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Vulcanized rubber — Guide to storage

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FOREWORD

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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.

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

Australia	Israel	Spain
Austria	Italy	Sweden
Egypt, Arab Rep. of	New Zealand	Switzerland
France	Poland	Turkey
Greece	Portugal	United Kingdom
Hungary	Romania	U.S.A.
India	South Africa, Rep. of	U.S.S.R.

No Member Body expressed disapproval of the document.

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Vulcanized rubber — Guide to storage

0 INTRODUCTION

Most vulcanized rubbers change in physical properties during storage and ultimately may become unserviceable, for example because of excessive hardening, softening, cracking, crazing or other surface degradation. These changes may be the result of one particular factor or a combination of factors, namely, the action of oxygen, ozone, light, heat and humidity.

The deleterious effects of these factors may, however, be minimized by careful choice of storage conditions. This International Standard, therefore, indicates the most suitable conditions for storage.

1 SCOPE AND FIELD OF APPLICATION

This International Standard provides a guide to the most suitable conditions for the storage of vulcanized rubber in all forms, whether supplied as such or as a component of composite articles. Some advice is also given on cleaning.

2 TEMPERATURE

The storage temperature should be below 25 °C and preferably below 15 °C. At temperatures exceeding 25 °C, certain forms of deterioration may be accelerated sufficiently to affect the ultimate service life. Sources of heat in storage rooms should be so arranged that the temperature of a stored article does not exceed 25 °C. The effects of low temperature are not permanently deleterious to vulcanized rubber articles, but the articles may become stiffer if stored at low temperatures and care should be taken to avoid distorting them during handling at that temperature. When articles are taken from low temperature storage for immediate use, their temperature should be raised to approximately 30 °C throughout before they are put into service.

3 HUMIDITY

Moist conditions should be avoided; storage conditions should be such that condensation does not occcur.

4 LIGHT

Vulcanized rubber should be protected from light, in particular direct sunlight and strong artificial light with a high ultra-violet content. Unless the articles are packed in opaque containers, it is advisable to cover any windows of storage rooms with a red or orange coating or screen.

5 OXYGEN AND OZONE

Where possible, vulcanized rubber should be protected from circulating air by wrapping, storage in air-tight containers, or other suitable means; this particularly applies to articles with large surface area to volume ratios, for example proofed fabric and cellular rubber.

As ozone is particularly deleterious, storage rooms should not contain any equipment that is capable of generating ozone, such as fluorescent or mercury vapour lamps, high voltage electrical equipment, electric motors or other equipment which may give rise to electric sparks or silent electrical discharges. Combustion gases and organic vapours should be excluded as they may give rise to ozone via photochemical processes.

6 DEFORMATION

Vulcanized rubber should, wherever possible, be stored in a relaxed condition free from tension, compression or other deformation. If it is impossible to avoid deformation, it should be kept to a minimum, since deformation can lead to deterioration and to permanent changes of shape. Where articles are packed in a strain-free condition, they should be stored in their original packing. Where material is supplied in coils, the restraining strings should be cut, if possible, to provide a strain-free condition. In case of doubt, the manufacturer's advice should be sought.

7 CONTACT WITH LIQUID, SEMI-SOLID MATERIAL OR WITH THEIR VAPOURS

Vulcanized rubber should not be allowed to come into contact with liquid or semi-solid material — in particular, solvents, volatile constituents, oils and greases — at any time during storage, unless so packed by the manufacturer.

8 CONTACT WITH METALS

Certain metals – in particular copper and manganese – are known to have deleterious effects on vulcanized rubber, which should not, therefore, be stored in contact with those metals, but should be protected by wrapping or by separation with a layer of suitable material, for example paper or polyethylene, unless so packed by the manufacturer.

NOTE – Plasticized films should not be used for wrapping.

9 CONTACT WITH DUSTING POWDER

The most suitable dusting powders are chalk, soapstone and mica; any dusting powder should be free from constituents having a deleterious effect on vulcanized rubber.

10 CONTACT BETWEEN DIFFERENT RUBBERS

Contact between vulcanized rubbers of different composition should be avoided. This particularly applies to vulcanized rubber of different colours.

11 ARTICLES WITH RUBBER-TO-METAL BONDS

The bonded metal should not come into contact with the vulcanized rubber other than at the bond and any preservative used on the metal should be such that it will not adversely affect the rubber or the bond.

12 CONTAINERS, WRAPPING AND COVERING MATERIAL

The material of any containers, wrapping and covering materials should be free from substances deleterious to vulcanized rubber, for example copper naphthenates, creosote, etc.

13 ROTATION OF STOCKS

Vulcanized rubber should remain in store for as short a time as possible. Therefore, articles should be issued from stores in rotation so that the articles remaining in store are those of latest manufacture or delivery.

14 CLEANING

Great care should be taken in cleaning vulcanized rubber. Cleaning with soap and water is the least harmful. Abrasives, sharp objects and solvents such as trichloroethylene, carbon tetrachloride and hydrocarbons must not be used.

Articles that have been cleaned should be dried at room temperature.