INTERNATIONAL STANDARD 3257

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Carbon black — Evaluation in styrene-butadiene rubbers

Noir de carbone — Évaluation dans les caoutchoucs butadiène-styrène

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up has the right to be represented on that Committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 3257 was drawn up by Technical Committee ISO/TC 45, *Rubber and rubber products*, and circulated to the Member Bodies in October 1973.

It has been approved by the Member Bodies of the following countries :

Australia	Hungary	Spain
Austria	India	Sweden
Belgium	Ireland	Switzerland
Bulgaria	Italy	Turkey
Canada	Mexico	United Kingdom
Czechoslovakia	Netherlands	U.S.A.
Egypt, Arab Rep. of	New Zealand	U.S.S.R.
France	Portugal	Yugoslavia
Germany	Romania	

No Member Body expressed disapproval of the document.

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Carbon black — Evaluation in styrene-butadiene rubbers

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies standard materials, equipment and processing methods for evaluating carbon butadiene rubbers.

NOTE — Variations in equipment and testing procedure permitted in this International Standard can lead to discrepant results. Therefore, carbon black is preferably compared to a reference carbon black tested under the same conditions.

2 REFERENCES

ISO/R 37, *Determination of stress-strain properties of vulcanized rubbers.*

ISO/R 289, *Determination of viscosity of natural and synthetic rubbers by the shearing disk viscometer.*

ISO 2393, *Rubber test mixes — Preparation, mixing and vulcanization — Equipment and procedures.*

ISO 3417, *Raw rubber — Measurement of curing characteristics with the oscillating disk curemeter.* 1)

3 TEST RECIPE

3.1 Standard test formula

The standard test formula is given in the following table.

The materials shall be NBS 2) standard reference materials as indicated in the table, or shall be in accordance with equivalent national standards.

Material	NBS standard reference material number	Parts by mass
SBR 1500*	386	100,00
Zinc oxide	370	3,00
Sulphur	371	1,75
Stearic acid	372	1,00
Carbon black	—	50,00
TBBS**	384	1,00
		156,75

* A European equivalent to NBS standard reference material 386 has been developed to match by ANIC. This EST (European Standard Type) rubber is an SBR 1500 type using a rosin acid emulsifier and a staining stabilizer.

The Mooney viscosity (ML 1 + 4 at 100 °C), as determined according to ISO/R 289, of this standard reference material should have limits of ± 1 Mooney unit within the absolute range of 50 to 56, but with the preferred viscosity of 52 to 53.

** *N-tert*-butyl-2-benzothiazole sulphenamide (powder form). This material must be stored under dry and cool conditions.

3.2 Procedure

3.2.1 *Equipment and procedure*

Equipment and procedure for preparation, mixing and vulcanization shall be in accordance with ISO 2393.

3.2.2 *Mill mixing procedure*

The standard laboratory mill batch mass, in grams, shall be based on four times the formula mass. The surface temperature of the rolls shall be maintained at 50 ± 5 °C throughout the mixing.

NOTE — All mill openings shall be adjusted to maintain a good rolling bank at the nip of the rolls during mixing.

	Duration (min)
3.2.2.1 Band the rubber with the mill opening set at 1,1 mm, and make 3/4 cuts every 30 s from alternate sides	7
3.2.2.2 Add the sulphur slowly and evenly across the rubber	2

1) At present at the stage of draft.

2) National Bureau of Standards of the U.S.A.