etc.) is rarely cleaned free of corrosion products, this primer is not generally intended for such use, although with due consideration to surface preparation it can be so used for spot priming.
- 1.3. The values stated in SI units are to be regarded as the standard.

2. REFERENCED DOCUMENTS

- 2.1. *AASHTO Standards:*
- M 92, Wire-Cloth Sieves for Testing Purposes
- 2.2. *ASTM Standards:*
- D 79, Specification for Zinc Oxide Pigments
 - D 84, Specification for Red and Brown Iron Oxide Pigments²
 - D 234, Specification for Raw Linseed Oil
 - D 235, Specification for Mineral Spirits (Petroleum Spirits) (Hydrocarbon Dry Cleaning Solvent)
 - D 600, Specification for Liquid Paint Driers
 - D 1648, Specification for Basic Lead Silicochromate Pigment
- 2.3. *Federal Standards:*
- TT-P-615, Primer Coating: Basic Lead Chromate Ready Mixed
 - TT-R-266, Resin, Alkyd, Solutions

3. CLASSIFICATION

- 3.1. *Types*—Ready-mixed basic lead silico-chromate-base primer covered by this specification shall be furnished in the following types, as specified in the invitation for bids, contract or order (Note 1).
- 3.1.1. *Type I*—Basic lead silico-chromate linseed oil-alkyd (4:1).
- 3.1.2. *Type II*—Basic lead silico-chromate base-iron oxide linseed oil-alkyd (1:1).
- 3.1.3. *Type III*—Basic lead silico-chromate base-iron oxide alkyd varnish primer.
- 3.1.4. *Type V*—Basic lead silico-chromate base-iron oxide linseed oil-alkyd (2.25:1.0)
- Note 1**—The type numbers shown are the same as the equivalent type as specified in Federal Specification TT-P-615, Type IV, a primer having a phenolic varnish vehicle has been removed from this specification.

4. MATERIALS

- 4.1. The materials used in manufacture shall conform to the requirements of the following specifications (Note 2):
- 4.1.1. *Basic Lead Silico-Chromate*—ASTM D 1648.
- 4.1.2. *Red Iron Oxide Pigment*—ASTM D 84, Class II, Type A, except the Fe_2O_3 content shall be a minimum of 85 percent.
- 4.1.3. *Pure Red Iron Oxide Pigment*—ASTM D 84, Class 1.
- 4.1.4. *Zinc Oxide (acicular)*—ASTM D 79.