



Standard Practice for Use of Qualitative Chemical Spot Test Kits for Detection of Lead in Dry Paint Films¹

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1. Scope

1.1 This practice covers the use of commercial spot test kits based on either sulfide or rhodizonate for the qualitative determination of the presence of lead in dry paint films.

1.2 This practice may also be used as a qualitative procedure for other dry coating films such as varnishes.

1.3 This practice provides a list of the advantages and limitations of chemical spot test kits based on sulfide and rhodizonate to allow the user to choose the appropriate spot test for a given circumstance.

1.4 This practice contains notes which are explanatory and not part of mandatory requirements.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 EPA Standards:

EPA 600/R-93/085 Investigation of Test Kits for Detection of Lead in Paint, Dust and Soil²

EPA 600/R-93/129 Identification of Performance Parameters for Test Kit Measurement of Lead in Paint²

3. Terminology

3.1 Definitions:

3.1.1 *core sample*—a fragment of a dry paint film removed from the substrate with a coring tool which is designed to remove a specified area (that is, a square centimetre) of dry paint film.

3.1.2 *negative test*—the absence of the characteristic color change within a specified time limit, usually within a few minutes.

3.1.3 *paint chip sample*—a fragment of a dry paint film removed from the substrate.

3.1.4 *positive test*—the observation of the characteristic

color change within a specified time limit, usually within 10 to 30 s.

3.1.5 *rhodizonate spot test method—for lead detection*, the use of a dilute solution of rhodizonate ion to test a painted surface or paint chip for the qualitative presence of lead (1).³ A color change from yellow/orange to pink or red indicates the presence of lead above the level of detection of the test kit.

3.1.6 *spot test*—the application of reagent solution to a prepared dry paint film sample, paint chip, paint powder, or painted surface and the subsequent observation for the presence or absence of the characteristic color change.

3.1.7 *sulfide spot test method—for lead detection*, the use of a dilute solution of sulfide ion to test a painted surface or paint chip for the qualitative presence of lead (2). A color change from clear to grey or black indicates the presence of lead above the level of detection of the spot test.

3.1.8 *test kit*—equipment (for example, a cutting tool, adsorbent applicators, if necessary) and chemicals (for example, sulfide or rhodizonate spot test reagents and any extraction solutions needed) assembled for use during spot testing for lead.

4. Summary of Practice

4.1 A dry paint film sample (a painted surface, paint chip, ground paint powder, or core sample) is tested for lead qualitatively through the use of spot tests. Spot tests kits are based on the reaction of Lead II (Pb^{2+}) ion with either sulfide ion (S^{2-}) or rhodizonate ion [$C_6O_6^{2-}$] resulting in a visual color change from clear to grey or black for lead sulfide and from yellow/orange to pink or red for lead rhodizonate.

4.1.1 Prior to performing the spot test, first clean the dry paint film surface. Except for surface tests, the film is then prepared by either cutting a notch or an angular cut in situ or by removing a paint chip or core sample.

4.1.2 The test is performed by applying the spot test reagents (directly or with the use of an adsorbent applicator) to the prepared dry paint sample and observing the requisite color change after a specified time, usually within a few minutes.

4.1.3 An interpretation of the presence or absence of lead in the dry paint sample is made based on the observation of the presence or absence of the characteristic color change.

¹ This practice is under the jurisdiction of ASTM Committee E-6 on Performance of Buildings and is the direct responsibility of Subcommittee E06.23 on Lead Paint Abatement.

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² Available from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

³ The boldface numbers in parentheses refer to a list of references at the end of this practice.