

Resilient Sheet Flooring

Resilient sheet flooring products are manufactured in thin sheets or tiles which are applied directly to a flat floor surface as a decorative and wear surface. Options for resilient flooring include vinyl, linoleum, synthetic rubber and recycled rubber. Roll widths are typically 1.8 m or 2.0 m although wider rolls may be available.

© BRANZ 2007

Extraction and manufacture	
Impact of extraction	<p>Resilient sheet flooring often uses recycled content.</p> <p>Linoleum is a natural product based on linseed or vegetable oil, compressed cork and wood flour, resin binders, and pigments on a jute backing.</p> <p>Vinyl and synthetic rubber are made using petrochemicals. Vinyl can be as much as 55% or as little as 11% PVC, and also contains fillers, plasticisers, stabilisers and pigments.</p>
Energy use	Embodied energy is quoted as 116 MJ/kg for linoleum 79.1 MJ/kg for vinyl, and 110 MJ/kg for synthetic rubber.
By-products/emissions	<p>Vinyl flooring – because of the plasticisers used in manufacture to give flexibility – has created concerns as to the potential harmful health effects during its life. Vinyl chloride is a known human carcinogen (causing a rare liver cancer) because the plasticiser contains phthalates which may leach out (Danish research has shown a very strong link between allergies in children and the phthalates used).</p> <p>Linoleum is a natural, inert material.</p>
Sourcing	
Material sources	<p>Vinyl and synthetic rubber are manufactured in NZ from imported components, or imported ready to lay.</p> <p>Linoleum and recycled rubber are imported.</p>
Availability	A wide range of linoleums and vinyls is available throughout NZ. Specialised products (e.g. anti-static) may only be available on indent.
Cost	Costs vary depending on product specification.
Transport to site	Resilient sheet flooring is moderately heavy to transport on the roll. Single house-lots can usually be transported in a light vehicle.
Construction/installation	
Health and safety during construction/installation	Vinyl and the adhesives used may contain VOCs. Vinyl should be unrolled in a well ventilated space to allow off-gassing to occur before laying.
Ease of construction/installation	Materials require lightweight delivery vehicles and can be handled on-site.
Adaptability	Limited once installed
Performance	
Health and safety during life of building	<p>Linoleum is allergen-free and can be fixed with solvent-free, low-VOC adhesives. Some volatile compounds are emitted from the oxidation of the linseed oil. Linoleum inhibits growth of bacteria.</p> <p>Danish research has shown a very strong link between allergies in children and the phthalates DEHP and BB, which may leach out.</p>
Structural capability	Nil – not a structural component

Expected durability (assuming correct installation and maintenance)	15-20 years for private homes – but depends on material quality and level of use
Maintenance rating	Medium – will require regular cleaning
Moisture resistance	Good – all are suitable as wet area finishes. Joints should be welded in wet areas
Rot, mould and corrosion	Unaffected
Thermal performance	Resilient sheet flooring has very low R-value and no thermal mass.
Sound insulation	Specific acoustic floor coverings are available to reduce impact noise.
Fire performance	Vinyl will melt or scorch under heating – it typically contains fire retardant to restrict flammability. Linoleum won't burn.
Waste disposal/recycling/re-use	
Re-use	Re-use is generally not possible due to the difficulty of lifting.
Recycling	Synthetic rubbers and some vinyls may be able to be recycled – the ease of recovery depends on the fixing method. Currently, linoleum can not be recycled as it is made of so many different ingredients.
Waste disposal	Vinyl and synthetic rubber are petrochemical-based materials and release GHG gases as they eventually decompose. Linoleum is bio-degradable and creates no toxins as it degrades.