

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS CONTROL, SOILS AND TESTING DIVISION

MATERIALS PROCEDURE

QUALITATIVE DETERMINATION OF COATING MATERIALS ON METAL

1.0 PURPOSE

- 1.1 To set forth test methods for the chemical analysis of coating materials on various types of metal.

2.0 SCOPE

- 2.1 These procedures shall be used to determine whether the coating material is aluminum, zinc, or cadmium.

3.0 DETERMINATION OF ALUMINUM COATING

- 3.1 Aluminum metal is amphoteric (reacts with acids or bases); zinc and cadmium do not react with bases. Aluminum can, therefore, be identified from the other by its property of reacting in a base.

- 3.2 The sample is placed in a beaker with enough sodium hydroxide (200 g per liter) to cover the sample. If the coating is aluminum, gas bubbles will form on the coating and then rise to the top of the beaker.

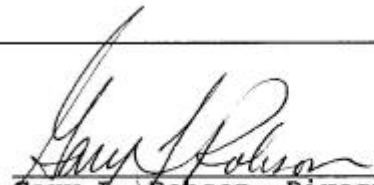
4.0 DETERMINATION OF ZINC OR CADMIUM COATING

4.1 Procedure

- 4.1.1 The sample is placed in a small beaker with sufficient dilute (1:1) hydrochloric acid to cover the sample.

- 4.1.2 The coating is allowed to react. The acid solution is diluted with water to 100 milliliters in a volumetric flask.

- 4.1.3 The atomic absorption spectrophotometer is standardized using ten (10) and twenty (20) parts per million standards of zinc and cadmium. The sample is aspirated and the predominate concentration of zinc or cadmium is considered to be the type coating.


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