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PEOPLE'S REPUBLIC OF CHINA**

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**Rubber - General procedures for preparing and conditioning
test pieces for physical test methods
(English Translation)**

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1 Scope

This Document specifies general procedures for the preparation, measurement, marking, storage, and conditioning of rubber test pieces for use in physical tests, and the preferred conditions to be used during the tests. Special conditions, applicable to a particular test or material or simulating a particular climatic environment, are not included, nor are special requirements for testing whole products.

This Document also specifies the requirements for the time interval to be observed between forming and testing of rubber test pieces and products. Such requirements are necessary to obtain reproducible test results and to minimize disagreements between customer and supplier.

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in this Document. For the dated documents, only the versions with the dates indicated are applicable to this Document; for the undated documents, only the latest

version (including all the amendments) is applicable to this Document.

ISO 1795 Rubber, raw natural and raw synthetic - Sampling and further preparative procedures

NOTE: GB/T 15340-2025 Rubber - raw natural and raw synthetic - Sampling and further preparative procedures (ISO 1795:2017, IDT)

When controlled temperature and humidity are not required or when standard laboratory conditions are difficult to achieve, prevailing ambient temperature and humidity can be used.

6 Storage of Samples and Specimens

6.1

Samples of specimen to be prepared and specimens before conditioning shall be stored in an environment that is least susceptible to aging, such as avoiding light, heat and contamination (such as cross-contamination from other samples).

6.2

For all tests, the minimum time interval between sample formation and testing shall be 16 h. If the specimens are cut from finished products or the entire finished product (such as bridge bearings) for testing, the time interval between sample formation and testing may be much longer than 16 h. In this case, the minimum time interval shall be as specified in the product instructions or relevant test methods.

6.3 For unfinished product tests, the maximum time interval between sample formation and

testing shall be 4 weeks. In order to make the tests comparable, they shall be carried out within the same time interval as much as possible.

6.4 For finished product tests, the time interval between finished product formation and testing shall not exceed 3 months whenever possible. In other cases, the test shall be carried out within

2 months of the date of receipt of the product by the customer.

6.5 These requirements only relate to initial rubber material testing and finished product testing during the initial and delivery stages. Special tests for other purposes may be carried out at any time, such as process control or evaluation of the effects of abnormal storage conditions on the product. Such reasons shall be clearly stated in the test report.

6.6 If it is an unvulcanized rubber compound, it shall be conditioned at a standard laboratory temperature specified in 5.1 for 2 h to 24 h; preferably in a sealed container to prevent moisture in the air, or placed in a room with a relative humidity controlled at 50% ±

5%.

7.1 Specimen thickness

The specimen thickness shall comply with the provisions of the relevant test method. The preferred specimen thickness is shown in Table 2. If it is necessary to retain the original surface of the sample, a specimen thickness other than that shown in Table 2 may be used.

7.2.3.1 Rotary cutting equipment

This equipment refers to a slicer. It consists of a motor-driven or manual disc-shaped cutter of appropriate diameter and a movable cutting table that can transport the sample to the edge of the knife.

The cutting table is equipped with an adjustable slow feed mechanism to transport the rubber in the cutting direction and control the thickness of the slice. The equipment shall also have a clamping device to fix the rubber. The blade is preferably lubricated with a diluted aqueous detergent solution to facilitate the cutting operation.

7.2.3.2 Skiving machines

This equipment is based on commercial leather-slitting machinery, and convenient types are available for cutting strips about 50 mm wide with thicknesses up to about 12 mm. Adjustment shall be possible to vary the thickness of cut, and feed rollers shall be provided to transport the material past the knife. Provision shall be made for maintaining the cutting edge in a sharp condition. Attachments are available for splitting and cutting sections from cable sheathing.

7.2.3.3 Abrasive wheels

The abrading apparatus shall consist of an abrader with a motor-driven abrasive wheel. It is important that the wheel runs true without vibration, and that the abrasive surface, of aluminum oxide or silicon carbide, is true and sharp. The abrader can be equipped with a slow-feed mechanism so that very light cuts can be made to avoid overheating of the rubber. Suitable means shall be provided for securing the rubber to prevent excessive deformation and for controlled traversing of the rubber against the abrasive wheel.

NOTE: Wheels of diameter 150 mm operating at a surface speed in the range of 10 m/s to 12 m/s, designated C-30-P-4-V for roughing and designated C-60-P-4-V for finishing (see ISO 525), have been found suitable. C-30-P-4-V means: the abrasive is black silicon carbide, the particle size is 30, the hardness code is P, the abrasive structure number is 4, and the ceramic bond. C-60-P-4-V means: the particle size is 60, and the rest is the same as C-30-P-4-V.

The depth of cut produced in the first pass shall not exceed 0.2 mm. Successive cuts shall be progressively less deep to avoid overheating of the rubber. Buffing shall not be carried

out beyond the point where unevenness in the thickness has been eliminated. For removal of greater thicknesses of rubber, cutting equipment as specified in 7.2.3.1 or 7.2.3.2 shall be used.

7.2.3.4 Flexible abrasive belts

The apparatus shall consist of either a motor-driven drum on which a helical strip of the abrasive belt is secured, or of two pulleys, one motor-driven and the other adjustable, to tension and align the belt. The abrasive belt shall be of textile or paper or a combination of the two, with the abrasive, of aluminum oxide or silicon carbide, bonded to the surface with a resin which is unaffected by water. Equipment shall be provided for slow feeding device of the material to the abrasive belt and for securing the material without excessive deformation.

NOTE: A linear speed of the abrasive belt of (20 ± 5) m/s has been found suitable.

With this apparatus, cuts removing several tenths of a millimeter of rubber are practicable as much less heat is produced than with the equipment specified in 7.2.3.3. Abrasion can be carried out against the drum, against one of the pulleys or against the taut belt between the pulleys.

7.3.1 General requirements

The structure and type of cutter or die employed depends on the thickness and hardness of the material under test. In the case of thin materials, punching or rotary cutting tools shall be used as specified in 7.3.2, 7.3.3 or 7.3.4. For thicker materials, usually above 4 mm, a rotary cutting tool as specified in 7.3.4 is desirable to reduce the degree of dishing of the cut edge resulting from compression of the rubber during cutting.

7.3.2 Fixed-blade cutters

For cutters which do not have replaceable blades, an example of a suitable cutting edge is shown in Figure 1. These shall be made from high-quality tool steel and can be of either one-piece or two-piece construction. They can be designed to punch out single or multiple specimens. It is essential that the design ensures sufficient rigidity to prevent distortion of the cutting shape, and the cutter shall preferably be fitted with an ejection system to release the specimen. If fitted, such a system shall be designed to accommodate material up to the maximum thickness to be cut, normally 4.2 mm. If an ejection system is not fitted, access shall be available from the rear to permit release of the specimen by the operator without damaging the cutting edge. The cutting edge shall be kept sharp and free from nicks, as specified in 7.4, to prevent the formation of ragged edges on the specimens.

to release the specimen. If fitted, such a system shall be designed to accommodate sample up to the maximum thickness to be cut, normally 2.2 mm. If an ejection system is not fitted,