

## RESILIENT FLOORING

In the floor covering trade, the term "resilient" flooring refers to smooth-surfaced tile and sheet material whose resilience is measured by the ability to recover from impact or pressure. Included in the "resilient" category are: solid vinyl, cushion-backed vinyl, vinyl asbestos, asphalt, rubber, cork, linoleum, and similar products. Carpeting is not included in the resilient flooring classification.

Most resilient floor coverings are manufactured by combining a plastic material with fillers and pigments to produce a mixture that is processed into sheets of different thicknesses. The sheets are then cut by machine into sheet rolls or square tiles.

When evaluating resilient flooring, consideration should be given to a product's resistance to dynamic or impact loads resulting from falling objects and static loads caused by furniture or equipment placed over the flooring.

Solid vinyl features a smooth surface with clear, bright colors. It has considerable resiliency and good acoustic properties as regards the sound transmission of impact loads. Solid vinyl has good wear resistance because of its monolithic nature distributing the wearing surface throughout the thickness of the material. Solid vinyl also has good resistance to oil and grease and stands up well against mild acids, alkali and moisture. Disadvantages include relatively high initial cost, low resistance to solvent-based cleaning materials, and susceptibility to dulling when subjected to constant foot traffic. Lustre is restored by steel wool buffing.

Cushion-backed vinyl consists of a thin wear surface of vinyl laminated to an asbestos or fiber-based backing providing a relatively firm surface underfoot. Vinyl foam backing can be obtained for a soft and spongy cushion.

Vinyl asbestos tile has polyvinyl chloride (PVC) as its basic resin, a strong abrasive-resistant material that is also resistant to nearly all solvents and chemicals. Like solid vinyl, vinyl asbestos has a continuous wear surface throughout its thickness. Observe caution in selecting decorative patterns that may not be "through the body." Vinyl asbestos is suitable for installation over all on-and-off grade and above grade sub-floors. It is also suitable for radiant heated floors as long as temperatures do not exceed 100 degrees F. The maximum static load should not exceed 100 pounds per square inch to avoid permanent indentation. Vinyl asbestos is considered semi-porous, whereas asphalt tile is porous and solid vinyl and rubber are non-porous. A non-porous characteristic contributes towards easier maintenance. VAT has good resistance to oil, grease, acids, and alkalis, making it suitable for installation over below-grade concrete sub-floors. The encapsulated asbestos is considered safe and not an atmospheric contaminant.

Asphalt tile is relatively inexpensive and was once the most widely used of the resilient tile family. Asphalt and bituminous materials were formerly used as binders but have been replaced by thermoplastic binders. Suitable for installation on or below grade, it has good wear characteristics but has low resistance to abrasive materials. High temperature may soften asphalt tile making it susceptible to denting. Low temperatures may cause the tile to become brittle.

Rubber tile is made from styrene butadiene, a synthetic material which has better aging properties than natural rubber. Rubber tile is susceptible to deterioration from certain cleaning compounds; fatty acids are harmful; solvents, oils, grease, and ultra-violet light are damaging. It is a specialty floor covering for selective use.

Cork tile is made from the bark of the cork oak tree grown principally in Spain and Portugal. Cork's porosity is a disadvantage but its resilience makes cork desirable for comfort, acoustical qualities, and rich appearance. There are four basic types of cork flooring: natural unfinished; waxed (impregnated with molten wax at the factory;) resin-reinforced waxed, pretreated at the factory, providing a less porous and smoother surface than the two previously mentioned; vinyl cork, cork treated with a substantial wear layer of vinyl polycarbonate or other polymeric substance bonded into the cork facing making it highly impervious to staining.

Linoleum, one of the oldest forms of resilient floor covering, was introduced in England in 1864 and brought to America shortly thereafter. Linoleum's wear layer and backing are of the same material. This wear layer consists of oxidized drying oils and resins to which fillers and pigments are added. The mix is applied to a carrier such as burlap, then heated and cured. Inlaid linoleum denotes a floor covering whose colors are integrally mixed.

Installation of resilient flooring is primarily controlled by two factors: the condition of the sub-floor and the type of adhesive used.

Generally, concrete is a suitable sub-floor for most materials. In preparation for installation, the concrete floor must be more than broom clean. The floor must be smooth, dry, and level. Cracks, holes, and rough surfaces may be "telegraphed" through the flooring surface. White powder at cracks indicates crystallization of alkaline salts resulting from interaction of moisture with salts in the concrete or sub-surface. Salts can attack the adhesive and deposit salt crystals on the face of the tile at the tile joints.

Curing compounds may cure the floor and ruin the floor covering: solvents that remain in the concrete may attack both the flooring material and the bond; chemicals may be incompatible with the flooring or the adhesive; greasy or oily compounds destroy the adhesive bond; some substances react unfavorably with the adhesive in the presence of alkaline moisture. Observe the recommendations of the adhesive manufacturer for application conditions and those of the resilient flooring manufacturer for preferred adhesives. Since moisture is present in almost all concrete floors, below or on grade, caused by humidity, capillary action, or seepage, serious consideration must be given to the selection of moisture resistant materials. The temperature of the floor should be at least 70 degrees F. for the successful installation of any resilient flooring and in the case of vinyl asbestos, a 70 degree F. temperature should be maintained for at least 48 hours before and after installation.