FLOOR CARPET

APPLICATIONS

- step noise reduction
- a warm - feeling cover for apartments and offices

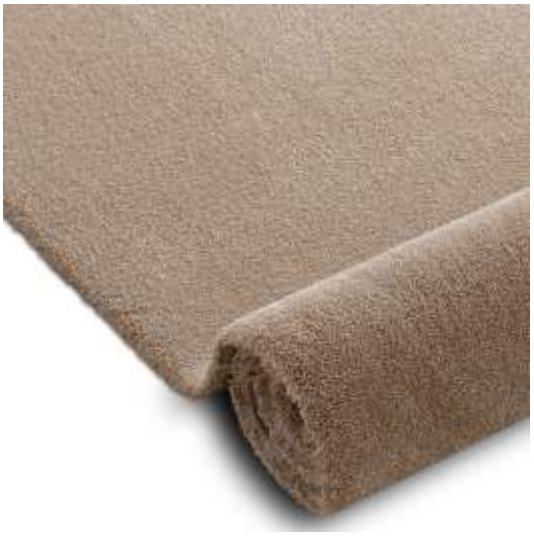
PRODUCTION PROCESS

In the production of stitched carpets, needles loop the yarn onto the polypropylene backing, the surface consists of continuous rows of loops. The carpet with a looped surface is the crocheted carpet. The rug made of cut loops is the suede rug. The design basically determines the look of the rug. The floor mats were originally made by weaving, this version is durable, but expensive because it requires a lot of raw materials and time to produce. In the cheapest versions of carpeting, synthetic fibers are glued to the back side, which are often available in the form of sheets. It can be picked up sheet by sheet, so the parts under the floor are accessible and the used up elements can be replaced without picking up the entire cover. A new result of technical development is a floor mat made of recycled waste materials (eg soft drink bottles).

MAIN ENVIRONMENTAL IMPACTS

Environmental impact of the production of carpet floor covering depends on the constructing synthetic materials, mainly plastics. Carpet needs to be replaced more times during the life time of a building which significantly increases its environmental impacts.

MATERIALS



Source: https://www.emag.hu/dywany-luszczow-szonyeg-star-padloszonyeg-bezs-500x600-cm-at89216/pd/DZ65BBMBM/

TECHNICAL DATA	
Thermal conductivity (W/mK)	0,06
Density (kg/ m^3)	200

Co-funded by the Erasmus+ Programme of the European Union

PVC FLOOR COVERING

APPLICATIONS

- wet rooms of flats,
- floor coverings of high-traffic public buildings

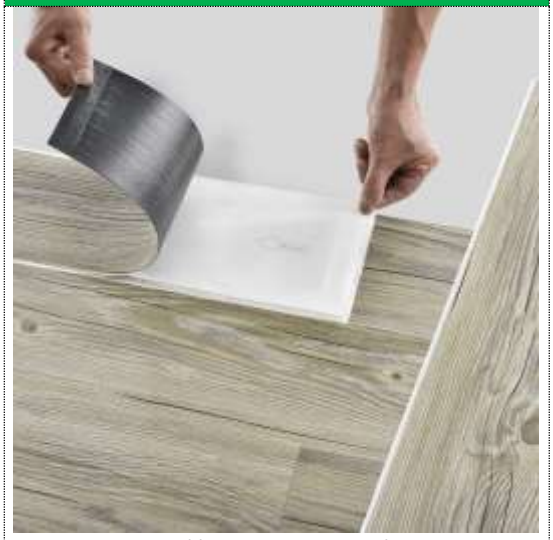
PRODUCTION PROCESS

PVC, or polyvinyl chloride, is a thermoplastic, combustible, chemically resistant, hard plastic. It is the third largest produced synthetic polymer. They distinguish between two types: soft and hard PVC. The latter are used for floor coverings.

MAIN ENVIRONMENTAL IMPACTS

The main environmental concern concerning PVC is related to the potential emission of highly toxic substances during its production, use and disposal. Its main component is vinyl chloride, which can be formed during combustion into severely toxic, persistent compounds such as dioxin. Heavy metals are used to stabilize the products, which, when released into the environment, can have harmful (eg neurotoxic) effects throughout the whole food chain. PVC floor covering usually needs to be replaced during the lifetime of a building which increases the environmental impacts related to its application.

MATERIALS



Source: https://www.emag.hu/neu-holz-vinyl-pvc-laminalt-padlo-amazon-ontapados-padloburkolat-natural-edition-italian-oak-42-db-padlolap-5-85-m-73637221/pd/D2666DMBM/

TECHNICAL DATA	
Thermal conductivity (W/mK)	0,17
Density (kg/ m^3)	1390

Co-funded by the Erasmus+ Programme of the European Union

LINOLEUM FLOOR COVERING

APPLICATIONS

Seamless floor coverings

PRODUCTION PROCESS

Linoleum is based on linseed oil, which is mixed in appropriate proportions with natural resin (most often pine resin), limestone, cork or wood flour, titanium oxide, and natural dyes, and the mixture is placed on a jute backing. The raw material formed by the polymerization of linseed oil and resin are mixed, which makes up 40 percent of the linoleum cement, and the remaining 60 percent is the other fillers. The strength of the linoleum is due to the oxidation of the oil, the additional raw materials determine the special properties of the covering. Recently the linseed oil has often been replaced by soya oil. The surface of the dried raw material is treated and then cut to size, rolled or cut - the latter being made available for click fixation. Today, the surface of linoleum is treated with various coatings, so it is not necessary to carry out protective surface treatments before use and practically during its entire life. Moreover, by making a highly resistant material that is naturally bacteriostatic, it is also used in medical and laboratory 'cleanrooms' with its special type of conductive composition.

MAIN ENVIRONMENTAL IMPACTS

It does not contain chlorine based chemical fire retardants that can release dioxins when burned. There are no plasticizers such as phthalates used to give its flexibility. Linoleum is 100% biodegradable. Generally it is non-allergenic.
It has an advantageous performance concerning climate change, however environmental impacts of plantations and agricultural activities related to its raw materials can be significant in a life cycle perspective.
Linoleum floor covering usually needs to be replaced during the lifetime of a building which increases the environmental impacts related to its application.

MATERIALS

Source: www.praktiker.hu

TECHNICAL DATA	
Thermal conductivity (W/mK)	0,17
Density (kg/ m^3)	1200

Co-funded by the Erasmus+ Programme of the European Union

CERAMIC TILE

APPLICATIONS

used for interior and exterior decoration of floor and wall

PRODUCTION PROCESS

The raw materials used to form tile consist of clay minerals mined from the earth's crust, natural minerals such as feldspar that are used to lower the firing temperature, and chemical additives required for the shaping process. The minerals are often refined or beneficiated near the mine before shipment to the ceramic plant.
The initial step in ceramic tile manufacture involves mixing the ingredients. Sometimes, water is then added and the ingredients are wet milled or ground in a ball mill. If wet milling is used, the excess water is removed using filter pressing followed by spray drying. The resulting powder is then pressed into the desired tile body shape. Most tile is formed by dry pressing.
A glaze is a glass material designed to melt onto the surface of the tile during firing, and which then adheres to the tile surface during cooling. Glazes are used to provide moisture resistance and decoration, as they can be colored or can produce special textures. After glazing, the tile is heated to strengthen it and give it the desired porosity.

MAIN ENVIRONMENTAL IMPACTS

Ceramic tile production consumes significant amounts of natural resources and energy during the processes. Thermal energy is the most important demand that is mainly obtained by combustion of natural gas, which represents 90% of the overall direct energy consumption.
Among the pollutants produced in tile manufacture are fluorine and lead compounds, which are produced during firing and glazing. Lead compounds have been significantly reduced with the recent development of no-lead or low-lead glazes. Fluorine emissions can be controlled with scrubbers, devices that basically spray the gases with water to remove harmful pollutants. They can also be controlled with dry processes, such as fabric filters coated with lime. This lime can then be recycled as a raw material for future tile.
The tile industry is also developing processes to recycle wastewater and sludge produced during milling, glazing, and spray-drying. Already some plants recycle the excess powder generated during dry-pressing as well as the overspray produced during glazing. Waste glaze and rejected tile are also returned to the body preparation process for reuse.

MATERIALS

TECHNICAL DATA	
Thermal conductivity (W/mK)	1,3
Density (kg/m^3)	2300
Fire class	A1

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NATURAL STONE

APPLICATIONS

- masonry
- interior and exterior decoration of floor and wall, pavements
- roof covering

PRODUCTION PROCESS

Natural stone (marble, granite, limestone, and sandstone) is extracted in large blocks, which then are divided into slabs or other shapes. The surfaces are polished and finished with varying degrees of sheen or luster. A primary block can vary in size depending on the stone type, and up to 1000 m^3, 2700 t.

After the primary block is loosened from the quarry, it can divided into smaller blocks by using the drilling/blasting, sawing or by inserting wedges into the drill holes and striking with a hammer until the stone cracks. Most of the natural stone extracted will produces of different forms of slabs. Slate is split along its natural cleavage plane repeatedly, where the distance between these layers determines the thickness of the slab. Roof slate is usually less than 1.5 cm in thickness, while roofing slates used on traditional alpine cottages and paving stones can be up to 10 cm thick. Dimension stone is usually shaped by sawing.

MAIN ENVIRONMENTAL IMPACTS

Stone is a natural product, the original green building material. It does not require other materials or resources to create it. Natural stone contains no harmful chemicals or toxins. Regionally manufactured and extracted materials reduce environmental impacts by reducing emissions of greenhouse gasses during transportation of the materials. Stone is completely recyclable and has the potential to serve many different uses and purposes over its lifetime.

The most obvious engineering impact of quarrying is a change in geomorphology and conversion of land use, with the associated change in visual scene. Transporting stone from quarry does have a negative environmental impact, it is a significant contributor of carbon footprint.

MATERIALS

TECHNICAL DATA	
Thermal conductivity	0,85-3,5
Density	1600-3000

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WOOD FLOOR COVERINGS

APPLICATIONS

Outdoor and indoor floor covering

PRODUCTION PROCESS

Traditional parquet and flooring are produced with traditional woodworking tools and methods. The process of manufacturing wood-plastic composites differs from this because they are created by thoroughly mixing natural wood particles and thermoplastics (melt) by extruding the composite consisting of a mixture of molten plastic and wood particles into the desired shape using a tool of a given profile.

MAIN ENVIRONMENTAL IMPACTS

The raw material of wood flooring is basically recyclable, biodegradable material - which also binds atmospheric CO_2.Wood flooring can be burned as fuel or recycled. Drying of wood for floor covering is however an industrial process with potentially significant emissions.
Environmental impacts are reduced if the final product is durable and does not need replacement during the building lifetime.

MATERIALS

Source: https://www.parketta.hu/

TECHNICAL DATA	
Thermal conductivity (W/mK)	0,12 – 0,18
Density (kg/ m^3)	450 - 700

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CERAMIC ROOF TILE

APPLICATIONS

covering of pitched roof

PRODUCTION PROCESS

The raw material for tile production is clay.
Production processes: selection of raw material, extraction, preparation, wetting, shaping, drying and firing of the clay.
Water is mixed into the raw material mixture and processed into a fine-grained mass. The grinding rollers mix further the mass. In the cylindrical shredder, the grind is further reduced. The mass rests in the settler approx. for two weeks. It is moistened in a filter round feeder and then pressed into small, uniformly sized clay rods. The vacuum press also displaces the last air bubbles from the mass and enters a stream of semi-finished material into an endless clay stream, which is divided into separate pre -tile forms with a razor-sharp wire. The turret press gives the final shape of the roof tiles. After pressing, the blanks are transferred to the dryer. This is followed by the breeding process. After preheating, the tiles are burned in a tunnel kiln. After the firing process, the pots are cooled to room temperature.

MAIN ENVIRONMENTAL IMPACTS

Long firing times increase the embodied energy of a tile which is already fairly high due to high firing temperatures required. Some greenhouse gas is also released during firing. At the same time clay tiles are amongst the most durable of building materials.

MATERIALS

TECHNICAL DATA	
Thermal conductivity (W/mK)	1,00
Density (kg / m^3)	2000

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TITANIUM ZINC SHEET

APPLICATIONS

- tinsmith coverings and rainwater drainage
- roofing
- façade cladding systems

PRODUCTION PROCESS

The raw material is an electrolytic zinc of a particularly high purity (99.995%), to which titanium and copper alloys are added to improve the mechanical and physical properties, and also improves workability.

MAIN ENVIRONMENTAL IMPACTS

Zinc is commonly found in mineral deposits along with other base metals, so it requires extraction from mines. The zinc production and refining stages outweigh the mining and mineral processing. The overall environmental impact of titanium zinc sheet production is relatively significant
On the other hand, architectural grade zinc is 90 to 95% recycled. Replacement costs are negligible. The long-life durability is a key component in durability. At the end of its service life, it can be recycled indefinitely without loss to chemical or physical properties.

MATERIALS

Source: https://tetoesfal.hu/termek/rheinzink-lemezszalag-070-mm-vtg-prepatina-blue-grey/

TECHNICAL DATA	
Thermal conductivity (W/mK)	110
Density (kg / m^3)	7200

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BITUMINOUS SHEET

APPLICATIONS

Waterproofing:
- flat roof insulation,
- damp proofing against soil vapor and soil moisture,
- waterproofing against groundwater pressure and stratified water,
- waterproofing against domestic water

PRODUCTION PROCESS

The cut-to-size substrates of the insulation materials are impregnated with bitumen and then the filler-containing cover layer is applied to it. The bitumen used for saturation has a lower, while the bitumen applied to the surface has a higher melting point. The spreads are used to prevent the bituminous sheet surfaces from sticking together and to protect the barrier layer of the insulation against ultraviolet radiation. Sand and talc are used to prevent adhesion. To protect the coating bituminous layer, slate and fine gravel having a grain size of 2-3 mm are used. In the case of modified bituminous sheets, the distillation base bitumen is mixed with plastic, which, depending on the type, imparts better properties to the final product, such as higher heat, UV or oil resistance, flexibility, better cold bendability, extensibility, tensile strength and better aging resistance.

MAIN ENVIRONMENTAL IMPACTS

Although bituminous products used in building construction are not considered hazardous waste, they still have a serious impact on the environment. However, technical progress has also made great improvements in this area.
In a life cycle perspective, the environmental impacts of bituminous sheet can be significant mainly because of its replacement during the lifetime of a building.

MATERIALS

Source: https://epitoanyagvasarlas.hu/termek/bitumenes-lemez-2/

TECHNICAL DATA	
Thermal conductivity (W/mK)	0,23
Density (kg / m^3)	1100

Co-funded by the Erasmus+ Programme of the European Union