ACCS Ltd
Industrial Protective Linings

Unit 6, Scott Lidgett Industrial Estate,
Scott Lidgett Road, Longport,
Stoke-On-Trent, ST6 4NQ, United Kingdom
Tel: +44 (0) 1782 817 107
Tel: +44 (0) 1782 824 979
Email: info@accsltd.co.uk
Skype: accs.ltd
Registered in England: 6090394
VAT No GB 880-1983-03
www.protectivelinings.co.uk

Product Information Sheet **March 2014**

NOVOLAC VINYLESTER

Description
Novolac Vinylester is high performance vinylester-based acid resistant material designed to provide the maximum resistance to aggressive chemical environments. It is typically provided in two-component format comprising, a vinylester solution and a catalysed filler powder, which can be altered, with varying granulometry to suit required thickness and application.

Typical Uses
Novolac Vinylester is one of the most corrosion resistant materials on the market. It is an extremely flexible material that can be installed as a coating, membrane, or mortar, depending on the job requirements. This versatility allows for its installation in a number of applications such as; general tiling / masonry work, trenches, pits, floors, walls, plinths, tanks and storage areas.

ACCS typically provides Novolac Vinylester materials in the following classifications:

	Typical Use	Installed Thickness	Filler (Particle Size)
VE50	Paint/Coating	0.5-1mm	≤0.2mm
VE55	Coating/Membrane	1-2mm	≤0.2mm
VE60	Mortar	1-10mm	≤0.7mm
VEGF30	Vertical Coating	1-5mm	≤0.2mm

Advantages
Novolac Vinylester provides resistance to the majority of concentrated oxidising acids, such as nitric acid to 50%, sulphuric acid to 75%, hydrochloric acid to 36%, phosphoric acid to 85%, sodium hydroxide to 50% and sodium hypochlorite. It is also resistant to hydrofluoric acid (with carbon-based filler, contact ACCS Ltd for further details) and a large number of concentrated alkalis and salts.

Chemical Resistance
Full details are available on ACCS website: www.protectivelinings.co.uk. Provides the maximum resistance to even the most aggressive chemical environments, including Hydrofluoric acid.

Surface Preparation
For all pre-existing surfaces of metal or concrete, abrasive blast or scarify to remove all laitance and surface contaminant. A primer base should be applied before application to ensure sufficient key. The surface should be dust-free and dry and the ambient temperature should be above the dew point of air. Prepare the substrate with either PE120 membrane (metal) or AC90 primer (concrete) to ensure an adequate bond with the Novolac Vinylester material. For new-build concrete constructions, a damp tolerant primer AC95 is recommended and can be applied within 48 hours of concrete set, potentially expediting any construction schedule. It is recommended, to ensure a sufficient key between the primer and the Novolac Vinylester, that a light scatter of inert material (typically sand) is applied to the primer to provide a non-sheen finish. Novolac Vinylester can then be applied once priming has been completed.

It is generally recommended to apply the coating of Novolac Vinylester whilst the primer layer is still slightly tacky (ie usually within 2 hours of primer application). This will allow a bond to form between the primer and the top coat layer improving adhesion and reducing run or pooling of the top coat.

Do not apply over any standing water. Do not impose loads until final set has been achieved. Lower temperatures will require longer cure periods.

Application
Novolac Vinylester typically comprises a vinylester solution and a catalysed filler powder. Prior to application, the components must be mixed thoroughly before application. Ensure that the Vinylester solution is at approximately 20°C before mixing to ensure a workable viscosity. Values are an intended guide.

	Mixing ratio of Solution to Powder
VE50	~25kg Solution to 0.75kg VE50 Powder ~1L Solution to 0.075L VE50 Powder
VE55	~25kg Solution to 25kg VE55 Powder ~1L Solution to 1L VE55 Powder
VE60	~8.5kg Solution to 25kg VE60 Powder ~1L Solution to 3L VE60 Powder
VEGF30	~25kg Solution to 12.55kg VEGF30 Powder ~1L Solution to 0.5L VEGF30 Powder

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Using an inclined mixer or paddle mixer, place the powder in mixing vessel and add the solution. Mix thoroughly for at least 3 minutes; the powder will 'wet' out to a mortar.

For coatings, apply by paint brush, roller or float/trowel depending on thickness/application desired. Apply until a smooth coating has been established without allowing the materials to form into pools or flood the area. Leave to cure, and then apply second coat 12-16 hours but not later than 48 hours after the first, to even off the finish and give an attractive gloss. To aid adhesion of the second coat, the application of a fine quartz scatter before full cure is recommended to provide a key for subsequent layers. Where necessary, enhanced strength and durability of VE50 and VE55 coatings can be achieved through the addition of a fine weave glass matting material. Please contact ACCS Ltd for more information. To provide anti-slip facilities to the coating it is recommended that the mixed product is allowed to cure for 1 hour before application of an anti-slip scatter material. Please contact ACCS Ltd for further information.

Vinylester-based materials have a tendency for some shrinkage during the curing process. As such, examination of the lining should be made after the second coat has been applied to ensure complete coverage.

Vinylester-based materials also stay tacky for a number of days after installation. Prevent access during this time or apply a light scatter of inert material to prevent footmarks or the adherence of dirt.

For mortars, application should be made with either float or trowel to all jointing surfaces to ensure a complete chemical barrier. For all trowel/float applications, regular brushing of tools with solvents ensures a smooth (non-drag) finish. However, do not apply too much solvent or this will lead to blistering of the vinylester finish.

All tools and equipment should be cleaned off with solvents and damp cloths to ensure their continued use.

If pigmentation is required, please contact ACCS Ltd for more information. Colours are available in white, grey, black, green, blue, red and yellow.

Pot-Life of Novolac Vinylester

- at 20°C – 25mins
- at 30°C – 20mins
- at 40°C – 10mins

An initial set occurs approximately 4hours after mixing, light foot traffic permissible after 24hours and with a full chemical cure occurring after 5-7days. Novolac Vinylester will remain 'tacky' for a number of days after installation. By applying a light scatter of inert material after 2 days cure, footmarks and dirt collection can be avoided. Novolac Vinylester materials should never be exposed to water, steam or chemical environments before a full chemical cure is completed.

Note: Do not mix more material than required by pot-life. It cannot be reconstituted. Never add unapproved materials to the mix, in particular water. After mixing spread out on to the surface to avoid self – generated heat. Large mixed volumes that are not thinned will flash set, becoming extremely hot and producing smoke.

Coverage

Typical coverage rates on a relatively smooth concrete surface for a Novolac Vinylester materials:

	Typical Use	Thickness	Coverage
VE50	Paint/Coating	0.5-1mm	1 kg/m^2
VE55	Coating/Membrane	1mm 2mm	1 kg/m^2 2 kg/m^2
VE60	Mortar/Screed	2mm 5mm	2 kg/m^2 5 kg/m^2
VEGF30	Vertical Coating	2mm	1.5 kg/m^2

For fully bedded and jointed (4mm) VE60 mortared bricks of dimensions:

Brick/Tile	Powder	Solution	Unit
230x114x75mm (Wall – 114mm)	17	5	Kg/m^2
230x114x65mm (Wall – 114mm)	19	5.5	Kg/m^2
230x114x50mm (Floor – 50mm)	9	2.5	Kg/m^2
230x114x38mm (Floor – 38mm)	7	2	Kg/m^2
230x114x20mm (Floor – 20mm)	5.5	1.5	Kg/m^2

Values are approximate requirements.

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Standard Packing
Solution – 25kg in 25L UN drums (24 per pallet)
Powder – 25kg lined polyweave bags (40 per pallet)

Storage
Store in a cool, dry, covered and frost-free place. Ideal storage conditions 10°C should provide shelf life of:
Solution – 12 months
Hardener – 12 months

Do not store a combined stack of Solution and Powder components. Accidental leakage could lead to flash setting of material, producing smoke. Storage at, or exposure to, warmer temperatures or UV light may initiate a setting reaction. In particular, storage at temperatures higher than 30°C will lead to premature setting of the solution component. It is recommended that air-conditioned storage is used at all times before use. Prior to mixing, ensure solution and powder components are warmed to approximately 20°C to ensure sufficient viscosity for mixing.

During extended (unforeseen) storage time periods, the reactivity of the Novolac Vinylester components will begin to reduce. The formulation is flexible so that additional accelerator can be added to the solution and/or additional accelerator added to the powder. Small test samples are advised before proceeding. Please contact ACCS Ltd for more advice.

Safety
Safety data information available on request. Adequate ventilation must be provided whilst work is in progress and is compulsory for closed or indoor applications. The instructions on storage, fire and explosion are to be observed. No releases to the sewers or drains are to be permitted under any circumstances. Always refer to MSDS data sheets for hazard and transport information.

Ventilation is required with special consideration for enclosed or confined areas. Air movement must be designed to ensure turnover at all locations in work area and adjacent areas to avoid build-up of heavy vapours.

Warranty
We warrant that our products will conform to the description contained in the order and that we have good title in all goods sold. WE PROVIDE NO WARRANTY, WHETHER OF MERCHANTABILITY, FITNESS FOR PURPOSE, OR OTHERWISE, EXPRESS OR IMPLIED, OTHER THAN AS EXPRESSELY SET FORTH HEREIN. We are glad to offer suggestions or to refer you to customers using ACCS Ltd cements and compounds for similar applications. Users shall determine the suitability of the product for intended application before using, and users assume all risk and liability whatsoever in connection therewith regardless of any suggestions as to application or construction. In no event shall we be liable hereunder or otherwise for incidental or consequential damages. Our liability and your exclusive remedy hereunder or otherwise, in law or in equity, shall be expressly limited to our replacement of non-conforming goods at our factory or, at our sole option, to repayment of the purchase price of non-conforming goods.

Technical Data

Parameter	Test Method	Unit	Value
Density		kg/m³	1180
Specific Volume		m³/tonne	0.84
Tensile Strength		N/mm^2	11.5
Compressive Strength		N/mm^2	80
Flexural Strength		N/mm^2	80
Bond strength (wire cut bricks)		N/mm^2	4.2
Coefficient of expansion		10^{-6} °C	16.0
Water absorption		%	0.25
Maximum Operating Temperature		°C	125
Coverage – mixed primer		m^2/kg	2

Disclaimer
The technical data contained in this document represents the current state of our product knowledge and is for information purposes only. It does not constitute a guarantee or specification.