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Ceramic tiling systems — Sustainability for ceramic tiles and installation materials —

Part 1: Specification for ceramic tiles

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: 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).

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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.

This document was prepared by Technical Committee ISO/TC 189, *Ceramic tile*.

A list of all parts in the ISO 17889 series can be found on the ISO website.

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.

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Introduction

This document outlines the requirements for sustainable tiles and installation materials including environmental, economic and social criteria, in order to:

— promote the development and use of sustainable ceramic tiles and installation materials;

— guide all stakeholders in environmental responsibility throughout the supply chain for tiles and installation materials;

— provide a verifiable resource for tile product specification and for design professionals, contractors and consumers to identify sustainable tiles and installation materials;

— increase the value of sustainable tiles and installation materials throughout the supply chain by creating greater market awareness and demand.

This document provides a system for sustainability assessment of products throughout their life cycle using qualitative and quantitative indicators for environmental performance and for social and economic responsibility pertaining to the design, manufacture, installation, and use of ceramic tiling systems. This document is focused on ceramic tiles, as part of the tiling system.

This document can be used to assess the sustainability performance of the product of interest.

Evaluation schemes, taking into account the materials mentioned in the product standards, to enable comparability of the results of assessment, are part of this document.

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Ceramic tiling systems — Sustainability for ceramic tiles and installation materials —

Part 1: Specification for ceramic tiles

1 Scope

This document specifies sustainability requirements together with assessment methods and evaluation schemes for ceramic tiles.

This document includes relevant criteria across product life cycle from raw material through manufacturing, use and end-of-life management.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 13006, *Ceramic tiles — Definitions, classification, characteristics and marking*

ISO 14024, *Environmental labels and declarations — Type I environmental labelling — Principles and procedures*

ISO 14025, *Environmental labels and declarations — Type III environmental declarations — Principles and procedures*

ISO 16000-3, *Indoor air — Part 3: Determination of formaldehyde and other carbonyl compounds in indoor air and test chamber air — Active sampling method*

ISO 16000-6, *Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TA sorbent, thermal desorption and gas chromatography using MS or MS-FID*

ISO 16000-9, *Indoor air — Part 9: Determination of the emission of volatile organic compounds from building products and furnishing — Emission test chamber method*

ISO 16000-11, *Indoor air — Part 11: Determination of the emission of volatile organic compounds from building products and furnishing — Sampling, storage of samples and preparation of test specimens*

ISO 21930, *Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services*

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/

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3.1 Sustainability

3.1.1
environmental sustainability
state in which the ecosystem and its functions are maintained for the present and future generation

3.1.2
economic sustainability
ability to provide sustainable, successful places in an economic context

Note 1 to entry: Economic considerations include employment, competitiveness, wealth and distribution, welfare, accounting and regulation.

3.1.3
social sustainability
ability to provide sustainable, successful places in a social context

Note 1 to entry: Social sustainability combines design of the physical realm with design of the world, infrastructure to support social and cultural life, provides social amenities, systems for citizen engagement and spaces for people and places to evolve.

3.1.4
LCA
life cycle assessment
systematic evaluation of the *environmental impact* (3.2.3) of a product(s) that includes all stages of its life cycle

EXAMPLE Period from installation to uninstalling.

3.2 Environment

3.2.1
environment
surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans and their interrelationships

Note 1 to entry: Surroundings in this context extend from within an organization to the global system.

[SOURCE: ISO 14001:2015, 3.2.1, modified — Note 2 to entry was removed.]

3.2.2
environmental aspect
element of an organization's activities or products or services that can interact with the *environment* (3.2.1)

[SOURCE: ISO 14001:2015, 3.2.2, modified — The notes to entry were removed.]

3.2.3
environmental impact
any change to the *environment* (3.2.1), whether adverse or beneficial, wholly or partially resulting from an organisation's *environmental aspects* (3.2.2)

[SOURCE: ISO 14001:2015, 3.2.4]

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3.3 Materials input

3.3.1
raw material
basic material that can be converted by processing or manufacturing, or a combination of both, into a new product

Note 1 to entry: A raw material may be virgin, recycled, harvested, extracted, recovered, or manufactured when used as an ingredient in a new material.

3.3.2
indigenous raw material
raw material (3.3.1) that is recovered, harvested, or extracted within an 800 km radius of the manufacturing site

Note 1 to entry: Where materials are transported by water or rail, the distance to the manufacturing site shall be determined by multiplying the distance that the materials are transported by water or rail by 0,25 and adding that number to the distance transported by means other than water or rail.

3.3.3
fresh water
surface water and groundwater withdrawn for manufacturing use

3.3.4
packaging material
any material intended for presentation to a consumer that is used for the containment, protection, handling, or preservation of a product

Note 1 to entry: Included tools in a kit or parts of the packaging that are used directly in the combining or installation of the product shall be excluded from this definition.

Note 2 to entry: *Shipping material* (3.3.6) is not considered to be packaging material.

3.3.5
primary packaging
any material that first envelops and holds the *product of interest* (3.5.2)

Note 1 to entry: It is intended to be the smallest unit of distribution or use and is the package which is in direct contact with the contents.

Note 2 to entry: For *ceramic tiles* (3.5.1) the primary packaging is restricted to the following materials: paper, cardboard or corrugate.

3.3.6
shipping material
any material that is used for the containment, protection, handling, or preservation of a product while en route from one location to another that is generally not intended for presentation to a consumer

EXAMPLE Pallet, industrial carton, banding, freight panels, wood/lumber bracing, etc.

3.4 Sustainability management

3.4.1
energy efficiency management system
EEMS
procedures to monitor, control, evaluate and improve the performance of the used energy

3.4.2
environmental management system
EMS
procedures to monitor, control, evaluate and improve the organization environmental performance

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3.4.3
health and safety management
procedures to monitor, control, evaluate and improve the system performance as regards health and safety

3.4.4
environmental product declaration
EPD
standardized and *LCA* (3.1.4) based tool – type III environmental declaration - to communicate the environmental performance of a product or system

3.4.5
type I environmental label
LCA (3.1.4) based label which identifies products or services proven environmentally preferable overall, within a specific product or service category

3.4.6
certified
product or management system that is certified by a *certification body* (3.4.7) in accordance with the relevant standard

3.4.7
certification body
third-party conformity assessment body operating certification schemes

3.4.8
maintenance
service
actions which have the objective of retaining or restoring a product in or to a state in which it can perform its intended function

3.5 Products and production

3.5.1
ceramic tile
ceramic surfacing unit, usually relatively thin in relation to facial area, having either a glazed or unglazed face and fired above red heat in the course of manufacture to a temperature sufficiently high to produce specific physical properties and characteristic

3.5.2
product of interest
single product or line of products with homogeneous technical characteristics and equal *environmental impacts* (3.2.3) and performances

Note 1 to entry: In case of product specific environmental criteria a “worst case scenario” analysis of a single product may suffice to extend the boundaries of the product of interest to be representative of the facility’s entire *production* (3.5.3).

3.5.3
production
industrial processes involving steps resulting in the manufacture of products or items

3.5.4
transport
movement of goods [e.g. products, *raw materials* (3.3.1)] from one location to another

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3.6 Waste materials

3.6.1
post-consumer material
waste material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product, which can no longer be used for its original intended purpose

3.6.2
pre-consumer material
material, solid and/or liquid, diverted from a waste stream generated by the manufacturing process

Note 1 to entry: Reutilization of materials (i.e. rework, regrind or scrap generated in a process that does not enter the waste stream and that is capable of being reclaimed within the same process that generated it) is excluded.

3.6.3
reclaimed waste
waste, scrap material, or water generated during manufacturing processes that, in lieu of disposal, is captured and reused to manufacture more of the same product

3.6.4
waste water
liquid waste resulting from industrial processes, including but not necessarily limited to water mixed with *raw materials* (3.3.1), contact cooling water, condensing waters, and water that comes in contact with process materials, products or by-product, but excluding sanitary sewage, cafeterias, irrigation, storm water runoff

3.6.5
waste water discharged
production (3.5.3) *waste water* (3.6.4) generated in the manufacturing process, that is discharged in the external *environment* (3.2.1)

Note 1 to entry: The waste water can be discharged, for example, to publicly owned treatment works (POTW).

3.6.6
waste management
collection, *transport* (3.5.4), processing, recycling or disposal, and monitoring of waste materials

3.7 Health and safety

3.7.1
hazard
source, situation, or act with a potential for harm in terms of human injury or *ill health* (3.7.3), or a combination of these

3.7.2
hazard identification
process of recognizing that a *hazard* (3.7.1) exists and defining its characteristics

3.7.3
ill health
identifiable, adverse physical or mental condition arising from and/or made worse by a work activity and/or work-related situation

3.7.4
safety in use
level of risks associated with the installation and use of the products

3.7.5
sanitary employers' control
surveillance program including generic or specific medical check-up, according to risk assessment

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