Australian/New Zealand Standard®

Paints and related materials—Methods of test

Method 1580.214.4: Consistency—Rotothinner

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee CH/3 on Paints and Related Materials as a revision of AS 1580.214.4—1990.

The objective of this Standard is to specify a method for determining consistency using a rotothinner-type instrument. This Standard differs from the previous edition in that a different thermometer is specified, the procedure wording has been modified and a 5 percent variation in viscosity is permitted for the performance check in Appendix A.

The term 'normative' has been used in this Standard to define the application of the appendix. A 'normative' appendix is an integral part of a Standard.

METHOD

1 SCOPE This Standard sets out a method of determining the consistency of paints by means of a rotothinner.

NOTE: The suitability and applicability of this method are discussed in AS/NZS 1580.214.0.

2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS	
2850	Chemical analysis—Interlaboratory test programs—For determining precision of analytical method(s)—Guide to the planning and conduct
AS/NZS	
1580	Paints and related materials—Methods of test
1580.214.0	Part 214.0: Rheological properties—Guide to test methods

3 PRINCIPLE A disc-shaped stirrer with angled holes is used to generate a measurable torque in a paint sample. (See Figure 1.)

4 APPARATUS

4.1 Rotothinner—a suitable rotothinner with an appropriate scale range (G), as shown in Figure 2.

4.2 Container—a cylindrical can (C), of approximately 250 mL capacity.

4.3 Measuring table—a measuring table (D) designed so that the can does not rotate relative to the table during the test.

NOTE: The torque-measuring table (D) is magnetic and therefore a container made of ferromagnetic material should be used.

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4.4 Thermometer—a thermometer capable of measuring 25°C to an accuracy of ±0.25°C and graduated to 0.5°C or finer.

5 PREPARATION OF APPARATUS A performance check on the apparatus shall be conducted, in accordance with Appendix A, to assess its suitability.

6 PREPARATION OF SAMPLE The sample preparation shall be as follows:

(a) Prepare the sample in accordance with AS/NZS 1580.214.0.

(b) Mix thoroughly.

(c) Immediately proceed with the test.

7 PROCEDURE The procedure shall be as follows:

NOTE: It is essential that the instrument be cleaned and dried before each determination. Particular attention should be paid to the holes in the disc.

(a) Pour approximately 200 mL of the sample into the test container.

(b) Bring the temperature of the test sample to 25 ±0.5°C and maintain it at that temperature during the test.

(c) Centre the test container on the torque measuring table.

(d) If an air-driven rotothinner is used, adjust the speed of rotation of the spindle, using either the stroboscope attachment supplied with the instrument or at the air pressure specified.

(e) Lower the stirrer-disc into the paint sample (S) by gently pulling down the handle (H) to its full extent. (This will activate the motor and cause the disc to rotate in the paint.)

(f) Immediately the table has stabilized, record the consistency.

(g) Raise the stirrer-disc to the first stop and pause to allow excess sample to spin off, then raise it to the uppermost position.

(h) Check that the temperature of the sample is still within the specified range; if it is not, repeat the test, making any appropriate adjustments to technique, until it is.

8 PRECISION An interlaboratory trial on this method was conducted in 1986 and involved 21 laboratories. Two paints were tested—one water-based, the other one solvent-based. After removal of statistical outliers, the data in Table 1 were determined using the procedures equivalent to those specified for a uniform-level experiment in AS 2850.

The difference between two single results found on identical test material by one operator using the same apparatus within a short time-interval will not exceed the repeatability on average by more than once in 20 cases in the normal and correct operation of the method.

The difference between two single and independent results found by two operators working in different laboratories on identical test material will not exceed the reproducibility on average more than once in 20 cases in the normal and correct operation of the method.

Results obtained within a laboratory or between laboratories shall be considered suspect if these values of repeatability (r) and reproducibility (R), as appropriate, are exceeded.

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