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BUILDING PROTECTION SYSTEMS
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ACID ALKALI PROOFED FLOORING FOR CHEMICAL LABORATORIES, INDUSTRIES & EFFLUENT TREATMENT PLANTS

By
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Chairman & Managing Director

Flooring is one of the most important parts of any building, more so in an industrial building which is continuously subjected to wear and tear and in certain other cases it is damaged by spilling of acids, alkalies and aqueous solvents. It is very important that an appropriate material is selected for such floorings in the beginning itself, because replacing and repair of old flooring interferes with the production and is a costly affair.

HARD FLOOR

In the industries where the movement of materials is carried out by using trolleys and where vibrations caused by running machines result in damage to the floor, Abrasion Resistant flooring is essential.

It is well known that magnesium-oxi-chloride cement gives the best and very hard flooring for such usage. Magnesium-oxi-chloride has many superior properties compared to Portland cement. It does not need wet curing, has low thermal conductivity, higher fire resistant and indeed a good resistant to abrasion. The only problem in this kind of flooring is that it is not stable as it remains in prolonged contact with water resulting in leaching. However over a period of time, carbon-di-oxide will react with magnesium-oxi-chloride to form a surface layer, which slows down the leaching process, but it, still remains sensitive to water.

INDUSTRIAL FLOORING

Industrial floors are generally designed and constructed to take care of the following:

- Mechanical loading
- Impact loading
- Abrasion
- Thermal movements
- Chemical processes/materials

EPOXY SYSTEMS

Epoxy systems have been known for a long time to be used on concrete surface as a protective system. There are techniques available now where water damp permeable self-levelling, flooring systems can be produced. This technology enables the formation of a durable internal 3D epoxy network. After completing the hardening process, this system creates a micro porous structure. Due to the special nature of the matrix, only water vapour can pass through the system without liquid regents penetrating through the top surface. This unique system is a perfect extension to conventional epoxy and polyurethane flooring systems.

As with acrylics, epoxy coatings are generally not considered true waterproof coatings. They are not recommended for exterior installations due to their poor resistance to ultraviolet weathering. Epoxy coatings have very high tensile strength, resulting in low elastomeric capabilities. These coatings are very brittle and will crack under any movement, including thermal and structural.

Epoxy deck coatings are also used as topcoats over a base-coat waterproof membrane of urethane or latex. However, low-movement capabilities and brittleness of epoxy coatings limit elastomeric qualities of waterproof topcoats.

Solvent free epoxy systems were used for a long time as coating and flooring system. Most of these epoxy resins are based on Bisphenol-A and Bisphenol-F. These epoxy resins are normally very viscous materials and are quite often used with reactive solvents. The nature of solvents can sometimes create problems in the working environment. The curing of epoxy resins does need products like Benzyl alcohol, Salicylic acid and other additives, which are often required in order to complete the cure. Looking at the composition in detail, some components are very critical in use. They are known for their ability to create some skin reactions combined with high allergy potential.

WATER BASED

There are few water-based epoxy systems where water based epoxy binders are used in combination with cement like water dispersible polyamides combined with non-ionic surfactants. This is followed by the use of hydrophilic solvents to disperse the polyamides.

In early 1990's, water bond aliphalic amine adducts were introduced but pot life, problems arose with the film, changing gloss, poor adhesion to substrate, poor paintability, appearance of cracks because of its brittle nature etc.

There are large numbers of epoxy products, which are developed and used in India but they all have the above shortcomings and frequent reflooring becomes a necessity. There has been a lot of development in the field of industrial flooring and very effective coatings have come out in the market based on a hydroxyl group containing polyacrylate resin and its use in process for producing a multicoat finish. Unfortunately either they are too expensive or are not very durable.

In the recent past there has been lot of research work conducted in this area to develop useful aqueous coating compositions. Some novel compositions obtained by polymerizing radical polymerizable acrylic monomers in the presence of an aqueous polyurethane resin have been produced. These are novel compositions having all of the elasticity and abrasion resistance inherently possessed by urethane resins and the weather resistance and toughness inherently possessed by acrylic resins and can find wide applications as a coating for cement, concrete, metals, paper, leather wood, etc.

Tech-Dry (India) Pvt. Ltd.,'s Research and Development has developed 2 products for flooring:

PROTEKTA SENFLOOR

A novel Acid, Alkali, Organic solvent resistant material. Most suitable for Industrial flooring. Available as ready mix brushable material.

This is based on co-polymers of various acrylic monomers which have excellent hydrophobicity.

Aqueous dispersions of acrylic copolymers as an aqueous coating composition have conventionally been used for their excellence in weather resistance and toughness, and in various applications such as interior or exterior finish work of buildings, coatings of leather, metal, wood floor, etc., impregnation or bonding or fibers, adhesion and pasting.

OUTSTANDING FEATURES

- Outstanding weatherability and resistance to ultra violet degradation
- Water clear transparency
- High gloss, hardness and adhesion

- Excellent resistance to water, alcohols, oils, chemical fumes, dilute acids, alkalies.
- Properties of Film: Tough, Durable film

Tor Steel Test Report on Protekta Senfloor

Sl. No.	Test Conducted	Result
1.	Hardness in Moh's scale	8.0
2.	Acid/Alkali Resistance (10% concentration for 3 ½ hrs).	No change in weight observed. No debonding observed

Therefore it is more durable and harder than granite where the Hardness is 6 to 7 on Moh's scale.

METHOD OF APPLICATION

Spread the material on the floor with the help of brush to the thickness of about 2-3mm and leave it over night. This would give you acid alkali waterproofing flooring.

COVERAGE: Approximately 4-5sq.ft./kg.

PROTEKTA –FLEXSTONE COAT

A novel Acid, Alkali, Organic solvent resistant material, which is supplied in squeezing bottle and can easily be applied on cracks, joints, voids etc. This product can also be used as a final brushable coat on the roofs. It can stand steam and low temperatures without any cracking. It generates tough and durable film. It is a unique product which gives waterproofed, acid proofed, alkali proofed, pollutant proofed hard surface.

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METHOD OF APPLICATION

By Brush
For cracks and Joints use product supplied in squeezing bottle

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