Technical Data Sheet

Civilox-11

A two-part epoxy used for priming concrete or steel prior to application of Tufflon or Elaston Polyurea Spray Applied Protective Linings.

DESCRIPTION

Two-part epoxy resin, 93% solids, low viscosity, designed for protecting metal and concrete substrates typically found in wastewater, water and sewage infrastructure against corrosion and chemical attack. Its unique chemistry ensures outstanding resistance to water, making it the primer of choice for use with polyurea topcoats. (Note: 100% solids, solvent-free version available as Civilox-18).

Civilox-11 with its simple mix ratio of 1:1, long pot life and fast 2.5-hour cure make it an industry favourite.

Based on the same phenalkamine chemistry as Civilox-18, both versions offer the same benefits of low viscosity, fast cure, ability to adhere strongly to damp, green concrete and outstanding water resistance.

TYPICAL USES/APPLICATIONS

- Anti-corrosive primer or final protective coating for inside steel & concrete tanks, reservoirs and pipelines with 20+ year design life
- The primer of choice for permanent immersion. It prevents osmosis blisters forming by creating a watertight barrier between the substrate and topcoat
- Applications requiring fast return to service will benefit from this product's two-hour thin-film dry time and good hardness
- Can be used to prime damp and green concrete when project timelines have to be met
- Can be filled with Renderfill (a mix of sand and other fillers) for rendering exposed aggregate. Also can be filled with Patchfill for a fine light patch repair product. Civilox-11 and Renderfill will not stick to steel trowels)
- Ideal for use in extreme climatic conditions of high or low temperatures and high relative humidity
- Is excellent to protect floor from oil (for example workshop flooring)

ADVANTAGES/FEATURES

- Resin to Hardener mix ratio 1:1 by volume (1L Resin: 1L Hardener)
- Outstanding water resistance
- Fast 2+ hour thin-film dry time
- Low mixed viscosity of 240 CPs penetrates concrete and is easy to roll or spray
- Easy to mix with Renderfill or Patchfill for onsite rendering or repairs.
- Zero VOC's - safe for confined spaces
- Bonds strongly with polyurea topcoats
- Adheres to wet and green concrete
- Good adhesion to difficult substrates such as inorganic zinc primer & degreased galvanised steel
- Is excellent to protect floor from oil (for example workshop flooring)
- Superior corrosion protection for steel
- Good chemical resistance
- Continues to chemically cross link at temperatures as low as 0°C
- Clear, blush-free finish, even at low temperatures and high humidity

- No induction time required
- Good flexibility

LIMITATIONS

- Expect some colour change and surface chalking over time for exposed Civilox-11.
- May bubble or crater when applied to concrete that is outgassing from rising temperatures or high moisture content. To minimus this, apply a thin coat first and work it well into the surface, making sure all pores and holes are filled.
- Mixing too much at once will shorten the pot-life. On large areas, pour the mixed product directly onto the concrete and then roll it in.
- Product requires up to 14 days to develop full physical properties and adhesion. Do not try to pull polyurea off Civilox during this development period (this includes adhesion testing)..

TYPICAL LIQUID PROPERTIES		
Property	**Part A**	**Part B**
Appearance	Beige Liquid	Amber Liquid
Viscosity @ 25°C, [CPs]	896	118
Mixed [A+B] Viscosity [CPs]	240	
Specific Gravity @ 25°C	1.17	0.97
Solids Content, [wt %]	100	85
Mixed [A+B] Solids Content [wt%]	93%	
Mix ratio - Parts by volume	1	1

TYPICAL CURED PROPERTIES		
Property	**Test method**	**Results**
Mix Ratio	By volume	1:1
Hardness	Shore D	60
Elongation at 25°C	ASTM D412 06ae2	1-2%
Abrasion resistance	ASTM c501-84, H18 wheel @ 1,000rpm with 1,000g weight	98
Tensile Strength	ASTM D412-92	16.0 MPa
Tear Strength	ASTM 412-92	98N.mm
Solids	A and B mixed	93%
Flash Point	Pensky Martens Closed Cup	>180°C
Theoretical coverage	1L (A and B mixed)	$4m^2$ - $8m^2$
Thin with (A and B mixed)	Xylene with maximum of	10%

PROCESSING EQUIPMENT	
Roll-on application	Paint Roller
Spray equipment / proportioning pump	Graco XM or XP

CURING SCHEDULE	
Pot life (100g @ 25°C)	30 minutes
Tacked dry	5 hours
Hard	7 hours
Full physical properties and full adhesion	7 to 14 days

APPLICATION GUIDELINES

RECOAT PROCEDURES

Depending on the quality and porosity of the concrete, up to three coats of Civilox-11 may be required in order to minimise pin-holing in the subsequent application of polyurea. A minimum of two coats is required for permanent immersion applications in order to seal the concrete against soluble salts and help prevent osmosis blisters forming in the polyurea.

RECOAT TIMES

Recoat over itself and topcoated with Tufflon

Substrate Temp	Minimum Recoat Time (Note 1)	Maximum Recoat Time (Note 2)	Hard Dry
10°C	12 Hrs	12 Days	24 hrs
15°C	10 Hrs	10 Days	14 hrs
25°C	5 Hrs	5 Days	7 hrs
40°C	2 Hrs	2 Days	3.5 hrs

Note 1 - Or when the film has tacked

Note 2 - Where the coating is exposed to direct sun and UV, the maximum recoat time will be considerably reduced. Contact LiquiMix for advice.

MEASURING & MIXING

Always sir part A (beige coloured epoxy resin) in its original container well before use. Mechanically mix (by volume) 1 part of Civilox-11 resin to 1 part of Civilox-11 hardener (1:1). Do not vary from this ratio. More hardener does not speed the cure. It stops the epoxy from curing properly.

There are many ways to measure the A and B components. Graco makes a range of specialised plural component equipment that automatically meters and mixes Civilox. No wastage. No guessing. No mistakes. Request more information from LiquiMix.

APPLICATION

FOR USE AS A CONCRETE SEALER

Mix the two components well and apply with a suitable paint roller or spray using plural spray equipment such as Graco XM or XP. Work the product well into the concrete to seal the open pores.

Other: DO NOT POND Civilox-11

FOR USE AS A RENDER

Civilox-11 can be mixed with Renderfill to create a render to go over concrete.

FOR PATCHING USE

When mixed with Patchfill, Civilox-11 is ideal for patching.

COVERAGE RATES AND DILUTION

Thinning of Civilox-11 is not considered necessary due to its already very low mixed viscosity. However, where deep penetration is required, Civilox thinners may be added to a maximum of 10% of mixed resin and hardener. Often the first coat of Civilox is thinned thereby allowing it to penetrate deep into the substrate. The final coat should always be undiluted.

1. Prepare the concrete surface to a clean, dry, sound finish.
2. Ensure that any laitance or other invisible contaminants have been removed. Be especially careful of concrete surfaces that have been in contact with formply or moulds that may contain release agents. These release agents commonly containing heavy hydrocarbons, waxes or silicones that can adversely affect the adhesion of Civilox.
3. Fill bug holes and rough areas. Remove high spots and protrusions. Render exposed aggregate back to original profile. Radius sharp edges and corners. Cove internal 900 angles

with 450 chamfer.
4. Concrete should be roughened to a profile similar to 80 grit sandpaper. This may be achieved by using diluted hydrochloric acid (rinse off thoroughly) grinding or abrasive blasting.
5. Now follow 'Application Guidelines'.

TIMBER

1. Prepare the timber surfaces to a clean, dry sound finish.
2. Ensure that any surface contamination is removed.
3. Now follow 'Application Guidelines'

STEEL

1. Remove all rust, mill scale, oil and any previously applied coatings back to bare clean steel using abrasive blast. Welds should have slag and spatter fully removed.
2. Light to medium blast cleaning (Sa 1 - AS 1627.9, Sa 2-AS 1627.9) is sufficient for most purposes whereby loose mill scale, loose rust and foreign matter is all removed.
3. For permanent immersion remove any soluble salts on the steel surfaces.
4. Once clean and dust-free follow 'Application Guidelines'.

EQUIPMENT/PRODUCT CLEANUP

Xylene may be used for general cleanup of equipment and hoses. For soaking of contaminated metal parts use SWELL. Keep all gun A side components in soak containers on the left side of the work bench and all B side components on the right side of the work bench. The use of plastic soak containers with clip on lids and removable baskets makes the job easier. Replace the SWELL regularly as soon as it starts turning cloudy and dirty.

STORAGE AND HANDLING

Under normal storage conditions and in properly sealed containers, both the isocyanate and resin have a storage life of 18 months. Protect from frost. If crystallisation occurs, heat the material to 80°C whilst agitating to melt it. On no account should the materials be heated above 80°C. Storage temperatures above 50°C are not recommended since they can accelerate the formation of insoluble solids and also increase the rate of viscosity increase on extended storage. If either component is opened and partially used, it should be purged with nitrogen or desiccated air and resealed.

HEALTH AND SAFETY ADVICE

Do not breathe dust/fume/gas/mist/vapours/spray. Use only outdoors or in a well-ventilated area. Wear protective gloves/clothing/eye protection/face protection. Do not eat, drink or smoke when using this product. Avoid release into the environment. Contaminated work clothing should not be allowed out of the workplace. Take off contaminated clothing and wash before reuse.

Specific treatment (see advice on label and Safety Data Sheet). If on skin: wash with plenty of soap and water. If in eyes: rinse cautiously with water for several minutes. Remove contact lense if present and easy to do so. Continue rinsing. Call a poison center or doctor if you feel unwell. If skin irritation or rash occurs get medical advice/attention. If eye irritation persists get medical advice/attention. If inhaled, remove victim to fresh air and keep at rest in a position comfortable for breathing.
Always collect all spillage. Refer to LiquiMix Safety Data Sheets for individual products.

Important Notice

The information contained herein is offered without charge and is for use by technically qualified personnel at their own risk. All statements, technical information and recommendations contained herein are based on tests and data which we believe to be reliable, but the accuracy or completeness thereof is not guaranteed and no warranty of any kind is made with respect thereto.

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