

CEN CSN Conference
“Construction Standards: 2010–2015”



→ **CEN TC 67 “Ceramic Tiles”**
facing BWR 3 and 7 in the proposal of
Construction Products Regulation

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- Ceramic Floor and Wall Tiles
- Adhesives and Grouts for Ceramic Tiling
- Design and installation of Ceramic Tiling

- Ceramic Tiles: thin slabs of **ceramic materials**, for floor and wall coverings, made from clays and/or other inorganic materials, shaped by extrusion or dust pressing and **fired at high temperature** (1000-1250 °C).

Ceramic Tiles

- Are intrinsically **hard** and **strong** (fragile)
- Are intrinsically chemically-physically **inert**, and resistant to water, to chemicals, to fire



In working conditions:

- **High durability**
- **NO release of toxic substances**
- **NO reaction to fire**
- **Cleanability and Hygiene**

Ceramic Tiles

- Are intrinsically **hard** and **strong** (fragile)
- Are intrinsically chemically-physically **inert**, and resistant to water, to chemicals, to fire



After tiling demolition:

- **Wastes are inert materials, re-usable in civil engineering applications**

Ceramic Tile Industry

Environmental impact factors of the manufacturing process

- Energy Consumption (GHG emissions)
- Emissions into the atmosphere
- Water consumption and wastewater production and discharge
- Raw materials consumption and waste materials production and discharge

Data for the Italian Ceramic Tile Industry (Centro Ceramico)

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Ceramic tile industry

Energy consumption

→ Average Electric + Thermal Energy Specific Consumption [GJ/t]

1970	10
1980	12
1990	6
2000	5
2008	6



Ceramic tile industry

Emissions into the atmosphere

→ Fluorine emissions from firing kilns [g/m²]

1970



Double Firing Tunnel Kiln **20**

Single Firing Tunnel Kiln **9**

Single Firing Single Layer Kiln **6**

Porcelain stoneware
Single layer kiln
Emission control according to the BATs..... **0.6**

2008



Ceramic tile industry

Materials and Water Balances

1970



2008

- Progress of recycle
 - Toward 100% recycle: no discharge =
 - no negative env. impact
 - no cost for pre-discharge treatments
 - reduced raw materials and water consumptions
- Waste materials recovery from other productions
- New bodies containing wastes of external origin

ECOLABEL for Ceramic Tiles (Hard Floor Coverings)

EUROPEAN UNION ECOLABEL



Awarded to goods or services
which meet the environmental requirements
of the EU eco-labelling scheme

Licence registration number XXXXX

- ◆ Reduced energy consumption of production process
- ◆ Reduced emissions to air and water
- ◆ Improved consumer information and waste management

ECOLABEL for Ceramic Tiles (Hard Floor Coverings)

Criteria based on LCA studies



Criterion

Parameter

Raw materials extraction

Extraction activity project
Visual impact factor

Raw materials selection

Additions to the raw materials
Glaze composition

Production process

Energy requirement for firing
Water use
Emissions to air
Emissions to water

Waste management

Waste handling system
Waste recovery

Use phase

Release of dangerous substances

Fitness for use

Technical specification

ECOLABEL for Ceramic Tiles (Hard Floor Coverings)

EUROPEAN UNION ECOLABEL



- 9 Italian firms
- 2 Spanish firms
- 1 French firm (I)

With products awarded with ECOLABEL



Ceramic Tiles to contribute to the LEED Green Building Rating System

In the following thematic areas:

- **SS** Sustainable Sites
- **EA** Energy and Atmosphere
- **MR** Materials and resources
- **EQ** Indoor Environmental Quality
- **ID** Innovation in Design

Ceramic Tiles

R&D and Sustainability

Increasing R&D efforts towards:

- Ceramic tile with antibacterial, self-cleaning, photocatalytic surfaces
- Photocromic materials
- Photovoltaic ceramic tile surfaces

with expected performance in the field of CPR Basic Work Requirements 3 and 7.

Conclusions

- Ceramic tiles (ceramic tiling and related materials):
Construction products more and more designed and assessed for their significant contribution to the CPR
BWR 3 and 7
- A good baseline for the process of implementation of the new CPR
- Competitiveness aspects