

CRITERIA FOR ENVIRONMENTAL LABELING OF CERAMIC COVERING PRODUCTS

ARTICLE 1- These criteria have been established under the Environmental Label Regulation dated 19.10.2018 and numbered 30570.

ARTICLE 2- The product group 'ceramic coverings' shall comprise – ceramic tile products for internal and external use. If the production process is identical and uses the same materials and manufacturing methods, the criteria can be applied to wall ceramic tiles for internal use, floor ceramic tiles for internal use, floor and wall ceramic tiles for internal and external use, which comply with the TS EN 14411 standard.

ARTICLE 3- In order for the products in the 'ceramic coverings' product group to be awarded the Environmental Label within the scope of the Environmental Label Regulation, the criteria specified in this document must be fulfilled.

ARTICLE 4- The Environmental Label criteria and assessment and verification requirements established for the product group 'ceramic covering' will be valid for 5 (five) years. The criteria may be updated within a five-year period when deemed necessary by the Environmental Labeling Board. The period of validity of the criteria may be extended based on the approval of the Environmental Labeling Board.

Assessment and Verification Requirements

The specific assessment and verification requirements are indicated within each criterion.

'Ceramic tiles' are thin slabs made from clays and/or other inorganic raw materials such as feldspar and quartz as defined by CEN/TC 67. They are usually shaped by extruding or pressing at room temperature, dried and subsequently fired at temperatures sufficient to develop the required properties. Tiles can be glazed or unglazed, are non-combustible and generally unaffected by light.

Where appropriate, test methods other than those indicated for each criterion may be used if their equivalence is accepted by the Ministry assessing the application.

The Ministry recognizes the tests performed by laboratories accredited by an accreditation body that is a party to the International Laboratory Accreditation Association (ILAC) - Mutual Recognition Agreement (MRA) according to TS EN ISO/IEC 17025. TÜRKAK accredited organizations can be accessed at <https://secure.turkak.org.tr/kapsam/search> TS EN ISO/IEC 17025 accreditation condition is not required if it is documented that there is no accredited organization for the test method, which is mandatory within the scope of evaluation and verification requirements.

When generating data on the classification of substances or mixtures, the provisions of the "Regulation on the Test Methods to be Applied in the Determination of the Physico-Chemical, Toxicological and Ecotoxicological Properties of Substances and Mixtures" published in the second repeated Official Gazette dated 11.12.2013 and numbered 28848 or methods that have been validated in accordance with internationally recognized scientific principles or international procedures should be considered.

The applicant must have fulfilled the necessary obligations under the Environmental Law and the current legislation that came into force pursuant to this law. Accordingly, the applicant is obliged to submit other documents required by the Ministry, such as the EIA Decision, Environmental Permit and License Certificate, Zero Waste Certificate, etc.

Where appropriate, the Ministry may require supporting information/documentation and may carry out independent verification.

CRITERIA

Criterion 1. Raw material extraction

Criterion 1.1 Extraction management

The raw materials used in the production of ceramic coverings shall comply with the requirements in Table 1 for the related extraction activities:

Table 1 Documents Required for Raw Materials Extraction Activities

Parameter	Requirement
Extraction activity project and environmental recovery	a) EIA Positive Decision or EIA Not Required Decision or EIA Opinion b) Topographic map and satellite image showing the location of the raw material field (quarry) c) Business Operation License d) Operating License e) Reinstatement Plan

Assessment and verification: The applicant shall provide related data and documents, including a map of the area. If the extraction activity is not directly managed by the producer, the documentation shall be requested from the enterprise from which the raw material is procured the extractor(s). A "Reinstatement Plan" shall be provided within the scope of the "Reinstatement of Land Degraded by Mining Activities", which was published in the Official Gazette dated 23.01.2010 and numbered 27471.

Criterion 2. Selection of raw materials

These requirements apply to both raw and secondary or recovered materials used in manufacturing processes as well as to semi-processed products (mixtures) that are purchased externally.

Criterion 2.1. Hazard statements that should not be present in raw materials

According to the Regulation on Classification, Labeling and Packaging of Substances and Mixtures that entered into force by being published in the Official Gazette dated 11/12/2013 and numbered 28848, any substances or mixtures with one of the hazard statements (or combinations) classified in Table 2, cannot be used in the ceramic covering production or application process.

Table 2 Hazard statements that raw materials should not have

H350 (May cause cancer)	H340 (May cause genetic defects)	H350i (May cause cancer by inhalation)
H400 (Very toxic to the aquatic life)	H410 (Very toxic to the aquatic life with long-lasting effects)	H411 (Toxic to the aquatic life with long-lasting effects)
H412 (Harmful to the aquatic life with long-lasting effects)	H413 (May cause long-lasting harmful effects to aquatic life)	H420 (Harms public health and the environment by destroying ozone in the upper atmosphere)
H360F (May damage fertility)	H360D (May damage the unborn child)	H361f (Suspected of damaging fertility)
H361d (Suspected of damaging the unborn child)	H360FD (May damage fertility. May damage the unborn child)	H360fd (Suspected of damaging fertility. Suspected of damaging the unborn child)

H360Fd (May damage fertility. Suspected of damaging the unborn child)	H360Df (May damage the unborn child. Suspected of damaging fertility)	H341 (Suspected of causing genetic defects)
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Due to the environmental advantages of the recycling of materials, these criteria do not apply to closed-loop recycled materials such as waste generated during the manufacture of a product and reused for the same product.

Assessment and verification: The applicant shall provide the material formulation and the relevant safety data sheet, together with the declaration of compliance with the criteria mentioned above.

Criterion 2.2. Limiting the presence of some substances in additives (only for glazed tiles)

Where lead, cadmium, and antimony (or any combination of these) are used in the glaze, their content in the glaze recipe by mass shall not exceed the limits specified in Table 3:

Table 3 Content values of certain substances

	(% by weight of glaze ⁽¹⁾)
Parameter	Limit
Lead	0.5
Cadmium	0.1
Antimony	0.25

⁽¹⁾ Glazes are all the substances applied to the surface of the tiles between the tile shaping and firing stage.

Assessment and verification: The applicant shall provide the glaze material formulation together with the declaration of compliance with the criteria mentioned above.

Criterion 2.3 Limiting the presence of asbestos and polyester resins in materials

No asbestos shall be present in the raw materials used for ceramic coverings as stated in the Annex-17/6 of the Regulation on the Registration, Evaluation, Authorisation and Restriction of Chemicals (KKDIK), which entered into force after being published in the Official Gazette dated 23/06/2017 and numbered 30105.

Assessment and verification: The applicant shall provide the material formulation together with the declaration of compliance with the criteria mentioned above, or it shall be provided that asbestos is not used in the raw material used by having the analysis done by authorized laboratories.

Criterion 3. Production process

Criterion 3.1. Energy consumption

Energy requirement for firing (ERF) limit

The energy requirement for firing (ERF) stages for ceramic tiles and clay tiles shall not exceed the following limit as given in Table 4:

Table 4 Energy consumption

	Limit Value (MJ/kg)	Test Method
Ceramic Tiles	3.5	Technical Annex – A3

Note: The limit value expressed in MJ per kg of the final product ready to be sold.

Assessment and verification: The applicant shall calculate the ERF according to the Technical Annex-A3 instructions and provide the related results and supporting documentation and documents (gas bill, electricity bill, etc.).

Criterion 3.2. Water consumption and use

- a) The water consumption at the manufacturing stage, from raw material preparation to firing operations, for the fired products, shall not exceed the following limit as given in Table 5;

Table 5 Consumption of process water

Parameter	Limit Value (L/kg of product)
Consumption of process water (C_{w-s})	1

Assessment and verification: The applicant shall provide the calculation of process water consumption per kg of product produced, as defined in the Technical Annex — E4.

- b) The wastewater produced by the processes included in the production chain shall reach a recycling ratio of at least 90 %. The facilities that recycle at least 60% on the environmental label application date must make a commitment and provide at least 90% within 2 years. If the 90% commitment is not reached, the right to use the Environmental Label is canceled. Previous environmental label usage periods will be included in the 2-year period. The recycling ratio shall be calculated as the ratio between the wastewater recycled or recovered by applying a combination of process optimization measures and process wastewater treatment systems, internally or externally at the plant, and the total water that leaves the process, as defined in the Technical Appendix — E2.

Assessment and verification: The applicant shall provide a report containing data on the total wastewater generated, recycled water, and the amount and source of water used in the processes, as well as the calculation of the recycling rate. The applicant shall provide the tap water bills and/or documents regarding the well water use.

Criterion 3.3 Emissions to air

Cold Emissions: Total emissions to air of particulates from pressing, glazing, and spray drying (cold emissions) operations shall not exceed 5 g/m². Total emissions to air of particulates for pressing, glazing, and spray drying (cold emissions) and raw material storage, mills, and crushers shall not exceed 5 g/m². (Cold emissions from pressing, glazing, and spray drying machines, as well as raw material storage, mills, and crushers, must be included in cold emissions.)

Assessment and verification: The applicant shall provide the relevant calculation and test reports.

Hot Emissions: The emissions to air for the only firing stage shall not exceed the values given in Table 6:

Table 6 Limit values for emissions to air

Parameters	Limit Value (mg/m ² of product)	Test Method
Particulate matter (PM ₁₀)	200	TS EN 13284-1
Fluoride (as HF)	200	ISO 15713
Nitrogen oxides (as NO _x)	2 500	TS EN 14792
Sulphur dioxide (SO ₂) (Sulphur content in raw material ≤ 0.25%)	1 500	TS EN 14791
Sulphur dioxide (SO ₂) (Sulphur content in raw material 0.25%)	5 000	TS EN 14791

Assessment and verification: The applicant shall provide appropriate documentation, test reports and calculation for each emission parameter given above, following the explanation of Technical Annex — E5. An up-to-date (preferably within the last 6 months) air emission measurement report must be submitted, indicating that all emission measurement limit values provide limit values in line with the Regulation on the Control of Industrial Air Pollution.

Criterion 3.4 Emissions to water

After wastewater treatment, whether on-site or off-site, the following parameters shall not exceed the following limits given in Table 7:

Table 7 Limits for emissions to water

Parameter	Limit Values	Test Method
Suspended solids	40 mg/L	SM 2540/TS EN 872
Cadmium (Cd)	0.015 mg/L	TS EN 11885
Chromium (Cr (VI))	0.15 mg/L	SM 3500 Cr B/SM 3500 Cr C
Lead (Pb)	0.15 mg/L	TS EN 11885

**The samples for the measurements of the parameters are taken from the wastewater treatment plant outlet.*

Assessment and verification: The applicant shall provide appropriate documentation and test reports showing compliance with this criterion.

Criterion 4. Waste

Criterion 4.1 Waste Management

All plants involved in the production of the product shall have a system for handling the waste and residual products deriving from the production of the product. The system shall be documented and explained in the application form and shall at least include information on the following three items:

- a) Procedures for separating and using recyclable materials from waste streams.
- b) Procedures of recycling materials for other uses.
- c) Procedures for handling and disposing of hazardous wastes.

Assessment and verification: For the relevant sites, the applicant shall present the Waste Management Plan prepared within the scope of the "Waste Management Regulation" which was published in the Official Gazette dated 02/04/2015 and numbered 29314.

Within the scope of waste management, the term waste covers the residues or wastes that occur as a result of production.

Criterion 4.2 Recovery of waste

The applicant shall provide appropriate documentation explaining the procedures adopted for the recycling of waste from production. The applicant shall provide a document including the following information:

- a) type and quantity of waste recovered,
- b) disposal method,
- c) information about the waste reuse (internally or externally into the production process) in the production of new products.

At least 85% (in weight) of the total waste¹ produced within the production process shall be recovered according to the provisions introduced by the Waste Management Regulation. Facilities that recycle at least 70% on the date of environmental label application must make a commitment and provide at least 85% within 2 years. If 85% commitment is not reached, the right to use the environmental label is canceled. Previous environmental label usage periods will be included in the 2-year period.

¹ Process waste does not include waste generated by utility and office activities, organic and municipal waste.

Assessment and verification: The applicant shall provide appropriate documentation based on, for example, mass balance sheets and/or environmental reporting systems showing the rates of recovery achieved whether externally or internally, for example, by means of recycling, reuse or reclamation/regeneration.

Criterion 5. Use Phase

Criterion 5.1 Release of harmful substances (only for glazed tiles)

In order to control the potential release of harmful substances in the use phase and at the end of the glazed tile's life, the products shall be verified according to the EN ISO 10545-15 test. The following limits given in Table 8 shall not be exceeded:

Table 8 Limits for release of harmful substances

Parameter	Limit (mg/m ²)	Test Method
Lead (Pb)	80	TS EN ISO 10545-15
Cadmium (Cd)	7	TS EN ISO 10545-15

Assessment and verification: The applicant shall provide corresponding analysis and test reports for the emission parameter mentioned above. This shall include a declaration of conformity with the relevant harmonised standards established by CEN and Construction Products Regulation, which came into force by being published in the Official Gazette dated 10/07/2013 and numbered 28703.

Criterion 6. Packaging

Cardboard used for packaging the final product must be suitable for reuse or made of 70% recycled material.

Assessment and verification: A sample of the product packaging shall be provided together with a corresponding declaration of compliance with all requirements.

Criterion 7. Fitness for Use

The product shall be fit for use. This evidence may include data from appropriate ISO, CEN or equivalent test methods, such as national or in-house test procedures.

An indication of the kind of use for which the product is fit for use has to be clearly specified: wall, floor or wall/floor if suitable for both purposes.

Assessment and verification: The details of the test procedures and results shall be provided together with a declaration that the product is fit for use based on all the other information about the best application by the end-user. According to the Construction Materials Regulation (305/2011/EU), a product is presumed to be fit for use if it conforms to the relevant harmonized standard or a European Technical Assessment, the declared performance values for its intended use also meet national requirements and do not contradict the legislation. The conformity mark 'CE' for construction materials provides producers with an attestation of conformity easily recognizable and may be considered sufficient in this context.

Criterion 8 Consumer Information

The product shall be sold with relevant user information, which provides advice on the product's proper and best general and technical use as well as its maintenance. It shall bear the following information on the packaging and/or on documentation accompanying the product:

a) Information for the use and maintenance of the product

This information should highlight all relevant instructions, particularly referring to the maintenance and use of products. As appropriate, reference should be made to the features of the product's use under difficult climatic or other conditions, for example, frost resistance/water absorption, stain resistance, resistance to chemicals, necessary preparation of the underlying surface, cleaning instructions and recommended types of cleaning agents and cleaning intervals. The information should also include any possible indication of the product's potential life expectancy in technical terms, either as an average or as a range value.

b) Recycling or disposal information

Assessment and verification: The applicant shall provide a sample of the packaging and/or the label information placed on the packaging.

Criterion 9. Information Appearing on the Environmental Label

The following information will be placed on the product along with the environmental label:

An Environmental Label with the dimensions of 5x5 cm shall be placed on the product packaging. Below the label, document number in 10-point font and "The use of Environmental Label in this product has been approved by the Ministry of Environment, Urbanisation and Climate Change in accordance with the Environmental Label Regulation published in the Official Gazette dated 19.10.2018 and numbered 30570 due to its environmental performance." statement should be included.

If the product is approved during the application process, it may contain the following statements.

- a) Reduced energy consumption in production processes,
- b) Reduced emissions to air and water (carbon footprint and water footprint),
- c) Improved consumer information and waste management.

Assessment and verification: The applicant shall provide a sample of the packaging and/or texts enclosed.

Technical Annexes for Ceramic Coverings

The applicant shall provide all required information calculated, measured, or tested for the period preceding application. This information is applied to represent the relevant products in order to comply with all criteria and submitted to the Ministry's evaluation.

E1 – Raw material selection

'Closed-loop recycling' means recycling a waste product into the same kind of product.

For secondary materials arising from a manufacturing process (such as leftovers or remnants), 'closed-loop recycling' means that materials are used again in the same process.

E2 – Water recycling rate

The calculation of the water recycling ratio shall be consistent with the formula below, based on the flows outlined in Figure E1;

$$\text{Recycling Rate} = \frac{\text{Amount of Recycled Wastewater}}{\text{Total Amount of Water Used in Production}} * 100 = \frac{R}{W1} * 100$$

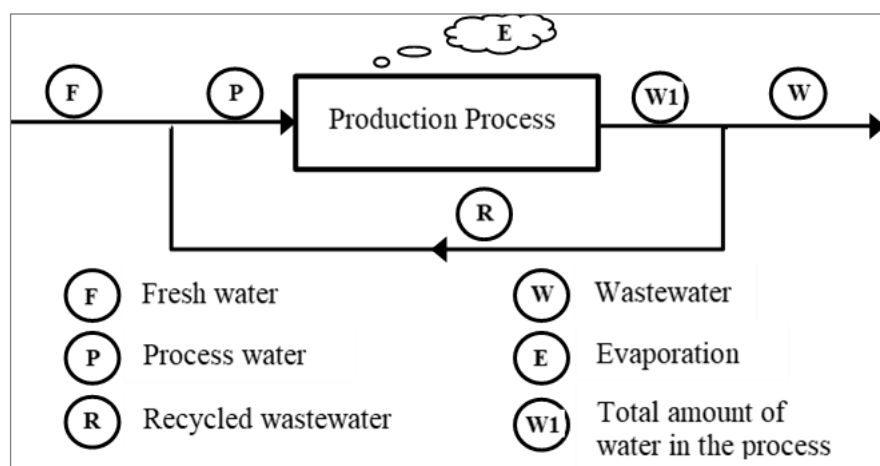


Figure E1 Example water flow scheme used to calculate water recycling ratio

E3 – Energy consumption calculation

When providing a calculation of the energy requirement for firing (ERF), the correct energy carriers shall be taken into account for the entire plant or for the firing stage only in line with the product group for which the environmental label is applied. The gross calorific value (high heat value) of the fuels shall be used to convert energy units to MJ (Table E1). In the case of the use of other fuels, the calorific value used for the calculation shall be indicated. Electricity means net imported electricity coming from the grid and internal generation of electricity measured as electric power.

Evaluation of ERF for ceramic tile production shall consider all energy flows entering all the kilns as fuels.

Table E1 Calculation Table for ERF

Production Period	Days	From	To	
Production (kg)				
Type of Fuel	Amount	Units	Conversion factor	Energy (MJ)
Natural Gas		kg	54.1	
Natural Gas		Nm ³	38.8	
Butane		kg	49.3	
Kerosene		kg	46.5	
Gasoline		kg	52.7	
Diesel		kg	44.6	
Gas oil		kg	45.2	
Heavy fuel oil		kg	42.7	
Dry steam coal		kg	30.6	
Anthracite		kg	29.7	
Charcoal		kg	33.7	
Industrial coke		kg	27.9	
Electricity (from the net)		kWh	3.6	
Total Energy				
Specific Energy Consumption (MJ/ kg of product)				

E4 – Calculation of Process water consumption

The process water consumption shall be calculated as follows;

$$C_{W_{w-s}} = (W_w + W_s) / P_t$$

$C_{W_{w-s}}$ = Fresh water specific consumption. The results are expressed in m³/ton equivalent to L/kg.

P_t = Total production in tons

W_w = Water from wells and intended for exclusive industrial use (excluding water from wells for domestic use, irrigation and any other non-industrial use), expressed in m³.

W_s = Surface water intended for industrial use (excluding water from aqueducts for domestic use, irrigation and any other non-industrial use), expressed in m³.

The system boundaries cover the process from raw materials to firing operation.

E5 – Emissions to air

The air pollutant emission parameters shall be calculated as follows:

- a) In line with the test methods, the value of each parameter shall be measured for the product for which the environmental label is applied.
- b) Mass flow shall be calculated by considering the volumetric flow and the measured values.
- c) Contamination parameters shall be calculated per product surface area, taking into account the time during which the production is carried out.
- d) The sampling shall be representative of the considered production under the environmental label application.