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ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

**ISO RECOMMENDATION
R 2028**

**PREPARATION OF DRY POLYMER
FROM BUTADIENE HOMOPOLYMER
AND COPOLYMER LATICES**

1st EDITION

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BRIEF HISTORY

The ISO Recommendation R 2028, *Preparation of dry polymer from butadiene homopolymer and copolymer latices*, was drawn up by Technical Committee ISO/TC 45, *Rubber*, the Secretariat of which is held by the British Standards Institution (BSI).

Work on this question led to the adoption of Draft ISO Recommendation No. 2028, which was circulated to all the ISO Member Bodies for enquiry in May 1970. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Australia	India	Switzerland
Austria	Israel	Turkey
Canada	Italy	U.A.R.
Ceylon	Netherlands	United Kingdom
France	New Zealand	U.S.A.
Germany	South Africa, Rep. of	U.S.S.R.
Greece	Spain	
Hungary	Sweden	

No Member Body opposed the approval of the Draft.

This Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided to accept it as an ISO RECOMMENDATION.

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**PREPARATION OF DRY POLYMER
FROM BUTADIENE HOMOPOLYMER
AND COPOLYMER LATICES**

1. SCOPE

This ISO Recommendation describes a method for the preparation, for subsequent testing (for example, the determination of shearing disk viscosity) or dry polymer from butadiene homopolymer and copolymer anionic stabilized SBR and NBR latices having a volatile unsaturates content of less than 0.5 %. The method is not applicable to latices which contain surfactants of the sulphonate or sulphate types, such as carboxylated rubber latices.

It should be noted that the dry polymer contains residual organic acids or soaps which may affect the properties of the polymer.

2. PRINCIPLE OF METHOD

The latex is coagulated by the addition of sodium chloride and sulphuric acid solutions, with fast agitation, in the presence of phenyl β -naphthylamine dissolved in methanol. The resultant crumb is filtered and dried.

3. REAGENTS

All reagents should be of recognized analytical reagent quality, and distilled water or water of equivalent purity should be used wherever water is specified.

3.1 *Sodium chloride* solution, 20 % (m/m).

3.2 *PBN* solution, 0.75 % (m/m) solution of phenyl β -naphthylamine in methanol.

3.3 *Sulphuric acid* solution : 1 volume of concentrated sulphuric acid (ρ 1.84 g/cm³) added to 9 volumes of water.

3.4 *Congo red indicator paper*.

4. APPARATUS

4.1 *Combined high speed mechanical stirrer and comminutor* with a totally enclosed motor, and with a stirrer vessel of capacity at least 1000 cm³.

4.2 *Cheesecloth*.

4.3 *Drying tray*, preferably of stainless steel wire gauze.

4.4 *Forced draught oven*, maintained at a temperature between 100 and 125 °C.

5. PROCEDURE

If the total solids content of the latex is greater than 30 %, dilute the latex with water to a total solids content of 30 %.

To 250 cm³ of the latex contained in the stirrer vessel (4.1), add 50 cm³ of the sodium chloride solution (3.1) and mix thoroughly. With continued stirring, add 250 cm³ of the PBN solution (3.2) and slowly add, during 2 to 3 minutes, 10 ml of the sulphuric acid solution (3.3). Test with the indicator paper (3.4), and if its colour does not change from red to blue, add additional sulphuric acid, while stirring, until the colour does change.

Pour the contents of the stirrer vessel onto cheesecloth and press as much liquid as possible from the crumb. Separate the mass of crumb by hand and transfer the pieces to the drying tray.

Dry the crumb in the oven (4.4), avoiding under-drying and avoiding heating for more than 5 minutes after reaching minimum mass. The drying time depends upon the consistency of the crumb, the properties of the polymer and the oven conditions, and should be determined by experiment.