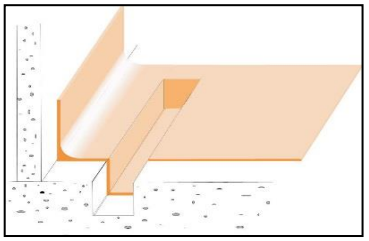
Technical Data Sheet

Surechem VE High Chemical Resistant Floor Topping

DESCRIPTION:
Surechem VE is a highly chemical resistant extremely hard wearing monolithic 6.5 to 9mm thick vinyl-ester resin-based flooring system. Surechem VE resin is blended with specially graded silica quartz aggregates to produce a floor system that is hard and durable, Non-slip, resistant to impact, abrasion, thermal shock and chemicals | food acids, yet is non-porous, seamless, hygienic and easily cleaned. Surechem VE is fully bonded to the concrete to prevent water creep.

TYPICAL FEATURES | BENEFITS:

- Rapid Cure: Full system may be installed within an 8hr period.
- Excellent chemical resistance.
- Surechem VE has been specifically designed to provide excellent all-round chemical resistance at both end of the pH scale i.e. concentrate acid and alkali compounds.
- Chemical resistance and general physical properties can be improved by POST CURE TREATMENT.
- Excellent abrasion resistance (6 times that of basalt concrete).
- Excellent impact resistance:
- Excellent adhesion to properly prepared substrates.
- Easily cleaned. Waterblast resistant.
- Excellent slip resistance. Specification is needed of the degree required
  Note Please read detail within
- Able to be formed into coving, plinths sumps, upstands etc.
- Good resistance to thermal shock. When cured, will perform at all normal in-service temperature ranges. I.e. Operational Freezers to hot & boiling water applications, as well as steam cleaning.
- Will not support bacteria or fungal growth. Contains STERISHIELD to retard microbial growth.
- Cured Film is non-toxic
- Not moisture permeable
- Suitable for use in dry or wet situations including ramps.
- Good weathering resistance. May chalk and exhibit slight discolouration when subjected to prolonged UV exposure. This will, however, not detract from its general durability and chemical resistance



COLOUR OPTIONS:
- Light Grey N35 - Standard option
- Clear option available - refer: allnex for suitability of the Clear option for specific installations.
  - clear option is not suitable for use in areas of high heat gain at time of installation.

ALLNEX SPECIFICATION:
These are specialist systems for specific high chemical resistant requirements and advice should be sought from allnex Construction Products for a specific recommendation for your installation.

PERFORMANCE DATA:

Minimum Thickness	6.5mm
Minimum Application Temperature: Air	+12°C
Maximum Application Relative Humidity: Air	85%
In-service temperatures: on fully cured system	8mm -50 to +100°C
Fire properties: AS/ISO 9239.1-2003:	Non-directional.
Critical Radiant Flux: 6.5Kw/m². 2008	6.5Kw/m². Smoke Value: 379 Kw/m²
Chemical Resistance	Resistant to chemical spillage –cured 7 days at 25^{0}C. .Refer Chemical resistance chart
Electrical properties: surface resistivity	3x108 Ohm
Adhesion to correctly prepared substrate	GB2567-2008. 2.77(KJ/m2). - Concrete failure
Co-efficient of expansion 2.23 x 10^5/C	20°C and 60°C when heated at 1°/minutes.
Compressive Strength 50mm cube	Nom. 90MPa
Flexural strength	38MPa
Flexural modulus	17 GPa
Tensile strength	22MPa
Heat resistant	100°C (Note: temperature resistance is lowered when combined with certain chemicals & temperatures)
Moisture absorption: ASTM D570-63	0.04%
Weight per m² @ 6.5mm thickness @ 8.0mm thickness	13.96 kgs 17.18 kgs
Slip resistance	R10 to R13. (when used with sharp aggregate)

RECOMMENDED USES:

- Food process floors walls, upstands, coves, plinths etc. where a very high degree of all-round chemical resistance is required
- Beverage Processing: Bottling Plants | Breweries |Fruit Juice |Wine etc.
- Chemical storage bunds
- Dairy Factory Floors. CIP areas | Main Process Halls/Rooms | Tanker Bays
- Seafood Processing: Wet Fish | Shellfish | Freezers | Chillers |Cool Stores etc.
- Interior/exterior use.
- Concrete repair and protection – resurfacing damaged or broken concrete with a more physical and chemical resistant surface.
- Suitable for use in dry or wet situations including ramps.
- To provide excellent underfoot slip-resistance in commercial applications.
- Floors, walls, upstands, plinths etc. where a high degree of chemical, mechanical and slip-resistance is of prime importance
- Interior/exterior use.
- Concrete repair and protection – resurfacing damaged or broken concrete with a more physical and chemical resistant surface.
- Can be applied to new or existing sound concrete.
- Sewage & wastewater facilities for liquid protection and gas-phase (Hydrogen Sulphide) protection.

LIMITATIONS:

- Application to uncured concrete (minimum recommended cure 28 days). Application to damp surfaces. (Refer to allnex Bulletin on application options on wet or uncured concrete).
- Application to unstable or defective substrates without approved remedial treatment prior to installation.
- Application below +12C.
- Application to unstable or defective substrates without approved remedial treatment prior to installation.
- Application where fumes may contaminate adjacent foodstuffs (refer to allnex Surecote 500AR for odour free installations). This only applies in the installation stage (up to 3 hrs after laying).
- Application over existing coatings/toppings (refer to allnex) or over concrete cure or release agents without allnex approval or over ceramic tiles without specific written allnex design specification.
- Refer to allnex chemical resistance data.
- Cracking in adjacent walls and concrete substrate will likely telegraph through the Surechem VE.
- Application to damp surfaces or when surface dew point has been reached.
- Maximum moisture content – timber 12%, Concrete 75% RH.
- Whitening/Blooming: Surechem VE surfaces will go white if exposed to water or dew point condensation from walls before it is fully cured. Take great caution that working areas are protected from water or condensation during the curing Period. This may be cleaned off; see cleaning / maintenance doc.
- Application where fumes may contaminate adjacent foodstuffs.
- Always use Surechem VE topcoat. (VE resin surface on its own will be remain tacky).

STORAGE OF MATERIALS:

Store at normal ambient temperatures (neither hot nor cold); never in direct sunlight. (storage in shipping containers will generally result in over heating). (Hot vinyl ester will cure very rapidly). (cold vinyl ester will not cure fully).

MIXING AND SITE CONDITIONS:
Shield mixing area and work site floor areas from direct sunlight and UV.
Directly impacting UV light will rapidly accelerate vinyl ester curing.
Strong winds across the surface during curing may cause shrinkage cracking.

CHEMICAL RESISTANCE CHART: 2009
Test procedure ~ Total immersion
Observation ~ Checked for chemical attack and hardness throughout the testing period
Results ~ Taken after 3 weeks exposure

Test Media	Concentration	Surechem VE		Test Media	Concentration	Surechem VE
ACIDS				**ALKALIS**		
Hydrochloric Acid	37%	U		Potassium Hydroxide	30%	A
Sulphuric Acid	70%	U		Caustic Soda	50%	U
Acetic Acid	70%	M		Sodium Hypochlorite	Refer allnex	Refer allnex
Hydrofluoric Acid	20%	EF may attack aggregate				
Nitric Acid	30%	U		**SOLVENTS**		
Nitric Acid	40%	EF*		Ethanol		M
Citric Acid	SAT SOLN	U		Toluene		A
Lactic Acid	All	U		Acetone		D
Phosphoric Acid	85%	U		Isopropanol		U
Oxalic Acid	SAT	U				
Hydrogen Peroxide	35%	U				
Hydrogen Sulphide	All	U				
PETROCHEMICALS				**DISINFECTANTS & CLEANERS**		
Kerosene		U		Detergent (DET 18)	100%	U
				Bleach (2.5% Sod Hyd Cl)		M
				MEKP – M50		A
OTHERS						
Sugar Syrup	30%	U		**SALT SOLUTION**		
Distilled Water		U		Brine	SAT SOLN	U

LEGEND:

U	Unaffected (i.e. after 3 week exposure the samples have not changed)	M	Marked (Short term exposure, the test media will leave a mark on the sample)
A	Attacked (Short or long term exposure, the mechanical properties will deteriorate)	D	Destroy (Short or long term exposure, damage will occur)
EF	Evaluate Further	*	Staining May Result

Solutions are Aqueous unless otherwise stated

SUBSTRATE: – Preparation
All substrates shall be stable and solid.

******Note******
The ability of new or existing floors to take the loads as a result of the allnex Surechem VE must be checked prior to installing. All control joints junction cracks in the substrate etc. are to be properly treated.

CONCRETE:
Shall have a surface which has been mechanically trowelled to AS3610:1995 U3/NZ/3114:1987U3 finish.
A minimum compressive strength of 25MPa at 28 days cure.
A minimum of 28 days prior to the installation of Surechem VE. The moisture content shall be less than 75% RH. (Refer allnex Bulletin on application options on wet or uncured concrete).

Prepare concrete by mechanical abrasion method to CSP7-8.
Remove all concrete curing agents, contaminants and any other material likely to affect the adhesion of the Surechem VE

****Note****
If the substrate is an above grade slab and waterproofing is required to comply with NZBC E3, then tank the floor and cove upstands with a layer of 450gsm CSM fibreglass. This will provide a seamless waterproofing layer. Ensure the floor is clean, dry and prepared as above.

allnex Construction Products should be consulted when installing allnex Surechem VE on any suspended floor slabs.

PLYWOOD | TIMBER:
Consult allnex for information

COVE TOPS: - http://www.allnexconstruction.com/pdf/Details_resin-floor-toppings.pdf
Install allnex cove upper termination metal strips: **5.2mm or 9.2mm rebated strip**.
Use a rebated wall cut if the coving strip cannot be used.
Install fibreglass CSM cloth in floor wall internal junctions.

STZ PREFILL: (for adding falls, slope modification and floor angles)
STZ prefill system types: see STZ technical literature.
The falls must be specified pre-tender. (Surechem VE is 6.5 - 9mm thick and prefill may involve significant extra materials).
The quantities of materials required to raise the floor height at wall perimeters is often underestimated. To do this may involve significant extra costs and should be discussed and agreed. It is a very common for STZ prefill system to be used under Surechem VE to create falls to drains and other filling applications. Normally for new work falls are laid in the concrete and fall to drains. However, in refurbishment the drains and falls are incorrect. Sometimes new drains are installed. The Prefill create falls of at least 1: 50 to ensure no ponding water. (1:100 will fall but will have standing water in places). See image latter in the document.

QUALITY ASSURANCE:
The allnex Licensed Contractor shall ensure all QA checks have been undertaken prior to the installation process and subsequently during the installation process. The completed documentation must be made available to allnex and the client/clients authorised personnel.
The product is to be installed within the required control range to ensure a fully cured hard wearing monolithic floor topping system.
Information to be recorded daily is:
Concrete sub-base or prefill mix.

- Material batch numbers used.
- Sequence of mixing, ratios and quantities and formula.
- Substrate moisture content & Substrate temperature.
- Ambient temperature | Ambient relative humidity.
- Daily detail of licenced contractors on-site.

MATERIAL PRE-PREPARATION: (Promotion of Surechem VE Resin and Surechem VE Topcoat)
New Pails of Surechem VE resin & Surechem VE topcoat are marked as un-promoted.
allnex supply the VE in pails with open top lids, thus enabling the Cobalt to be mechanically mixed into the resin base.

****Note****
Use a separate catalyst dispenser and mark it for Cobalt use only.
The cobalt can be added up to 12 hours prior to use.
Always add Cobalt first, mix and then add catalyst.

****Never mix Cobalt and catalyst****
Pre-train staff……..The lids are marked as un-promoted – tick or mark once promoted.

****Good Trade Practice****
Mix the cobalt into the resin in a separate operation on the same day as use away from the work area.
Then take the promoted material to the workface for catalyst addition.

****Note****
Check the Cobalt's age and stability by doing a TRIAL prior **to work start.**
Promote at the correct level, then add a 1.5% catalyst to check that the reaction starts.
Even if high catalyst levels are added, un-promoted resins will not cure.
This trial can also be used if confusion occurs about Cobalt addition.
Be well organised and train staff clearly in the promotion and catalysation process - Mistakes are costly.

SURECHEM VE COBALT MIXING RATIO:

Product	Cobalt Addition
Surechem VE Resin	0.3% ~ 60 grams per 20kg
Surechem VE Topcoat	0.3% ~ 30 grams per 10kg

****Note****
Variations on the level added as stated above are permitted with allnex consent in certain environmental conditions. Refer: allnex Construction products for advice.

Be well organised and train staff clearly in the promotion and catalysation process - Mistakes are costly.

CATALYST:
Use allnex Surechem VE Catalyst only. Use 1.5 - 2.0% on resin weight depending on temperature.

RETARDER:
Where extended working time is required allnex VE Retarder may be incorporated in the resin prior to the addition of catalyst. There are Maximum recommended addition rates. Refer: allnex Construction products for advice.

PREPARATION: - Installation
Prime the properly prepared floor areas with minimum one coat of STZ Primer. Coverage rate and number of coats will vary depending on the porosity of the substrate, Maximum coverage 6m²/litre/coat. STZ Primer and STZ Hardener are to be thoroughly mixed in the correct proportions (1-3% on STZ Primer weight).

Wait until STZ Primer has gelled/set before over-coating.

Surechem VE must be applied in such a manner to achieve a minimum 6.5mm thickness. Use screed box, bars or install angle strips as a guide. Accurately weigh and power mix until homogeneous Surechem VE Resin and VE Hardener in the correct proportions:

SURECHEM VE M^2 MIXING RATIO AND COVERAGE @ 8mm:

Surechem VE Resin	2.454kg
Surechem VE Hardener	1.5 -2.5% -on weight of resin
STZ Flooring Sand	14.72kg
Total Weight	17.18 kg/m^2

******Note******
Maximum Surechem VE Resin: Filler (sand) ratio 1:6 parts by weight Resin, Hardener and Sand are to be blended in an efficient mixer to ensure all ingredients are homogenously blended. Higher aggregate rates are used for coving.

Apply Surechem VE flooring to the correctly prepared and sealed substrate using a spreader box and/or a suitable glass, steel trowels, power float etc. Ensure the matrix is well compacted and free of ridges or unevenness. Successive mixes must be homogeneously blended together into wet Surechem VE mixes. Access to repair wet floor areas during installation can be achieved using crampons or special spiked shoes. Adequate lighting is to be provided to ensure defective surface finishing can be easily identified and corrected during the installation process. Lubricate tools and equipment used during the installation with sparing quantities of Styrene Monomer. Use Acetone only to clean tools and equipment.
Ensure all finished edges of the Surechem VE are supported to avoid damage. Surechem VE may be applied to skirtings, coves and upstands if required with the use of Surechem VE Resin and specially formed trowels.
Optional coves and skirtings can be completed as the main floor is installed however they are best installed following installation of the floor. Floors must be protected during cove/skirting installation.

TOPCOAT:
Once finished and hardened apply the Surechem VE Topcoat.
The Topcoat must be applied only to clean and dry surfaces.
Topcoat application rates depend on the Surface Finish Texture. (See Non- Slip Floor Definitions below)

****Note****
Additional topcoats will reduce surface texture and slip resistant properties.

Optional: For greater Chemical resistance use Situclad VE Glass Flake in place of the Surechem VE Topcoat. (Refer: allnex Construction Products for advice)

JOINTS:
All concrete control and construction joints should be carried through the Surechem VE using C81 for movement joints and K130 Epoxy Gold for control joints. Use K130 for larger joints.

THINNING:
Do not thin.
Lubricate tools with styrene monomer (mixer and barrows).

NON-SLIP: - floor definitions:
The contractor shall ensure that the surface finish in all zones is agreed with the client. (Samples to be supplied and agreed prior to installation).

allnex Rating	Description	CF Rating NZ/AS3661.1:1993	Examples Completely homogeneous floor	Topcoat Requirements	
				Number of coats	Spread Rate per litre
NR1	Smooth –steel trowel floated.	0.46	Dry areas e.g. Bakeries	1	6m^2
NR2	Non-slip & Hard-Wearing – glass float.	0.56	Light-Wet areas e.g. Heavy-duty bakery.	1	5m^2
NR3.A	Medium duty non-slip – Glass float finish and the 18/36 non-slip aggregate is broadcast into the wet surface. Apply a Medium Sprinkle with areas of no non-slip. Follow this with roller applied topcoat. This gives a good combination of Non-slip and cleanability.	0.73 R 11	Continually Wet areas with non-slip required. e.g. Light duty Meat, fish. Wet area Bakery.	2 1st Coat 2nd Coat	 4.00m^2 6.00m^2
NR3.B	Heavy duty non-slip – glass float and the 18/36 non-slip aggregate is broadcast into the wet surface. This is a full spread applied heavily. Follow this with roller applied topcoat.	R12	Heavy duty e.g. Butchery, abattoirs Fish Processing	2 1st Coat 2nd Coat	 2.5m^2 4.00m^2
NR4	Very sharp non-slip: glass float and is broadcast with 18/36 mixed 50/50 with Silicon carbide non-slip aggregate into the wet surface. Follow this with roller applied topcoat.	R13	Heavy duty processing with extra slip hazards.	2 1st Coat 2nd Coat	 2.5m^2 4.00m^2
NR5	Specialised very heavy duty nonslip. Refer to allnex for a specification.				

******Note******

1. The aggregates must be broadcast into the wet Surechem VE body coat; not into topcoat.
2. The First Topcoat is Surechem VE Resin: Final Coat is Surechem VE Topcoat Resin
3. Ensure the contractor supplies information on the above non-slip ratings and provides a cured sample showing the surface finish.

PRODUCT PROPERTIES:

Pot Life	25^{0}C -50%RH	10 – 20 minutes*
Hard Dry	25^{0}C	3 hours*
Light Foot Traffic	25^{0}C	5 hours minimum*
Full Use - unrestricted	25^{0}C	> 18 hours*
Recoat	Anytime within 24 hours. After 24 hours: Requires special preparation	
SG kg/litre Resin | Hardener | Aggregate	2.148	
Dangerous Good Class ~ STZ Primer ~ STZ Coving Resin ~ Surechem VE Resin ~ Surechem VE Topcoat ~ Surechem VE Hardener	 Hazard Class 3 | Packing Group III Hazard Class 3 | Packing Group III Hazard Class 3 | Packing Group III Hazard Class 3 | Packing Group III Hazard Class 5.2	
Packaging ~ STZ Primer ~ STZ Coving Resin ~ Surechem VE Resin ~ Surechem VE Topcoat ~ Surechem VE Hardener	 20 kg Open top metal container 20 kg Open top metal container 20 kg Open top metal container 10 kg Open top metal container 5 kg Plastic Bottle	
Shelf life	6 months from date of manufacture (After this period consult with allnex)	

*Excludes the use of Retarder

HEALTH & SAFETY: Refer safety data sheets (SDS).

- Overalls are recommended when using this product. Wear gloves if this suits the user as the material will bond strongly to skin. It has not been found to be dermatitis causing.
- Fumes may be cloying in enclosed areas. The use of fans to provide positive forced air draft and/or extraction is recommended.
- The levels of fumes have been shown to be well below recommended levels. See our data on emissions on our web bulletin board.
- Flammable 3C. Erect "No Smoking" signs. No welding or naked flames permitted during installation. Have fire extinguishers readily available.

MAINTENANCE AND CLEANING:

Resurfacing:

allnex recommend two options:

- Re-aggregating with Traxite VE which a high durability and chemically resistant finish. It offers very good adhesion to the prepared older surface.
- A second option is Surecote 500AR Traxite which is non-odour. (Refer allnex Construction Products for advice)

Repairs:

Can be undertaken with further new Surechem VE applied directly or use Surecote 500AR (no odour option- refer allnex) repair system.

Cleaning:

A Surechem VE floor is cleaned with stiff bristled brushes and detergents. The stiff bristle brushes and commercial detergents will remove dirt from the non-slip surface that a soft mop will not. The waxed nature of our top-coating system may attract dirt during the early life of the product. Pay careful attention to cleaning at this stage. Refer to the Cleaning document on our website.

PRODUCER STATEMENT:

allnex Construction Products state that Surechem VE is compliant with E3 (internal water) and D1 (Access routes / slip resistance wet & dry).

Complies with fire ratings.

DETAILS:

For details see the website: resin floors /industrial toppings / "details- Industrial floors" for more options.

http://www.allnexconstruction.com/pdf/Details_resin-floor-toppings.pdf

FIXING OF PLANT AND MACHINERY:

Mechanical fixings into the floor must be resin fixed. This is to ensure that there is no water migration into the substrate.

Conventional expanding plugs, screws or anchors are not an acceptable fixing method.

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Replaces: Dec 2017

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