

# THE CHOICE OF INDUSTRY FLOOR

## What is required by law - Law 155/97 of Ministry of Health

### As implementation of directive number 93/43 of the EEC

This law introduces in food field the concept of self-control better known in the U.S. A. as Hazard Analysis and Critical Control Points. The food business operators are obliged to identify in its production process the critical phases for health and hygiene of the product manufactured and adopt best practices to ensure safety and safeguard of the same food.

## FLOOR IN PORCELAIN STONEWARE, WHY?

One floor in water-proof material and resistant, easy to clean and disinfect, so arranged in order to facilitate the drainage of water and not only. Walls with smooth surfaces easy to clean, resistant and water-proof, clad with light color materials. Porcelain tile floor manufactured by CIPA GRES S.p.A. facilitates the regular maintenance of floors and the possible substitution of some pieces without necessarily stopping the production for a long time.

## CHOICE OF COLOURS

The choice of colours and laying patterns for the realisation of floor or wall floor in porcelain stoneware manufactured by CIPA GRES S.p.A. must take into account various factors including the size of the environment (height, natural or artificial light) in addition to the style and laying that will be realised. The final result might vary according to certain optical effects-led by the colours and laying patterns-which are subject to the human eye:

1. Spaces of equal dimensions seem different according to the way they are filled in:

- black and dark colours reduce space as they absorb light;
- white and bright colours spread the light and therefore enlarge space;
- vertical lines extend the space whereas horizontal lines enlarge it.

2. Black or dark surfaces seem smaller than white or bright ones, even when they have same dimensions. These are, in fact, indicated for machine shops and warehouses.

3. One bright and uniform floor visually enlarges a room. It is particularly suited for small rooms whereas different shades reduce the perceived sizes. A contrasting combination between floor and wall coverings guarantees a perception of the room wider than actual size; particularly well suited for environments, food production, hallways and utility rooms. Colours can also be used to distinguish work areas from traffic areas and facilitate orientation.

## CHOICE OF SIZES AND THICKNESSES

When thinking about industrial floor it is fundamental that the product used can withstand both static and dynamic stress to a great extent. The thickness of the tiles plays a key role in the resistance to such stresses. In addition, the thickness also ensures the tightness of joints, holding a larger amount of epoxy filler. The HI-TECH CIPA GRES S.p.A. range is realised in different thicknesses and sizes, offering to designers a great variety of technical as well as aesthetical solutions that could satisfy all requests. Small sizes facilitate the execution of any liability for the discharge of process liquids and washing.

## ADVANTAGES OF PORCELAIN TILE FLOORS

- **Hygiene and Safety:** Floors in porcelain tile from company CIPA GRES S.p.A. are continuous, filled with epoxy in order to prevent from the buildup of bacteria in cracks and joints. They can be cleaned with detergents and sanitizers. They comply with extreme hygienic conditions that require frequent and focused cleaning with steam or hot water and harsh chemical cleaners. Floors in porcelain tile are used in places where food products are manufactured or stored, as in these places must be employed very specific items or systems that might take into account the risk of absorption of odours developed during the construction phase. During the phase of laying the porcelain tile manufactured by CIPA GRES S.p.A. does not pollute with unpleasant odours the food, as it does not contain volatile organic compounds. Skirtings with special trims are realised in order to avoid bacterial accumulation between the sharp edge and the wall. By means of its porcelain tile, company CIPA GRES S.p.A. manufactures anti-slip floors in highest safety complying with existing laws for the safety of workers (Law 626 on safety in working and work places) and the law BGR 181 DIN 51130 (R9-R10-R11-R12-R13). Several industrial plants, drug industries, food companies, chemical and electronical industries must meet very important technical requirements; they need, in fact, spaces with floors completely without dust and sharp edges, easy to clean and that could satisfy other requirements such as chemical resistance.
- **Chemical Resistance:** Porcelain tiles manufactured by CIPA GRES S.p.A. are the ideal solution to realise surfaces subject to chemical attack, with the exception of hydrofluoric acid. The correct choice depends from various factors, such as: the aggressive nature and its concentration, temperature contact, occasional or continuous frequency.
- **Mechanical Resistance:** Concentrated heavy loads, frequent and heavy traffic (forklifts), impact resistance and abrasion resistance. You will have to take into account all loads both static and dynamic expected during the construction, operation and maintenance. The finish of industrial floor will be able to resist such stresses only in the measure of the quality of the substrate on which it will be applied and considering a proper laying along with the right thickness of the laid product.
- **Thermal Resistance:** Floors can withstand processing temperatures between -40°C (frozen departments) and +120°C (steam sterilization). It is important to consider not only the temperature of the working machines and the products used in the processes, but also the adjacent areas. The areas in which activities are carried out in autoclave heating, the firing, the sterilisation and freezing might be subject to rapid changes of temperatures.
- **Thermal Conductivity:** Regardless of the ambient temperature and the floor, thermal conductivity of the substrate has a positive influence on the feeling of well-being. In the case of underfloor heating, porcelain tile performances excellently in comparison with other products that are good conductors, as it allows the complete system with lower water temperatures and as a consequence energy saving for the entire plant.
- **Surface Finish:** The choice of porcelain tile for easy maintenance should also meet the requirements of hygiene, safety and durability. Company CIPA GRES S.p.A. has a wide range of products able to satisfy both technical and aesthetic requirements.
- **Anti-Slip Properties:** The areas of pedestrian traffic may require various degrees of slip resistance evaluating the degree of humidity in which it operates (predominantly dry or wet environment).
- **Impermeability:** Compact and non-porous, fully vitrified porcelain tile is water-proof, resistant to stains and is easy to clean. It protects and finally prevents toxic substances from polluting the ground water of the subsoil.
- **Fire Resistance:** Porcelain tile manufactured by CIPA GRES S.p.A. complies with current fire regulations for specific areas, such as emergency exit routes, depots of explosive materials, public areas and underground parkings. Unlike many other materials, porcelain tiles are incombustible, do not release smoke or toxic gases in the case of combustion and have the power to inhibit the flames, reducing damages caused by fires to a certain extent. Therefore, it is equivalent to the class 0.
- **UV Resistance:** Colours fastness to light and UV rays. It complies to DIN 541094 rule.
- **Odorless and volatile organic compounds free:** The series HI-TECH "technical porcelain tile GRANITI-GRANATI-COLOUR STYLE" is a fully vitrified product with low water absorption, -AA~ 0.03% - fired at 1200° C temperature (materials with low emission according to credit EQ - 4.2) is completely VOC-free (volatile organic compounds). Moreover, it does not release VOC in any condition of use.
- **Antibacterial:** Products from CIPA GRES S.p.A. do not promote the proliferation of bacteria. Hence, provide that all items are treated with specific products, they can be considered antibacterial.
- **Resistance to salt:** Since this material does not show porosity, it cannot be damaged even from the shedding of salt used for production (fish, tanneries) OR FOR EXTERNAL USE. Salt distributed in the winter to prevent ice from forming on sidewalks and lanes or to increase the resistance to the passage.
- **Installation speed:** The porcelain tile flooring manufactured by CIPA GRES S.p.A. allows a fast execution compared to other systems. The floors are made by countless pieces that can be replaced with the use of new glues, adhesives and grouts without the interruption of the activities of the establishment. Can be walked after about 12 hours and fully operational after one day (completion of physical chemical characteristics).
- **Supports in existing applications:** Floors in porcelain tile manufactured by CIPA GRES S.p.A. could be applied on new supports or existing ones. The substrates are typically made of concrete blocks, cast in place (screeds) or precast (plates). They are however also of different materials, for example anhydrite, magnesite, asphalt, metal, wood, brick, old resins, stone materials and etc.
- **Nature of materials used:** A proper design must think about the use of materials and solutions that allow greater continuity between different surfaces in both horizontal and vertical ways.
- **Type of materials:** Materials usually used in food industry are as follows: Epoxies (EP), Expansion joints and Adhesive and sealers of class C2.
- **Coating:** A porcelain tile floor produced by CIPA GRES S.p.A. which meets the requirements of the customer is the result of proper planning that leads to the choice of most appropriate technical and aesthetical solutions.