Technical Data Sheet

Date Feb 2015
Replaces July 2014
Flooring & protective Finishes

SURECHEM VE - Highly durable Industrial Floor Topping

GENERIC TYPE: A highly chemical resistant vinyl ester resin based aggregate filled topping for durable floor toppings

PROPERTIES /FEATURES:

- Surechem VE is an extremely hard wearing monolithic 6.5 to 9mm thick vinyl ester resin based flooring system.
- Surechem VE has been specifically designed to provide excellent all round chemical resistance at both end of the pH scale i.e. concentrated acid and alkali compounds.
- Exceptional impact, abrasion and wear resistance.
- Excellent adhesion to most substrates (refer Surechem specification).
- Can be used to form coves, plinths and follow complex curves and shapes.
- 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.
- Chemical resistance and general physical properties can be improved by POST CURE TREATMENT.
- Almost any surface finish can be obtained, from a smooth easily cleaned, to a coarse non-skid texture.
- Good resistance to high temperatures and thermal shock.
- Will not support bacteria or fungal growth.
- It is not moisture permeable.
- Minimum application temperature +12°C.
- Colour Light Grey, N35 with a clear option
  Surechem VE Topcoat , Clear with a N35 light grey option

TYPICAL PHYSICAL PROPERTIES OF CURED TOPPING:

Compressive strength (50mm cube):	90MPa
Tensile strength:	22 MPa
Moisture absorption:	0.04%
Flexural strength:	38 MPa
Flexural modulus:	17 GPa
Weight per m² @ 6.5mm thick:	15.0kgs
Temperature resistance:	up to 100°C

(Note: temperature resistance is lowered when combined with certain chemical solutions. Refer to Nuplex Industries for specific advice.)

SUGGESTED USES:

- On Floors, walls, upstands, coves, plinths etc where a very high degree of all round chemical resistance is required.
- Sewage & wastewater facilities for liquid protection and gas-phase (Hydrogen Sulphide) protection.
- Chemical storage bunds.
- Process floors where hygiene is essential.
- Surechem VE topcoat is also used to provide extra durability as a replacement for STZ topcoat in the Sureshield floor topping system.

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NOT RECOMMENDED:

Not recommended

- Application to uncured or green concrete (minimum recommended cure period 28 days).
- Application to unstable substrates.
- Application to damp surfaces or when surface dew point has been reached. Maximum moisture content – timber 12%, Concrete 75% RH.
  Whitening / Blooming: Surechem 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 / maintence doc.

- Application where fumes may contaminate adjacent foodstuffs.
- Application over existing coatings/toppings without approval by Nuplex Industries Ltd.
- Always use Surechem VE topcoat. (VE resin surface on its own will be 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.

Surface preparation: Concrete is to be clean and dry. Heavily shotblast, very coarse grinding or scabbling is required.
Surface profile CSP 7 or 8 is needed.

Material Pre-preparation: (promote & catalyse)
New Pails of Surechem VE resin & Surechem VE topcoat are marked as unpromoted. Nuplex supply the VE in 20 ltr pails with open top lids enabling the Cobalt to be mechanically mixed into the resin base. Buy another 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: - Train staff & mix cobalt and mark all resin in a separate operation on the same day as use. Then take the promoted material to the workface for catalyst addition.**

Surechem VE Resin 0.3%. or 60grams GRAMS COBALT TO ADD PER 20Kg.
Surechem VE Topcoat 0.3%. or 30grams GRAMS COBALT TO ADD PER 10Kg.

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, unpromoted 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 processes. Mistakes are costly.

Mixing Method
Concrete mixer, paddle mixer, Hobart mixer (small quantities only). (Care must be taken to avoid air entrainment.)

APPLICATION:	**Method**
1. STZ Primer:	Catalyse prior to use. Apply with Brush or roller. 4m²/ LT
2. Surechem VE Topping:	Prepare as above ; then Hand trowel using glass & steel floats to form floors, coves, drain sides, etc.
3. Surechem VE Topcoat:	Brush, roller (promote as above). 4m²/ Lt

*****Caution***** System must be topcoated with Surechem VE topcoat for full cure.
Full details of coves, drains, upostands etc are on the Nuplex website at:
http://www.nuplexconstruction.co.nz/pdf/Details_resin-floor-toppings.pdf

COVERAGE RATES:
(6.5mm topping/m²)

Nuplex STZ Primer:	0.25kg/m²
Surechem VE Resin:	2.50kgs
STZ flooring silica Gap Graded Aggregates: (resin : aggregates : 1 : 5.2)	15.0kgs
Surechem VE Topcoat: (level of catalyst dependant on temperature)	0.25kg/m²

Note**:** The above rates are theoretical and do not take into account losses through surface irregularities, mixing and application.

PROMOTER & CATALYST:

See above; variations on the level added as stated above are permitted with Nuplex consent in certain environmental conditions.
NB: Promote both resin and topcoat before use.
Then use Nuplex Surechem VE Catalyst only. Use 1.5 - 2.0% on resin weight depending on temperature.

RETARDER**:** Where extended working time is required Nuplex VE Retarder may be incorporated in the resin prior to the addition of catalyst. There are Maximum recommended addition rates.
THINNING**:** Not recommended. If necessary consult Nuplex Industries Ltd for advice.

CLEAN UP**:** Acetone. Styrene. Lubricate equipment, tools (mixer, barrow, trowels etc) using styrene monomer only.

CURE AND DRY TIMES @ 25°C**:** (Excluding the use of retarder) 1.5% catalyst

Workable pot life:	10-20 minutes
Hard Dry:	3 hours
Light Foot Traffic:	6 hours
Full use (unrestricted):	18 hours
Maximum recoat:	24 hours

(Requires special preparation after this period)

CAUTION**:** Residual fumes may contaminate foodstuffs.

- Provide adequate ventilation during application and cure.
- VE catalyst is highly corrosive. Protect eyes, skin etc.
- Do not mix or store MEKP (catalyst) or promoter together – explosion and/or fire may result.
- Wear suitable protective respirator and clothing when using this product.
- Products are highly flammable.
- Erect "No Smoking" signs.
- No welding or naked flames permitted during installation.
- Have fire extinguishers readily available.
- Refer MSDS on line www.nuplexconstruction.co.nz

SHELF LIFE**:** 12 months in unopened containers.
Maximum useful life 12 months (check suitability with Nuplex Industries before use).

CHEMICAL RESISTANCE @ 25°C (Ambient)

Acetic Acid	70%	NC
Brine	Sat	NC
Citric Acid	Sat Soln	NC
Distilled Water	All	NC
Hydrochloric Acid	37%	NC
Hydrofluoric Acid	20% (may attack silica aggregates)	EF
Hydrogen Peroxide	35%	NC
Hydrogen Sulphide	All	NC
Lactic Acid	All	NC
Nitric Acid	30%	NC
Nitric Acid	40%	EF*
Oxalic Acid	Sat	NC
Phosphoric Acid	85%	NC
Caustic, Sodium Hydroxide	50%	NC
Sodium Hypochlorite	(Refer Nuplex Industries for a specific recommendation)	
Sulphuric Acid	70%	NC

NR Not recommended
NC Not corrosive
EF Evaluate further
* Staining may result

Solutions are Aqueous unless otherwise stated

NOTE:

The table represents a guide only. Variable which may under extreme conditions, influence the chemical or corrosion resistance are:

1. Temperature of chemical concentration.
2. Intermittent or continuous contact.
3. Application under adverse conditions.
4. Risks of evaporation from chemical spillages causing concentration to rise adversely.
5. Good service may be expected where NR or EF is specified if exposure is intermittent or limited to occasional splash spill or fumes. Refer to Nuplex Industries Ltd for specific advice on this, or chemical contamination other than those listed.
6. Chemical resistance and general physical proprietary can be improved by post cure treatment (refer to Nuplex Industries Ltd for specific advice).