

MasterShield AKS KNB

HDPE concrete protection membrane

Material Description

MasterShield AKS KNB is a high-performance synthetic membrane composed of HDPE sheet with integrally moulded anchors, designed to be cast into concrete to create a flexible and durable corrosion protection lining.

MasterShield AKS KNB is supplied and installed as a fully sealed, welded system that offers robust chemical resistance. The system includes proprietary detailing for sealing around service penetrations and against non-HDPE substrates.

MasterShield AKS KNB can be integrated into new concrete structures or retrofitted onto existing surfaces using compatible MasterFlux grouts. With a proven track record in highly aggressive environments, MasterShield AKS KNB-lined structures have demonstrated a design life exceeding 100 years in the most demanding applications.

Areas of Application

MasterShield AKS KNB is used to protect concrete surfaces in chemically aggressive environments in sewerage tunnels, treatment works, pump stations, manholes and chemical retention bunds.

It comes in a range of colours and thicknesses and can be applied to new and existing structures for protection or enhancement.

Characteristics and Benefits

- **Fully welded homogenous lining** - all seams and joints are extrusion welded and tested by spark or vacuum box testing
- **Chemical resistance** - exceptional resistance to aggressive chemicals, making it ideal for environments with exposure to acids, alkalis, and industrial.
- **Long-term durability** - designed for a 100-year service life with minimal maintenance requirements, reducing lifecycle costs.
- **Versatile application range** - suitable for varying temperatures and installation methods, including extrusion welding and grouting.

Properties

Tested Charactrastics	Standard	Result
Density	ASTM D505/D792	≥940kg/m ³
Carbon Black Content	ASTM D 1603	2.0 - 3.0% (for black AKS)
Carbon Black Dispersion	ASTM D 5596	Category 1 or 2 (for black AKS)
ESCR (NCTL)	ASTM D 5397	>300 hours
OIT	D 3895	>100 minutes
Coefficient of Linear Expansion	ASTM E 831	1.1-1.4x10 ⁻⁴ /°C
Shore Hardness D	DIN 53505	>50
Tear Resistance	ASTM D 1004	120 N/mm
Puncture Resistance	ASTM D 4833	300 N/mm
Dimensional Stability	ASTM D 1204	<2.0% change
Water Absorption	ASTM D 570	<0.09%
Flammability	UL94	V0
Tensile Properties:	ASTM D 6693-04	Sheet Material
Yield Stress		15MPa
Break Stress		27MPa
Yield Elongation		12%
Break Elongation		700%
Standard Charactrastics	MasterShield AKS KNB	
Length of Knobs	12mm(nominal)	
No of Knobs	1230 per m ²	
Pull-off Resistance	>700N/knob 850 kPa (short term loading)	

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Ancillary Products

MasterShield AKS SMTH

- Smooth HDPE sheets are supplied in the same thickness and colour as the MasterShield AKS KNB sheets.
- This sheet can be cut and bent to fabricate such items as cover strips, corner angles and pipe sleeves.
- Alternatively, the installer can remove the knobs from the MasterShield AKS KNB to provide a smooth sheet for cover strips and corner pieces.

MasterShield AKS FLC

- Smooth HDPE Fleece-Back sheet is a composite product consisting of smooth HDPE sheet with a fleece geofabric heat-cast into one face.
- The fleece side can be coated with an epoxy resin such as MasterStrength 1444/1446/1475 or MasterStrength 2525 and adhered (on the fleece surface) to surfaces of concrete, Steel, PVC, or GRP. This in turn provides a HDPE surface onto which the MasterShield AKS KNB can be welded and closed onto these non-HDPE surfaces and provide a gas tight seal for corrosion protection.
- The HDPE smooth fleece back sheets are manufactured in 3.0-5.0mm x 3.0m x 1.5m sheets.

MasterShield AKS ASLIP

- Anti-slip HDPE sheets are in 3-5mm thickness and in the same colour as the MasterShield AKS KNB lining.
- Anti-slip HDPE sheets are manufactured in 1.0-3.0m width and 1.0-15.0m lengths and can be cut and bent to the desired size and shape.

MasterShield AKS WLDRD

- Master Builder Solutions supplies 4mm and 5mm welding rods for Hot Air Blowers and Speed Welding.

Application

Please refer to "HDPE Concrete Protective Liner for new and existing structures: MasterShield AKS" Application guide, including detailed Application methodology:

Welding Methods; Sureface Preparation and formwork installation, Installations to walls, internal or external slabs, Soffit slabs and Roof slabs as well as AKS lined Precast elements.

Post-Installation Quality Checks

Please refer to Quality Assurance and Testing Procedure section of "HDPE Concrete Protective Liner for new and existing structures: MasterShield AKS" Application guide, for full details.

Packaging

MasterShield AKS KNB rolls are available in:

Thickness	2.0 to 10.00 mm
Roll Width	Up to 3.2m
Roll Length	Up to 26.0m
Colours	Standard and customised

Standard stocked in Australia and New Zealand are:

Width: 2.6m & 3.0m x Length 11.8 Lm x 2.5mm thickness
Standard Color range: Black, Grey, light green and white.

MasterShield AKS can be customised for larger orders to meet specific client requirements, including color, thickness, width, and length.

Pale-coloured MasterShield AKS includes short-term UV protection for up to 2 years during transport, temporary storage, and pre-fabrication.

For extended UV exposure or operation, use MasterShield AKS Black, which provides full UV protection.

The material can be supplied to installers in either coiled or flat sheets, depending on project needs.

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Storage

MasterShield AKS KNB maximum of 24 months – it is essential that goods are kept in the original packaging, keep cool and dry, protect against sunlight. If packaging film has been opened apply the material within 2 months.

Disclaimer

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