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R 870

PLASTICS

PREPARATION OF SPECIMENS

FOR OPTICAL TESTS ON PLASTICS MATERIALS

CASTING METHOD

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PLASTICS

PREPARATION OF SPECIMENS

FOR OPTICAL TESTS ON PLASTICS MATERIALS

CASTING METHOD

1. SCOPE

This ISO Recommendation describes a method for casting plastics specimens for optical tests.

NOTE. – The preparation of specimens for optical tests by moulding is the subject of ISO Recommendation R 869, *Plastics – Preparation of specimens for optical tests on plastics materials – Moulding method*.

2. APPARATUS

The type of mould recommended is shown in the Figure below. It consists of the following parts :

- (a) two plates of glass with plane surfaces at least as good as those of photographic plates; a borosilicate glass resistant to thermal shock is recommended;
- (b) a stainless steel spacer about 4 mm thick;
- (c) a gasket of greater thickness than the spacer; the material used to make the gasket depends on the type of plastics material to be cast. In any case it should be of sufficient elasticity to compensate for the shrinkage of the plastics material;
- (d) two G-clamps to hold the plates together;
- (e) two plates, of metal or other rigid material, to be placed on either side of the glass plates to distribute the clamping pressure.

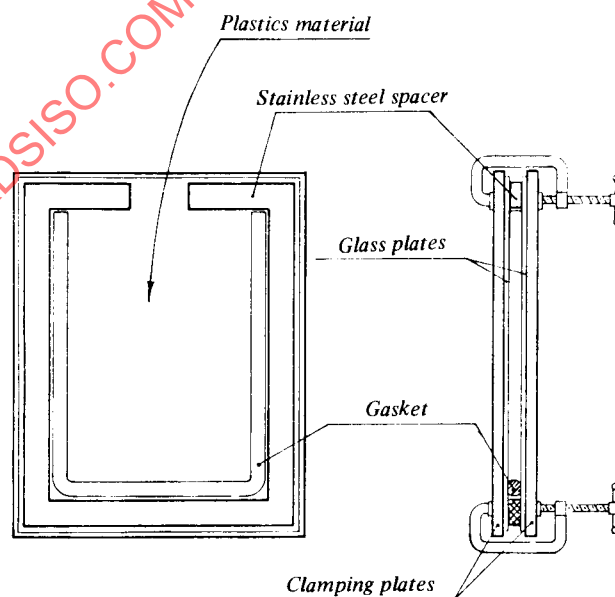


FIGURE – Mould for the preparation of test specimens for optical tests

3. PROCEDURE

- 3.1 After cleaning the plates carefully, assemble the apparatus as shown in the Figure.
- 3.2 Mix the plastics material with the appropriate types and quantities of accelerator and catalyst, or cross-linking agent.
- 3.3 Pour the plastics material into the mould; then gradually heat the mould at a temperature and for a time which is dependent on the type of plastics material being cast. If necessary, air in the mould may be evacuated to minimize the formation of bubbles in the specimen.
- 3.4 Then cool the whole assembly slowly and open the mould to remove the plate of the cured plastics material.
- 3.5 It is not advisable to use release agents between the glass and the plastics material because of the risk of altering the optical properties of the plastics surface. In some cases, however, a foil of polytetrafluoroethylene or polypropylene with a very smooth surface may be used on condition that the optical surface of the test specimen is not changed.
- 3.6 The separation of the plastics material from the glass plates is usually facilitated by the difference in their coefficients of expansion. If necessary, the assembly may be cooled to a temperature below ambient temperature. If moisture has no deleterious effect on the material being cast, immersion of the sandwich in water may be used to facilitate separation of the specimen from the mould surface. If absolutely necessary, the glass plates may be broken and the fragments removed with the aid of a small tool.
- 3.7 Then cut test specimens of the required dimensions from the sheet of cured plastics material.

4. REPORT

The report should include the following information :

- (1) date and location of preparation of test specimens;
- (2) complete identification of material moulded;
- (3) details of
 - (a) moulding temperature,
 - (b) preheating time,
 - (c) physical form of moulding material,
 - (d) the kind of pre-treatment (if any);
- (4) reference to this ISO Recommendation;
- (5) any other relevant details.