

Textile floor coverings — State of the art on maintenance and cleaning

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ISO copyright office

CP 401 • Ch. de Blandonnet 8

CH-1214 Vernier, Geneva

Phone: +41 22 749 01 11

Fax: +41 22 749 09 47

Email: [copyright@iso.org](mailto:copyright@iso.org)

Website: [www.iso.org](http://www.iso.org)

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 219, *Floor coverings*.

This second edition cancels and replaces the first edition (ISO/TS 21868:2021), which has been technically revised.

The main changes are as follows:

- clarifications to the terms and definitions were added;
- clarifications to the requirements were added;
- ~~table~~ **Table 1** “Fibre identification burn test” was deleted.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

This document is designed for ~~global governments, relative~~legislators, ~~related~~ enterprise associations, textile floor coverings manufacturers, ~~—~~, and textile floor covering maintenance and cleaning enterprises to develop their own specific textile floor covering maintenance or/and cleaning standards or procedures in accordance with the local conditions. Due to diversity of different regions in climates, customs and developing levels in the world, it is extremely difficult to create a specific textile floor covering maintenance and cleaning standard as a template which is globally workable. In addition, the factors which impact the result of cleaning are so abundant and the combinations of these factors so tremendous that particular programmes are necessary to acquire the best result of textile floor covering cleaning.

This guidance standard manages to list all the factors which affect the final results of cleaning, against which ~~global governments~~legislators, relative enterprises associations and textile floor covering maintenance and cleaning enterprises are able to establish the above-mentioned particular programmes (procedures or criteria) in their standards accordingly. Therefore, this standard is not intended to be used by end-users to perform any specific maintenance and cleaning jobs.

This comprehensive guidance standard is intended to pave the way for ~~global governments~~legislators and ~~relative~~related enterprise associations to establish specific standards for:

- regulating the development of the textile floor covering cleaning industry,
- promoting the development of the textile floor covering cleaning detergent and equipment industry,
- improving textile floor covering cleaning techniques, and
- improving sales of textile floor coverings,

since specific textile floor covering maintenance and cleaning standards are still absent in most nations.

NOTE The term "textile floor coverings" applies to wall-~~to-~~wall carpets, broadloom carpets, rugs, mat and tile carpets.

# **Textile floor coverings — State of the art on maintenance and cleaning**

## **1 Scope**

This document gives guidelines for the development of specific textile floor covering maintenance and cleaning standards, procedures and criteria to reflect local specific conditions. This document specifies the factors which will impact the final results of textile floor covering cleaning, defining maintenance and cleaning terms to highlight differences. It establishes textile floor covering maintenance and cleaning as achieving a low-cost, non-residue and environmentally friendly cleaning under the premise of maximizing the use value of textile floor covering.

## **2 Normative references**

There are no normative references in this document.

## **3 Terms and definitions**

For the purposes of this document, the following terms and definitions apply.  
ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org>/<https://www.electropedia.org/>

### **3.1**

#### **soil**

any matter that is foreign to the construction of the textile floor covering

Note 1 to entry:— Soil includes spill, spot, stain, and residue.

### **3.2**

#### **spill**

wet, dry, oily or combination states of matter that are accidentally deposited on the textile floor covering

Note 1 to entry:— Depending on the composition of the spill, quick response time and cleaning procedures can assist in minimizing the probability of a spill becoming a spot or a stain.

### **3.3**

#### **spot**

foreign material on the surface of a fibre, usually changing the texture of the fibre

EXAMPLE:— Sticky, oily, greasy, stiff.

Note 1 to entry:— Spots can usually be removed. However, some spots, if left untreated for too long, can become stains.

### 3.4

#### **stain**

indication of the addition of colour, frequently in liquid or pigment form that has been strongly attracted to the textile floor covering fibre

Note 1 to entry:— This added dye or pigment can bind to a dye site and actually alter the structure of the fibre. Not all stains respond positively to removal efforts.

### 3.5

#### **residue**

the foreign materials left in the cleaned textile floor coverings, which is originated from the detergents

### 3.6

#### **interim cleaning**

removal of topical appearance soil from textile flooring and return of the textile floor covering to a dry and usable state within a short period of time

### 3.7

#### **restorative cleaning**

thorough removal of soil both on the textile floor covering surface and embedded within the textile floor covering construction

## 4 Maintenance

### 4.1 General

Maintenance is the protection of textile floor coverings, vacuuming and timely removal of spills and dust which can be operated by non-professionals. Textile floor covering maintenance requires a user to develop a maintenance programme, which can be provided with the help of the textile floor covering manufacturer or provided or assisted by a contracted textile floor covering cleaner.

The significance of textile floor covering maintenance is that it is the first key step in extending the service life of the textile floor covering, and the simplest and most economical and effective means of preventing the textile floor covering from being soiled.

### 4.2 Maintenance plan

The maintenance plan shall include:

- Laying of door mats, which are for scraping soil and absorbing moisture. Pay attention to the length of door mats to prevent people from stepping over them. If necessary, a reminder for scraping shoes is recommended in case the door mat is too small.
- Timely removal of spills.
- Division of the textile floor coverings regions based on varying traffic frequency and varying functions to formulate a vacuum cycle accordingly.
- Protection of the textile floor coverings during the laying and maintenance of other flooring materials and furniture nearby.



- Provision of temporary or permanent convenient bins and ashtrays in special function areas.
- Controlling the dehumidification equipment to maintain the necessary dryness to prevent the room from developing mildew.

The maintenance plan is a program for end-users to follow in order to keep the textile floor coverings in good conditions and pave the way for necessary cleaning. For residential use textile floor coverings, it shall be provided by manufacturers. For commercial use textile floor coverings, it shall be discussed and, when customizing the textile floor coverings with the assistance of the textile floor coverings manufacturer or professional textile floor coverings cleaner, made to match the overall interior space designing.

## **5 -Cleaning**

### **5.1 General**

Cleaning is the process of locating, identifying, containing, removing and properly disposing of soil, performed by professionals with professional equipment and under standard programmes.

Cleaning requires professional personnel and equipment to be implemented in accordance with professional programmes. Either interim cleaning or restorative cleaning, professional personnel, professional equipment and conformant procedures are necessary. Cleaning is mostly likely to be conducted by an independent service provider, either a professional cleaning service companies or the manufacturers, other than the users, unless the user keeps a professional team with professional equipment, cleaning agents and professional programs.

### **5.2 The principle of cleaning**

The principles of cleaning are:

- Restoring the use value of textile floor coverings.
- Green environmental protection before and after cleaning.
- Having practices which are harmless to practitioners and users.
- Maintaining or restoring special properties attached to textile floor coverings: including but not limited to fire proof post-treatment and anti-static post-treatment.

At the same time, it shall be clear that cleaning a textile floor covering is not to transform the textile floor covering into a new one, but to remove the soil on the textile floor covering as completely as possible, and if necessary, repairs may be performed. Even after professional cleaning, it is possible that it will not be possible to reverse all damage due to permanent changes to colour or fibre.

### **5.3 Personnel training**

Qualified and professional personnel are prerequisites for ensuring cleaning quality, cleaning personnel safety and environmental protection. Cleaning personnel shall be professionally trained by a professional company or organization before going on duty. The training shall cover not only cleaning, but also textile floor covering quality, laying and repairing.

## 5.4 Cleaning Steps

### 5.4.1 Identification

#### 5.4.1.1 General

Identification is the most important step in a textile floor covering cleaning process and a complete identification of the factors which affect the cleaning result is required for the development of cleaning standards or individual cleaning programmes.

#### 5.4.1.2 Identification of textile floor covering appearance and defects

Observe the overall state of the textile floor covering appearance and search for defects. Locate the spills, spots and stains. Ask the textile floor covering user about the textile floor covering laying time, the time and manner of the previous cleanings, and ask the textile floor covering user for a textile floor coverings maintenance programme and its relative execution record if the user has this, in order to determine roughly how to clean it.

#### 5.4.1.3 Identification of textile floor covering laying quality

The laying quality defects mentioned below will directly lead to defects in cleaning results:

- a) If the textile floor covering is not stretched tightly and results in surface wrinkles, during the cleaning process, the textile floor covering surface can show watermark and shadow after cleaning and even damage to part of the textile floor covering pile.
- b) If the edge of the textile floor covering is unevenly trimmed, leading to burrs, during the cleaning process, the pile can be pulled out, seriously damaging the textile floor covering.
- c) If the textile floor covering is not fixed firmly, during the cleaning process, the textile floor covering can shrink and cause crevices.
- d) If the textile floor covering is not spliced strongly, the textile floor covering seam(s) will crack after drying.

#### 5.4.1.4 Identification of the textile floor covering surroundings

Identify adjacent furniture, equipment, floor coverings and the building itself to avoid any damage, harm or electric shock when on-site cleaning is conducted.

#### 5.4.1.5 Identification of climate and season

Identifying local climate and seasons is necessary to restore the qualified water content of the textile floor covering after cleaning in time.

#### 5.4.1.6 Identification of special textile floor covering function

Determine whether the textile floor covering has special functions in a functional area. Post-treatment of fire-proof and anti-static functions shall be maintained or restored after cleaning. Special attention shall be drawn to these special locations, such as laboratories, hospitals, workshops for electronic devices and elevators, as well as certain special functional areas of a hotel. For example, static electricity can damage elevators; being fire-proof can be a requirement for an area in a hotel where smoking is permitted permanently or temporarily.

#### 5.4.1.7 Identification of product quality

- a) Ask textile floor covering users for product label(s) and cleaning instruction(s) from textile floor covering(s) manufacturer(s).
- b) Determine the material(s) of the textile floor covering pile, the type(s) of pile, the length of pile, the pile weight.
- c) Determine the structure of the textile floor covering formation: hand-knotted, hand-tufted, semi-handmade, machine made, etc.
- d) Determine whether the formation of textile floor coverings and the adhesive (if any) adapts to washing, and the times of washing.
- e) Determine the physical and chemical properties of the base materials.
- f) Determine if there are post-treatments, such as fireproof post-treatment and/or anti-static post-treatment, to ensure that cleaning does not compromise the special properties, or completely restore these properties by reprocessing the post treatments.

#### 5.4.1.8 Identification of the cleaning objectives

- a) Appearance identification method: identify the material by observing the appearance of the soil, for example: various food juices, paint stains, etc.
- b) Colour identification method: Identify the material by unique colour of the soil, such as ink, dye, paint, blood stains, etc.
- c) Sensory identification method: Identify the material by hand feeling and observation, such as sugar stains and glue. This can rely on the accumulation of long-term experience and knowledge.
- d) Location identification method: Identify soil based on its location.
- e) Odour identification method: Identify soil based on the unique smell of soil, such as perfume, wine, chewing gum, etc.
- f) Chemical testing: For particularly expensive textile floor coverings, laboratory chemical methods may be used for identification if necessary.
- g) Ask for the customs of using textile floor covering; in case of close touch with human being, especially with bare skin, inactivation is necessary.
- h) Ask the user about the history of cleaning and identify whether it is necessary to remove the residue from previous cleanings.

It is necessary to identify the states of soil according to the classification of the three types defined above, i.e., spill, spot and stain. Spill, spot and stain removal chemicals shall be of a type that do not harm textile floor coverings when used in accordance with the chemical manufacturer's recommendations.

See **Table 1** for the types of soil and the applicable detergent categories of disposal.