



Keyfoil®

- PVC Concrete Protection Liner

The PVC Liner for Your Long Term
Concrete Corrosion Protection



Corporate
Member of IGS



Introduction

Keyfoil Concrete Protection Lining system is available in PVC. It is manufactured using single line T-Die extrusion and is produced with a high degree of uniformity and impermeability with excellent physical and chemical properties. The “diamond” shaped keys are formed during the extrusion process and are an integral part of the lining sheet. They provide a strong bond with the body of the concrete.

Keyfoil Liners are resistant to most acids, bases, hydrogen sulfide gases and microbiological attack. In the presence of oxygen and bacteria, the hydrogen sulfide gases react to form sulphuric acid which cause degradation or permeate of concrete. By incorporating Keyfoil concrete lining protective system into the design, the structural integrity of the concrete structure will be greatly enhanced in terms of service life and lower maintenance costs.

Advantages

- Embedment

The ‘keys’ are designed for easy anchorage during the lining process and give excellent mechanical locking into the concrete structure. The ‘keys’ can withstand a nominal concrete test pull equivalent of 14N/mm length.

- Tensile Strength

Both longitudinal and transverse tensile test exceed 17.25Mpa, together with the excellent ‘keys’ shaped mechanical interlock in the concrete, means permanent fixture weep channels preventing pressure build-up caused by moisture behind the lining.

- Elongation

Not less than 225% at failure together with the tensile strength, allows coverage of flexible joints without damage to the lining.

- Porosity

As the **KEYFOIL Key-Lock PVC Liner** is manufactured from a homogeneous extrusion, it is free from pin-holes. This means that gases and solutions will not penetrate through.

- Weldability

KEYFOIL Key-Lock PVC Liners can be readily heat bonded together.

- Temperature Effects

Flexibility of the **KEYFOIL Key-Lock PVC Liner** increases with an increase in temperature, but is otherwise not affected by ambient temperature. Under normal circumstances, the PVC Liner exhibits excellent flexibility.

Specifications

- **Composition**

The **KEYFOIL Key-Lock PVC Liner** sheet shall be composed of high molar mass polyvinyl chloride combined with plasticisers, stabilisers and carbon black compounded to make permanently flexible sheets. Copolymer resins shall not be permitted and polyvinyl chloride shall constitute not less than 99% by mass of the resin used.

The material used in joint strips and in plain sheets without keys, if called for, shall be of the same material composition. The **KEYFOIL Key-Lock PVC Liner** shall be supplied in black.

- **Manufacture**

The PVC liner shall be produced by extrusion process under controlled temperature and pressure conditions.

Individual sheets shall be fabricated into blankets by welding using dielectric welding machine and the joints shall be probe tested. The overlap used in welding shall not be less than 10mm.

The lengths of individual sheets shall be such as to involve a minimum amount of welding to form blankets and shall, where required, provide a 100mm flap at one end of the fabricated sheets for field jointing of the lining.

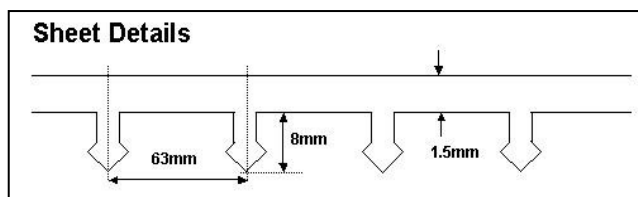
- **Dimensions**

The lining shall be not less than 1.5mm in thickness.

Applications

Keyfoil Concrete Protection Lining System can be used for the following applications:

- spun or vertical cast concrete pipe
- sewer treatment facilities
- concrete foundations in corrosive environment
- prefab concrete elements



Physical Properties

PROPERTY	TEST METHOD		AVERAGE RESULTS
Tensile Strength	ASTM D412	Longitudinal	17.25 N/mm ²
		Transverse	17.25 N/mm ²
Elongation at break		Longitudinal	225 %
		Transverse	225 %
Hardness	Shore Purometer at 20°C		54 ~ 62
Plasticiser Permanence	ASTM D1203		0.40 %
Water Absorption	ASTM D570		0.10 %
Water Soluble Matter			0.05 %
Porosity	Spark Tester 7kV		No Pin Holes
Seam Strength	ASTM D4437		20 N/mm ²
Pull out strength	ASTM D4541		30 tonnes/m ²

- The above results are average results. Standard variations of 10% has to be allowed for.

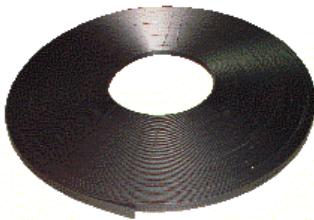
Chemical Properties

PROPERTY	TEST METHOD	MAX. RESULTS
Sodium Hypo-Chloride 1%	ASTM D543 (7 days at 20°C)	0.20 %
Ferric Chloride 1%		0.60 %
Sodium Chloride 5%		0.15 %
Sulphuric Acid 20%		0.12 %
Nitric Acid 1%		0.20 %
Sodium Hydroxide 5%		0.10 %
Ammonium Hydroxide 5%		0.40 %
Soap & Detergent Solution 2%		0.40 %

Important:

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Accessories



24mm x 150m Welding Strip



125mm x 100m Welding Strip

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