ARMOUR-GUARD MEMBRANE MANUAL

Extremely flexible, PUMA based, liquid, fast curing, manually applied, elastomeric waterproofing membrane for rail and highway bridge decks

Armour-Guard® Membrane Manual is a highly reactive, extremely flexible, liquid and easy to apply, elastomeric waterproofing membrane or wear layer with very high durability even at very low temperatures. Armour-Guard is suitable for rail exposures where dielectric resistance and resistivity values may be required. The dielectric values of Armour-Guard systems can be tailored to comply with varying requirements of rail operators.

BENEFITS

- High reactivity
- Fast curing
- Sustainable
- Liquid and easy to apply
- Applicable at low temperature -25°C / 13°F
- Optimal viscosity
- High elongation
- Crack bridging
- Dielectric resistance and values
- High chemical resistance
- Resistant to de-icing salt

FIELD OF APPLICATION

Armour-Guard Membrane Manual is primarily used as an extremely heavy-duty, seamless, bridge deck waterproofing and corrosion resistant membrane for rail and highway bridges. It can also be used in other areas where extreme performance and protection is desired.

- Roofs
- Terraces
- Balconies
- Parking decks

APPLICATION

Note: The following is a typical application description. In case of other jobsite parameters, please contact a Transpo Regional Manager.

Pre-application Checks

Before starting the substrate preparation and applying any Armour-Guard range of products, it is important to test various parameters in order to achieve an optimal and sustainable result.

Compressive strength of the substrate: minimum 25 N/mm² / 3,500 psi.

Tensile strength of the substrate: minimum 1.5 N/mm² / 220 psi.

Armour-Guard Membrane Manual must be applied in conjunction with an Armour-Guard Primer on a dry surface.

Moisture content in the substrate should be ≤ 6% checked with Tramex CME5 or similar moisture encounter device.

Appropriate and correctly placed expansion joints or joint modules must be provided where required and these should not be overcoated.

The flatness/slope of the surface must be consistent with the desired requirements. Should this not be the case, corrective measures must be taken to fill in or smooth out the unevenness with compatible products, such as Transpo T-17.

Shrinkage cracks and static cracks can be coated provided they are not performing as expansion joints and they are isolated from other movements of the structure. They should be addressed and treated with products that are complementary to the substrate and to the Armour-Guard System to be installed.

Required Tools

- Mixer with spiral paddle (min. 300 rpm)
- Spatula, rake or toothed trowel
- Spiked roller
- Masking tape

Preparation of the Substrate

Armour-Guard Membrane Manual is always applied on a suitable primer, depending on the type of substrate.

Armour-Guard Primer S: Dry, form-retaining, mineral substrates.

Armour-Guard Primer F: Moving or less form-retaining mineral substrates, asphalt or bituminous membranes.

Armour-Guard Primer W: Damp, form-retaining, mineral substrates.

Always consult the Armour-Guard Primers' technical data sheets. It is not necessary to place a primer on existing Armour-Guard Systems before applying Armour-Guard Membrane Manual.

Before applying the primer:

Cracks, joints and other surfaces that show leaking must first be made completely water-tight and leak-proof using products compatible with Armour-Guard Systems.

The surface must be mechanically prepared to CSP 4-6 / SSPC-SP 10 (NACE No. 2) by abrasive blasting, scarification, milling, micro milling or other process providing that it achieves the required surface profile. Tiles are to be fully degreased and ground with a diamond blade. These treatments are to ensure that an open texture surface is obtained, to remove the cement laitance from concrete, and old remnants of coatings and adhesives. Galvanized steel should be thoroughly cleaned in advance with water and soap or sandblasted. Degrease metal surfaces immediately after the mechanical preparation with MEK. After the MEK has fully evaporated, immediately apply a layer of Armour-Guard Primer F to prevent the steel from re-oxidizing.

High pressure water jetting is possible but the surface must dry sufficiently before applying the primer. Moisture content in the substrate: ≤6% moisture.

Always apply the products on a clean surface, free from adhesion inhibiting and deleterious substances such as dirt, oil, grease, old coatings or surface treatments. Areas of the surfaces to be coated that do not meet the requirements as described above (compressive strength, tensile strength, parts that are not well connected) must be treated or removed and repaired according to a correct method and with products that are complementary to the substrate and the Armour-Guard System to be installed. Remove any loose parts by brushing properly and with compressed air/high-power leaf blowers and remove dust with an industrial vacuum cleaner.

Preparation of the Product

Mix all Armour-Guard Membrane Manual components well, before use to obtain a homogenous and uniform mix. Add one 0.6 kg package of Armour-Guard X-51 per 25 kg of Armour-Guard Membrane Manual. Dispense an amount of resin that can be processed within 15 minutes. This mixture remains stable for 12 hours.

Add 1% to 6% of Armour-Guard Catalyst.

Add Armour-Guard Catalyst to Armour-Guard Membrane Manual.

Temp.	In %	Armour-Guard Catalyst per 1 kg Armour-Guard Membrane Manual
0°C / 32°F	5%	50 g
5°C / 41°F	4%	40 g
10°C / 50°F	3%	30 g
20°C / 68°F	2%	20 g
30°C / 86°F	1%	10 g

Mix the Armour-Guard Catalyst powder for one minute until fully dissolved. For vertical applications it is recommended to use Armour-Guard Membrane Thixo.

Preparation of the Equipment

Always work with clean mixing containers and application material.

Application

Armour-Guard Membrane Manual can be used in a wide variety of applications. Please refer to individual System Build Sheets (SBS) for details of your specific application and/or project.

Application Conditions

Conditions during the application and curing of the products. The recommended processing temperature for substrate, environment, material and products is between 0°C and +35°C / 32°F and 95°F. For temperatures lower than 0°C / 32°F please contact a Transpo regional manager for guidance.

Relative humidity: Max. 85%

Dew point: The temperature of the substrate and of the applied product must be at least 3°C / 5°F higher than the dew point. Avoid condensation on the surface from the moment that the preparations start until the complete curing of the products. Ensure adequate ventilation and a low relative humidity during curing.

Cleaning and Maintenance

Clean the used tools with MEK, acetone or m/ethyl acetate before the curing of Armour-Guard Membrane Manual. Cured products residues must be removed mechanically.

Complementary Products

- Cleaning solvent for tools: MEK, acetone or m/ethyl acetate
- Armour-Guard Catalyst
- Pigment powder
- Dry sprinkling granulates
- Depending on the application: Armour-Guard Thixo, Armour-Guard Primers and Topcoats

Advice/Focal Points
Always consult all technical and safety data sheets of the products concerned.

TECHNICAL DATA

Appearance — Composition
Liquid, slightly pasty

Armour-Guard Membrane Manual standard color: grey RAL 7040.

Armour-Guard X-51: colorless liquid.

Reaction Times
Processing time after mixing: 10 to 15 min.

Trafficable: typically after 1 hour

Recoat: typically after 1 hour

Fully mechanical load: after 2 hours

Full chemical resistance: after 2 hours

Times measured at 20°C / 68°F; lower temperatures extend the curing time.

Consumption / Coverage Rates
Armour-Guard Membrane Manual consumption depends on the substrate and the project type.

The minimum layer thickness of Armour-Guard Membrane Manual is 1.5 mm = 1.8 kg/m^2.

For highway bridge deck: 2.4kg/m^2 @ 2mm d.f.t.

For the rail bridge deck:

2.4kg/m^2 with Ballast Mat @ 2mm d.f.t

3.6kg/m^2 without Ballast Mat @ 3mm d.f.t

Technical Data

Odour	Methyl methacrylate (See also information sheet "Armour-Guard Odour")
Initiator: Armour-Guard Catalyst	BPO 50%, depending on the temperature from 1% to 6% weight calculated on the proportion of Armour-Guard Membrane Manual
Viscosity	1000 – 2000 mPa.s (20°C Brookfield, spindle III / 40 tr/min.)
Density	1.2g/cm³ ±0.1 (20°C)
Flash point	10 °C (MMA, DIN 51 755)

Chemical Resistance
Polymerized Armour-Guard resins have good chemical resistance to alkalis, petroleum derivatives, acid, salts and maintenance products. For more information please contact a Transpo Regional Manager.

CE Marking

CE

0749	
Transpo Industries	
13 0749-CPR-BC2-562-4717-0001-001	
EN 1504-2 : 2004 Surface protection products – Coating	
Bond strength by pull-off	≥1.5 (1.0) N/mm^2
Thermal compatibility: Freeze-Thaw with deicing salts	≥1.5 (1.0) N/mm^2
CO2 permeability	S_D≥50m
Water vapour permeability	Class II
Capillary water absorption	w<0.1kg/(m^2 • h$^{0.5}$)
Surface Resistivity, Ω	2.68 x 10^{11}
Volume Resistivity, Ω-cm	8.41 x 10^{12}
Crack bridging	Class B3.1 (-10°C)
Crack bridging ASTM C1305M-16	40 cycles
Elongation ASTM D638-14	>385%
Wear resistance: Systems (Membrane: Taber, CS17/1000/1000)	<100mg
Impact resistance	Class III
AREMA Ballast Indentation	Passes 2 million cycles
Skid resistance (in specific system)	Class III
Artificial weathering	No visual defects
Reaction to fire	E_{FL}(B_{FL}-s1 in system with Armour-Guard Topcoat AF)
Dangerous substances	Complies with 5.4
DoP N°: DOP02PLC02S2	

Reference documents
Information sheet “Armour-Guard Odour.”

FM 78518

PACKAGING

Armour-Guard Membrane Manual

25.6 kg / 5.62 gal kit	25 kg / 5.5 gal metal can
	0.6 kg / 0.12 gal plastic bottle X-51

To be ordered separately:

Armour-Guard Catalyst

10 kg / 22 lb	Plastic pail
25 kg / 55.1 lb	Box

STORAGE AND SHELF LIFE

Store Armour-Guard products in a dry, well-ventilated storage area between +5°C and +35°C / 41°F and 95°F.

Shelf life: 12 months after production date.

In case of doubt, please contact Transpo and state the batch number on the packaging. Do not discharge into groundwater, surface water of sewers. Dispose of contaminated packaging and residues in accordance with the applicable legal requirements.

SAFETY PRECAUTIONS

Carefully read the safety data sheets before using Armour-Guard products. A characteristic odour arises during processing. Ensure adequate ventilation, keep away from sources of ignition and do not smoke. Avoid skin contact. Eye irritation and/or hypersensitivity may occur with severe vapor concentration, inhalation and/or skin contact. Do not store food, drinks in the same workspace. Always wear personal safety equipment in accordance with the applicable local guidelines and legislation. Gloves and safety glasses are mandatory.

The value ranges stated above are based on system processing under laboratory conditions. Equipment configurations and/or field application conditions may produce variances in final system values.

To be used as general guidelines only.

The base language for this technical data sheet is English.