



Rubber, raw solid natural and synthetic — General guidance on storage

Caoutchouc brut, solide, naturel et synthétique — Guide pour le stockage

In 1979, Technical Committee ISO/TC 45, *Rubber and rubber products*, agreed to progress a request by the Netherlands to issue a document which would be a guide to the storage of synthetic rubber. The subject was then considered by Working group 3, *Raw materials for use in the rubber industry*, of TC 45 and agreement reached that a draft proposal be prepared to include both synthetic rubber and natural rubber. The draft was subsequently balloted within TC 45. The comments were examined by WG3 and there was unanimous agreement with the comment from France that the document should become a Technical Report rather than an International Standard. After amendment, as a result of the comments received, TC 45 approved the issue of the document as a Type 3 technical Report.

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0 Introduction

Under unfavourable storage conditions, all types of raw rubber change more or less in physical and/or chemical properties. Ultimately they may become unserviceable, for example because of hardening, softening, surface degradation, discoloration, etc., resulting in a different behaviour during processing and/or differences in properties of the vulcanizates.

These changes may be result of one particular factor or a combination of factors, mainly the action of oxygen, light, temperature and humidity. The deleterious effects of these factors may, however, be minimized by an appropriate choice of storage conditions. This Technical Report, therefore, indicates the most suitable conditions for storage.

1 Scope and field of application

This Technical Report provides information on the most suitable conditions for the storage of raw natural and synthetic rubber delivered in the form of bales.

For rubber delivered in the form of powder, loose crumb or pellets, extra care should be taken because of the far greater exposed surface area. In addition, "particulated" rubber can agglomerate under the influence of elevated temperature and/or pressure.

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2 Storage accommodation

The storage space should be clean, dry, well ventilated and of a moderate temperature.

2.1 Temperature

The storage temperature should preferably lie between 15 and 35 °C. However, it is recognized that in many parts of the world lower or higher ambient temperatures cannot be avoided.

Whereas too high a temperature may cause irreversible changes in properties, the effects of low temperature are not permanently deleterious.

Rubbers which tend to crystallize may become harder and show difficulties during the mixing process. The temperature of these rubbers should be raised during a sufficient period of time before processing starts.

2.2 Heating

Sources of heat in storage rooms should be so arranged and screened that the temperature of the stored rubber does not exceed 25 °C.

2.3 Humidity

Moist conditions should be avoided; storage conditions should be such that condensation on the rubber or the wrapping does not occur.

Moisture can influence the processing and even the cure behaviour of the rubber. Moreover, excessive humidity may cause hydrolysis of certain kinds of rubber.

2.4 Light

Raw rubbers should be protected from light and in particular from direct sunlight and strong artificial light with a high ultraviolet content. Unless the rubber is packed in opaque wrapping, it is advisable to cover any windows of storage rooms with a red or orange coating or screen. Otherwise, crates or pallets should be covered. The use of normal incandescent lamps is preferable.

3 Contamination

Raw rubber should be protected completely from dust and all other kinds of foreign material, with the exception of the packaging rubber used by the producers for wrapping the bales or packaging the raw rubber. All direct contact with other kinds of rubber should be avoided.

It is recommended that the rubber be kept in the packaging as delivered until required for use.

4 Rotation of stocks

Raw rubbers should remain in store for as short a time as possible. Therefore, the rubber should be issued from stores in rotation so that the rubber remaining in store is that of latest delivery.