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Replacing GB/T 9263-1988

Determination of Slip Resistance of Anti-skid Coatings

防滑涂料防滑性的测定

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Determination of Slip Resistance of Anti-skid Coatings

1 Scope

This Standard specifies the test method of testing the slip resistance of anti-skid coatings by using friction coefficient test device.

This Standard is applicable to the slip resistance test of a single coating or composite coating system of anti-skid coatings in the laboratory. Field test may also take this Standard as a reference.

2 Normative References

The following documents are indispensable to the application of this document. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 3186 Paints, Varnishes and Raw Materials for Paints and Varnishes - Sampling

GB/T 6682-2008 Water for Analytical Laboratory Use - Specification and Test Methods

GB/T 9271 Paints and Varnishes - Standard Panels for Testing

GB/T 9278 Temperatures and Humidities for Conditioning and Testing of Paint Specimens

GB/T 13452.2 Paints and Varnishes - Determination of Film Thickness

GB/T 20777 Paints and Varnishes - Examination and Preparation of Samples for Testing

3 Terms and Definitions

The following terms and definitions are applicable to this document.

3.1 Slip Resistance

Slip resistance refers to the capability of reducing the risk of sliding between personnel or equipment and the surface of the anti-skid coatings.

3.2 Static Friction Force

Static friction force refers to the force that an object receives from the horizontal plane

panels that are not cured under the conditions specified in GB/T 9278, before the test, the test panels shall be conditioned for at least 16 h under the conditions specified in GB/T 9278.

6.4 Thickness of Coating

The thickness of coating shall be specified or determined through negotiation. In accordance with one of the methods specified in GB/T 13452.2, determine the thickness of coating, which shall be expressed in (μm) or (mm).

7 Materials and Instruments

7.1 Materials

7.1.1 Aqueous medium: Grade-3 water that complies with the stipulations of GB/T 6682-2008.

7.1.2 Oil medium: varieties and specifications are determined through negotiation.

7.1.3 Silicon carbide sandpaper: No. 400.

7.1.4 Soft brush.

7.2 Instruments

The friction coefficient test device is used to test the force required to pull a sliding block on the coated surface under test, as it is shown in Figure 1. The test device includes:

---Spirit level.

---Tensile force meter: with a division value of 0.01 N; the maximum test load is not less than 50 N.

---Vulcanized neoprene rubber pad: Shore A hardness is (57 ± 2) HA; the nominal thickness is 3 mm.

---Sliding block: with a size of 145 mm × 100 mm × 22 mm. There is a screw hole in the center of the arc edge of the steel block; a screw ring is fixed in the hole for connection with the tensile force meter. The block body is glued with a layer of vulcanized neoprene rubber pad to cover the two sides connected with the arc edge and the arc edge. The total weight of the sliding block (including the rubber pad and the screw ring) is (2.7 ± 0.2) kg, as it is shown in Figure 2.

---Fixing frame: located below the surface of the test panel to prevent the test panel from sliding.

8.2 Processing of Sliding Block

Place No. 400 silicon carbide sandpaper (7.1.3) flatwise on a horizontal table. Along the horizontal direction, pull the sliding block, so that the vulcanized neoprene rubber pad on its surface moves about 100 mm on the sandpaper. Rotate the sliding block by 90° in the horizontal plane, then, repeat the above-mentioned polishing process for 4 times in total. The above steps constitute a complete process. Use the soft brush (7.1.4) to remove the debris. If necessary, repeat the above-mentioned process, until the gloss on the surface of the vulcanized neoprene rubber pad is completely removed.

8.3 Test of Static Friction Coefficient of Anti-skid Coating Surface

8.3.1 Test of static friction coefficient of dry-state surface

8.3.1.1 Conduct parallel test for 3 times.

8.3.1.2 Place the test panel on the test bench and fix it. Use the spirit level to test and adjust the test bench to the level of the coating surface.

8.3.1.3 Place the vulcanized neoprene rubber pad of the sliding block downward on the test surface of the test panel. Hang the hook of the horizontal tensile force meter on the screw ring of the sliding block. Fix the test panel; maintain the pull rod of the tensile force meter and the screw ring on the same horizontal line. Provide a horizontal pulling force; record the first peak value of the sliding block after the sliding starts, which is the static friction force. In addition, at a speed of 5 mm/s, maintain a uniform linear motion; the displacement distance of the sliding block shall be not less than 25 mm.

8.3.1.4 On the test surface of each test panel, pull the sliding block for 5 times. After horizontally rotating the test panel by 90°, conduct the test for 5 more times; record 10 readings of static friction force.

8.3.1.5 After the testing of a sample (3 test panels) is completed, replace a new vulcanized neoprene rubber pad. In accordance with the requirements of 8.2, handle the surface of the vulcanized neoprene rubber pad.

8.3.2 Test of static friction coefficient of wet-state surface

Before the test, use the aqueous medium (7.1.1) to wet the test surface of the test panel and the surface of the vulcanized neoprene rubber pad of the sliding block; repeat the steps of 8.3.1.1 ~ 8.3.1.5. Each test shall ensure that the surface of the test panel is always wet.

8.3.3 Test of static friction coefficient of oil-lubricated surface

Before the test, use the oil medium (7.1.2) to wet the test surface of the test panel and the surface of the vulcanized neoprene rubber pad of the sliding block; repeat the steps

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