

CHEMFIT ASPLIT VEL

Vinylester Resin Based Laminate Conductive System – For Chemically Stressed Environments Where High Chemical Resistance is Mandatory

PRODUCT DESCRIPTION

ChemFit Asplit VEL is a vinylester resin based laminate conductive system specifically formulated for chemically stressed environments where high chemical resistance is mandatory. This glass fibre reinforced, multi-layer system consists of a primary screeding, laminate layers, and a conductive top coat. The vinylester-based formulation provides exceptional resistance to a wide range of aggressive chemicals, including concentrated acids, alkalis, solvents, leachates, and oxidizing substances. The system is conductive, allowing safe dissipation of static electricity in hazardous areas. It is suitable for sealing reinforced concrete bunds, chambers, tanks, and steel storage vessels

PRIMARY APPLICATIONS

ChemFit Asplit VEL is recommended for use in conditions such as:

- Chemically stressed environments requiring high chemical resistance, including bunds, secondary containment, and tank farms
- Sealing of reinforced concrete receiving vats and chambers, indoors or outdoors
- Steel tanks for the storage of aggressive liquids (concentrated acids, leachates, solvents, alkalis, oils and fuels)
- Areas with high chemical exposure to oxidizing substances, pickling baths, acids, alkalis, and bleaches
- Process areas in electroplating works, pickling plants, galvanizing lines, chemical manufacturing, and treatment facilities
- Coating systems designed to be driven on by vehicles with pneumatic tyres, solid rubber, Vulkollan or polyamide wheels (e.g., in electroplating works, pickling plants)
- Conductive flooring for explosion-protected zones and areas requiring electrostatic discharge (ESD) properties

KEY FEATURES AND BENEFITS

- **Vinylester resin based** – Outstanding chemical resistance to a very wide range of aggressive substances
- **Conductive system** – Meets BGR 132 (German professional association regulation for static electricity) requirements for explosion protection; electrical resistance $\leq 1 \times 10^8 \Omega$
- **Wide-ranging chemical resistance** – Excellent resistance to acids, alkalis, solvents, leachates, oxidising substances, oils and fuels; tested to DIBt approval for multiple chemical test groups
- **Crack bridging** – Capable of bridging static cracks up to 0.2 mm
- **Very fast hardening** – Rapid return to service; walkable within 2-4 hours at 20°C
- **Driveable** – Can withstand vehicle traffic after full cure

- **Excellent bond strength** – Strong adhesion to properly prepared concrete and steel substrates (≥ 1.5 N/mm²)
- **High thermal resistance** – Suitable for dry heat up to approximately 80°C permanent, 100°C short-term
- **Building inspectorate approved** – Conforms to DIBt (Deutsches Institut für Bautechnik) Water Protection approval
- **CE marked** – Coating based on vinylester for concrete protection according to EN 1504

PHYSICAL AND CHEMICAL PROPERTIES

Property	Specification
Appearance / Colour	Primary screeding: Dark grey (RAL 7031 conductive), Laminate: Yellowish transparent
Basis	Two-part vinylester resin + organic peroxide hardener
Packaging	Vinylester resin (solution): 25 kg net; Hardener: 1 kg net; Carbon powder: 25 kg net; Glass fibre matting (450 g/m ²): roll ~70 kg; Surface matting (~30 g/m ²): roll ~9 kg
Density (mixed)	Resin (yellowish transparent): ~1.1 g/cm ³ ; Resin (conductive): ~1.26 g/cm ³ ; Powder: ~0.54 g/cm ³ (bulk density)
Pot life (at +20°C)	~30 minutes
Walkable (at +20°C)	Primary screeding: 2 hours; Laminate: 2 hours; Top coat: 2 hours
Overcoatable (at +20°C)	Primary screeding: 16 hours; Laminate: 2 hours; Top coat: 2 hours
Full cure	7 days
Application temperature	+5°C to +30°C (ambient and substrate)
Substrate temperature	Min. +5°C, max. +30°C; must be $\geq 3^\circ\text{C}$ above dew point
Relative humidity	Max. 80%
Substrate moisture (concrete)	$\leq 4\%$ (no rising moisture)
Thermal resistance (dry heat)	Permanent: approx. +80°C; Short-term: approx. +100°C
Thermal resistance (damp/wet heat)	Short-term up to +120°C (occasional, e.g., steam cleaning)

MECHANICAL PROPERTIES

Property	Value
Tensile strength (horizontal in layer)	approx. 73 N/mm ² (ISO 527)
Crack bridging ability	Up to max. 0.2 mm (static cracks)
Electrical resistance (conductive system)	$\leq 1 \times 10^8 \Omega$
Adhesion to concrete (tensile pull-off)	≥ 1.5 N/mm ² (substrate failure typical)
Thermal expansion	Similar to concrete

CHEMICAL RESISTANCE

ChemFit Asplit VEL has building inspectorate approval from DIBt (German Institute of Building Technology), approval number Z-59.12-69 for the following chemical test groups: 1, 1a, 2, 3, 3a, 3b, 4, 4a, 4b, 4c, 5, 5a, 5b, 6, 6b, 7, 7a, 7b, 8, 9, 9a, 10, 11, 12, 13, 14, 15 and 15a.

Additional building inspectorate approval for the following aggressive chemicals:

- Hydrochloric acid $\leq 37\%$
- Sulfuric acid $\leq 70\%$
- Nitric acid $\leq 65\%$
- Aqueous sodium hypochlorite (12% active chlorine)
- Hydrogen peroxide $\leq 30\%$
- Chromic acid $\leq 50\%$

The system also provides excellent resistance to:

- Mineral oils, diesel, petrol, kerosene
- Dilute and concentrated alkalis
- Organic and inorganic salts
- Many solvents and leachates

NOTE: In particular cases, a discoloration of media may occur. Nevertheless, this does not affect the chemical resistance itself. For a detailed chemical resistance list specific to your application, contact ChemFit technical service.

PACKAGING AND STORAGE

Packaging:

- Vinylester resin (solution): 25 kg net container
- Vinylester hardener (organic peroxide): 1 kg net container
- Conductive carbon powder: 25 kg net bag
- Glass fibre matting (450 g/m^2): roll $\sim 70 \text{ kg}$
- Surface matting ($\sim 30 \text{ g/m}^2$): roll $\sim 9 \text{ kg}$

Storage:

- Store in original sealed containers in a cool, dry environment at temperatures not exceeding +20°C
- Protect from direct sunlight, moisture, and freezing
- Keep containers tightly sealed when not in use
- Water, even in minimal quantities, may damage the accelerating system and prevent the hardening process – keep tools and mixers absolutely dry

Shelf life:

- Vinylester resin (solution): 3 months from date of manufacture when stored properly
- Hardener (organic peroxide): 6 months from date of manufacture when stored properly
- Carbon powder: 24 months from date of manufacture when stored properly

DOSAGE AND COVERAGE RATE

Application Type	Mix Ratio (by weight)	Consumption (approx.)	Coverage per 25 kg resin unit
Primary screeding	100 parts resin + 1.5 parts hardener + 80 parts carbon powder	0.7 – 1.5 kg/m ²	~17 – 36 m ²
Laminate (1 layer with matting)	100 parts resin + 1.5 parts hardener	~2.5 kg/m ²	~10 m ² per layer
Top coat conductive (per layer)	100 parts resin + 1 part hardener (conductive version)	~0.3 kg/m ²	~83 m ² per layer
Top coat non-conductive (RAL 7032, per layer)	100 parts resin + 1 part hardener (non-conductive version)	~0.3 kg/m ²	~83 m ² per layer

System Build-Up (Typical ~3 mm total thickness):

- Primary screeding: 1 layer
- Laminate: 2 layers of glass fibre matting (450 g/m²) + 1 layer of surface matting (~30 g/m²)
- Top coat: 1-2 layers of conductive top coat

Consumption per Complete System:

- Total resin consumption: approx. 3.0 – 3.5 kg/m² (dependent on number of top coats)

NOTE: Coverage is theoretical and does not account for substrate porosity, surface profile, variations in level, or wastage.

APPLICATION GUIDELINES

Surface Preparation – Concrete:

- Substrate must be sound, clean, dry, and free from dust, oil, grease, laitance, curing compounds, and loose particles
- Mechanically prepare by shot blasting, pressure blasting, or milling to achieve open texture (CSP 2-3)
- Residual moisture content not above 4%
- Average value of surface tensile strength should not be below 1.5 N/mm²
- Structures subject to water resource law (WHG) may only be coated by qualified coating firms possessing certificates of capability

Surface Preparation – Steel:

- Blast clean to Sa 2½ according to ISO 12944-4
- Surface must be free from dirt, oil, and grease

Mixing:

- Pre-mix vinylester resin component thoroughly before combining
- Add hardener (organic peroxide) according to ratio (100 parts resin + 1.5 parts hardener for primary screeding and laminate)
- For primary screeding: add carbon powder (80 parts) and mix thoroughly
- Mix with low-speed drill (300-400 rpm) for 2-3 minutes until uniform
- Use within pot life (~30 minutes at +20°C)

Application Sequence:

- **Primary screeding:** Apply mixed material by notched trowel at 0.7 – 1.5 kg/m²; allow to cure (walkable after 2 hours, overcoatable after 16 hours at +20°C)
- **Laminate – Layer 1:** Apply vinylester resin, embed 450 g/m² glass fibre matting, fully saturate
- **Laminate – Layer 2:** Apply vinylester resin while still wet, embed second 450 g/m² glass fibre matting, fully saturate
- **Laminate – Surface layer:** Apply vinylester resin while still wet, embed surface matting (~30 g/m²)
- **Top coat:** After laminate has cured, apply conductive top coat at approx. 0.3 kg/m² by short-pile roller; apply second coat if required

Curing Times:

Temperature	Primary screeding overcoatable	Laminate walkable/overcoatable	Top coat walkable/overcoatable
+10°C	~24 hours	~12 hours	~12 hours
+20°C	~16 hours	~2 hours	~2 hours
+30°C	~10 hours	~1 hour	~1 hour

- Full cure: 7 days

Limitations:

- Do not apply below +5°C or if relative humidity exceeds 80%
- Do not apply if substrate temperature is below dew point (+3°C margin)
- Protect from condensation, water, and mechanical damage during cure
- Water, even in minimal quantities, may damage the accelerating system and prevent the hardening process – keep tools and mixers absolutely dry
- During application, provide good and sufficient ventilation as the system contains styrene
- Do not apply on substrates with rising moisture
- For dynamic cracks wider than 0.2 mm, design as a movement joint
- The incorrect assessment and treatment of cracks may lead to reduced service life and reflective cracking

HEALTH AND SAFETY

Vinylester resin contains styrene and organic peroxide hardener. May cause skin and eye sensitisation and respiratory irritation. If eye contact occurs, rinse immediately with plenty of water for 15-20 minutes and seek medical attention. For skin contact, wash immediately with soap and water; remove contaminated clothing. If swallowed, do not induce vomiting; rinse mouth and drink water, then seek medical attention. Use gloves (nitrile), safety glasses, and protective clothing during handling. Ensure adequate ventilation – use respiratory protection with organic vapour cartridges if ventilation is poor. Provide good and sufficient ventilation during application. Refer to the Safety Data Sheet for detailed information.

CLEANG OF TOOLS

Clean all brushes, rollers, mixing equipment, and spillages with styrene or acetone immediately after use before material cures. Dried material requires mechanical removal. Keep tools and mixers absolutely dry as water may damage the accelerating system. Dispose of cleaning materials in accordance with local regulations.

APPROVALS AND STANDARDS

ChemFit Asplit VEL complies with the following standards:

- **BGR 132 (German Professional Association Regulation for static electricity)** – Conductive system meets explosion protection requirements for electrostatic discharge
- **DIBt (Deutsches Institut für Bautechnik)** – Satisfies 'Principles of Construction and Inspection for the Protection of Waters' (Bau- und Prüfgrundsätze für den Gewässerschutz) with building inspectorate approval number Z-59.12-69 for concrete
- **EN 1504** – Coating based on vinylester for concrete protection – CE marked with Declaration of Performance (DoP)
- **DIN EN 1081** – Resistance to ground testing for conductive flooring ($\leq 1 \times 10^8 \Omega$, for explosives $\leq 1 \times 10^6 \Omega$)
- **Wastewater Association Guideline** – (ATV-DVWK-M 769) Conformity for concrete bund areas (as part of system approval)
- **ISO 527** – Tensile strength testing (approx. 73 N/mm² horizontally in the layer)
- **ISO 9001** – Quality management system certified
- Vinylester resin based laminate conductive system
- Suitable for chemically stressed environments where high chemical resistance is mandatory

LEGAL NOTES

All technical data provided in this Product Data Sheet is based on laboratory testing under controlled conditions. Actual field performance may vary due to differences in substrates, application methods, site conditions, and environmental factors. ChemFit makes no warranty of merchantability or fitness for a particular purpose. Users shall conduct their own trials to validate product suitability for the intended application. ChemFit reserves the right to modify product specifications without prior notice. For the most current documentation, request the latest Product Data Sheet and Safety Data Sheet from ChemFit.

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