

Methods for

Testing pigments for paints —

**Part A5: Comparison of lightening
power of white pigments**

*This part should be read in conjunction with the General Introduction to BS 3483
issued separately.*

NOTE This part of BS 3483 is technically identical with Part XVII of ISO/R 787, *General methods
of test for pigments*.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 3 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Amendments issued since publication

Amd. No.	Date	Comments

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1 Scope

Part A5 of this British Standard describes a general method of test for comparing the lightening (reducing) power of a white pigment with the lightening power of a reference sample of the same type.

NOTE 1 Procedure A is quicker than Procedure B and is suitable for testing one sample of pigment: Procedure B is better for testing several samples, and especially if a pigment of unknown lightening power is being tested.

NOTE 2 When this general method is applicable to a given pigment, only a cross-reference to it should be included in the British Standard relating to that pigment, with a note of any detailed modification which may be needed in view of the special properties of the pigment in question. Only when this general method is not applicable to a particular pigment should a special method for comparison of lightening power of white pigments be specified.

2 Reagent

Blue paste with the following composition:

- 1) Castor oil, BP quality, 500 g.
- 2) Precipitated calcium sulphate, $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$, 475 g.
- 3) Ultramarine blue complying with BS 314¹⁾, 5 g.
- 4) Treated natural earth²⁾, 20 g.

The paste shall be made as follows: mix the treated natural earth in a beaker with sufficient of the castor oil to give a uniform paste and then gradually stir in the remaining castor oil. Heat the mixture so obtained to 50 °C and after maintaining this temperature for about 15 min, stir in the ultramarine blue and calcium sulphate, adding them in small amounts. Thoroughly disperse the paste obtained by passing it through a roller mill or other suitable machine and stir to homogenize the paste, heating it if necessary. Store the paste in air-tight containers, preferably with screw caps.

3 Apparatus

3.1 Palette knife, of steel with a tapered blade of the approximate dimensions 140 mm to 150 mm long, 20 mm to 25 mm wide at its widest point and not less than 12.5 mm wide at its narrowest point.

3.2 Glass slide, clear and colourless, 150 mm × 50 mm or other suitable size.

3.3 Automatic muller, with ground glass plates, preferably water-cooled³⁾, of diameter 180 mm to 250 mm to which a variable but known force of up to about 1 000 N may be applied. The driven plate shall have a rotation of between 70 and 120 rev/min and the apparatus shall have an arrangement for presetting the number of revolutions in multiples of 25.

3.4 Plate, of ground glass or marble, for use when an automatic muller is not available.

3.5 Hand muller, with a diameter of 75 mm to 75 mm.

4 Sampling

The sample of pigment used for the test shall be taken in accordance with the provisions of BS 4726⁴⁾.

5 Procedures

5.1 Procedure A (abbreviated procedure)

5.1.1 Incorporation of the white pigment into the blue paste by means of the automatic muller

Weigh, to the nearest milligram, 5 g of the blue paste and place it in the middle of the clean lower plate of the muller (3.3). Weigh, to the nearest milligram, the mass m of the reference sample pigment indicated in Table 1 and incorporate it into the blue paste by gently working it with a palette knife (3.1). When the white pigment has been wetted, spread the paste in a circle of approximately 50 mm diameter around the centre of the lower plate and clean the palette knife by drawing it across the top plate. Close the muller plates, apply maximum force and grind in four stages of 25 revolutions, picking up the paste with the same palette knife and transferring it to the centre of the plate after each stage.

Table 1 — Quantity of white pigment to be taken

Pigment	Mass (m) of pigment
Zinc oxide or lithopone, 30 % ZnS	0.5 g
High grade zinc sulphide	0.2
Titanium dioxide	0.1

When the grinding has been completed, remove the paste and store it on a palette.

¹⁾ BS 314, "Ultramarine blue".

²⁾ A prepared bentonite is suitable material.

³⁾ If the automatic muller does not have water-cooled plates, care should be taken that temperature variations do not occur during the grinding operation.

⁴⁾ BS 4726, "Sampling raw materials for paints and varnishes".