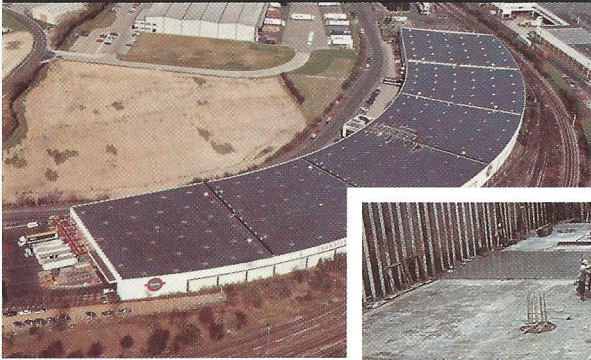


# DURABIT®

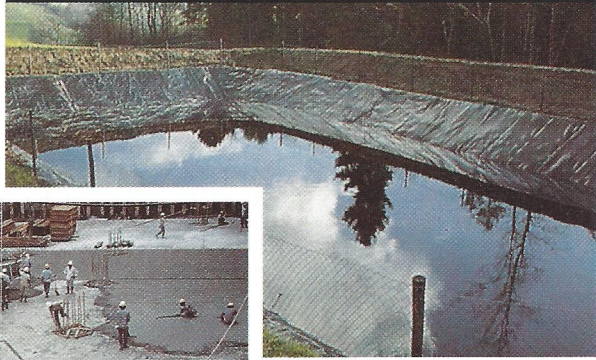
CIVIL ENGINEERING & BUILDING CONSTRUCTION WATERPROOFING MEMBRANES

*The life insurance sold by the square metre!*

Flat roof waterproofing in United Kingdom.



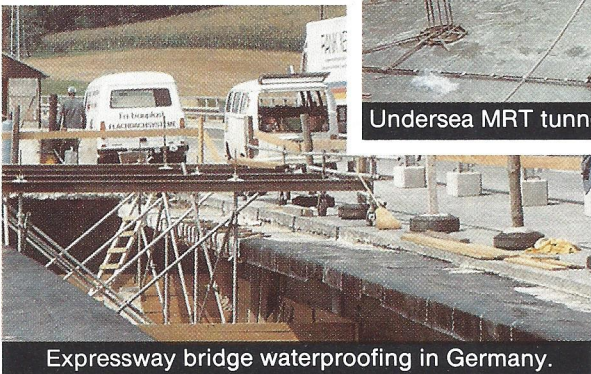
Chemical effluent pool lining in Belgium.



Undersea MRT tunnel sealing in Singapore.



Expressway bridge waterproofing in Germany.



Reservoir sealing in Austria.



DURABIT ECB high performance waterproofing membranes are used for a wide variety of civil engineering and building construction applications. Made from the latest resins developed by BASF Germany, DURABIT membranes possess superior mechanical properties and are highly resistant to heat ageing, ultraviolet radiation, root penetration, rodents, fire and most chemicals. Containing no plasticizers or fillers, they are environmentally safe and are simply welded without the use of adhesives or solvents. Available in rolls up to 2.0 metre width, DURABIT membranes are recommended in situations where fail-safe and life-long waterproofing are critical.



# A NEW GENERATION WATERPROOFING MEMBRANE

Architects and engineers concerned with the effectiveness of various waterproofing membranes will be interested to know that BASF, the giant German chemical conglomerate, produces a range of ethylene co-polymer bitumen (ECB) resins with thermoplastic properties that are used for the manufacture of very high performance waterproofing membranes. The ECB membranes, first introduced by BASF, have been developed specifically for civil engineering and building construction applications.

In building construction, the membranes are used in the waterproofing of flat roofs, terraces and roof gardens, and the securing of buildings against groundwater and moisture.

When used in civil engineering, the membranes are applied in the waterproofing of tunnels, dams, earth basins and ornamental ponds, the sealing of water reservoirs, irrigation channels, effluent sludge treatment basins and waste dumps, and for the protection against corrosion of buried high pressure pipelines and storage tanks.

ECB membranes have excellent mechanical and chemical properties, such as high tensile strength, exceptional elongation, high tear and high puncture resistance. They are also resistant against most chemicals (including dilute acids and alkalis), UV radiation, root-penetration, as well as weathering.

Whilst joints between adjacent membranes are often a source of concern to the specifier, this need not be so with ECB membranes. This is because ECB membranes are heat-welded automatically or manually without the use of any adhesives or solvents. In this way, the seams

are effectively stronger than the rest of the membrane.

Unlike PVC-based membranes, ECB membranes do not contain any plasticisers and are environment-friendly. The latter characteristic is now a mandatory requirement in several developed countries.

The original ECB resin, known as Lucobit 1210, has been produced since 1967 and has been employed principally for the weatherproofing of flat roofs.

Following the success of Lucobit 1210, two new resins have been developed and they are better suited for different applications.

The Lucobit 1221 is for building industry applications like flat roofs, terraces and roof gardens. It is particularly suitable for tropical climatic zones. Lucobit 1221 membranes, with an intermediate non-woven glass fibre fleece, have about the same flexibility as Lucobit 1210 membranes.

Lucobit 1233 is used in civil engineering applications, like sealing of ponds, dams, tunnels, reservoirs, chemical effluence ponds, building basements, subways and roads.

Membranes made from Lucobit 1210 are still produced, but these are recommended by BASF primarily for the waterproofing of roofs in temperate climatic zones.

The Lucobit 1210 membranes are usually reinforced with an underside glass fibre fleece. This fleece presented several problems. With the Lucobit 1233, the reinforcement is unnecessary as the unreinforced membrane has superior mechanical properties, such as tensile strength, elongation, etc. compared to

the reinforced Lucobit 1210 membrane. With Lucobit 1221, the membrane is usually produced with an intermediate reinforcement. This has numerous advantages over the membrane with an underside glass fibre reinforcement, such as:

- the fleece is protected from mechanical damage
- there are no exposed glass fibres to cause skin irritation to the applicators
- increased laying speed as the membrane lies flat after unrolling, without the need to pre-stretch the membrane prior to welding
- reduction in the number of different types of membrane required on site
- ease of welding as there is no necessity to wire brush the glass fibre layer off at end laps and similar locations
- increased strength in the seam welds as the reinforcement extends to the full width and length of the membrane
- improved bi-axial strength
- no shrinkage in the membrane

In Singapore where building basements, tunnels and viaducts are becoming more prevalent, the ECB membrane is expected to gain greater importance and prominence in the near future. However, virtually all ECB membranes that have been used here are made from older generation Lucobit 1210 resin. Perhaps the exception is Durabit-Bauplast GmbH, which has had over 170,000 sq m of its membranes made from the later generation ECB resins installed for several prestigious civil engineering projects, such as the Marina Bay MRT undersea tunnel and the new Woodbridge Hospital ground floor/basement waterproofing.