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

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

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 7664 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 3, *Raw materials (including latex) for use in the rubber industry*.

This first edition cancels and replaces ISO/TR 7664:1984, which has been technically revised.

Introduction

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

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

INTERNATIONAL STANDARD ISO 7664:2000(E)

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

1 Scope

This International Standard provides information on the most suitable conditions for the storage of raw natural and raw 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, "particulate" rubber can agglomerate under the influence of elevated temperature and/or pressure.

2 Storage accommodation

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

2.1 Temperature

The storage temperature should preferably lie between 10 °C and 35 °C. However, it is recognized that in many parts of the world lower or higher ambient temperatures cannot be avoided.

Whereas exposure to too high a temperature may cause irreversible changes in properties, the effects of low temperature may in some cases induce crystallization, which is reversible and therefore not permanently deleterious.

Crystallized or even partially crystallized rubbers are hard and may present difficulties during the mixing process. Such crystallization should be reversed by raising the temperature for a sufficient period of time prior to processing.

NOTE The maximum rate of crystallization of natural rubber occurs at a temperature of − 27 °C, and the rate is rapid between 0 °C and 10 °C. A minimum storage temperature of 20 °C is recommended to limit the extent of crystallization. Other rubbers which are susceptible to crystallization are isoprene rubber, IR, and chloroprene rubber, CR.

2.2 Heating

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

2.3 Humidity

Moist conditions should be avoided; storage conditions should be such that condensation of moisture 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 material (including sheet rubber used by producers for wrapping the bales or packaging some grades of natural 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. When partly used packages or cases are stored, care should be taken to cover the remaining bales.

4 Rotation of stocks

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

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