DE NEEF® HA Flex SLV AF

Next generation, non-phthalate, closed cell, 1-component high performance hydrophobic, Hydro-Active, flexible polyurethane injection grout for waterproofing leaking joints and cracks.

Product Description

In its uncured form, HA Flex SLV AF is a yellow, non-flammable liquid without phthalate plasticisers. HA Flex SLV AF is a next generation 1-component injection resin with improved waterproofing performance. When HA Flex SLV AF comes in contact with water, the grout expands and quickly (depending on temperature and the amount of accelerator HA Flex Cat AF used) cures to a tough, flexible, closed-cell polyurethane foam that is essentially unaffected by corrosive environments.

Product Advantages

- Next generation resin with improved waterproofing performance.
- Improved cell structure of the cured compound resulting in better mechanical properties and durability.
- Non-phthalate resin REACH compliant.
- Improved performance at temperatures below 5°C, no crystallisation of HA Flex Cat AF.
- HA Flex SLV AF forms a flexible gasket or flexible plug in the joint or crack.
- Non-flammable, non-solvent
- Choice of different expansion rates.
- User friendly: 1-component product.
- Controllable reaction times: by using catalyst curing times can be reduced.
- Cured compound is resistant to most organic solvents, mild acids, alkalis and micro organisms. *

(*) For chemical resistances please contact your GCP representative.

Field of Application

- Waterproofing wet and water bearing concrete cracks and joints smaller than 0.5 mm.
- Designed for grouting joints or stopping water leaks in concrete structures, which are subject to settlement and movement.
- Used for protective waterproofing and gap filling around the brush tails of the TBM and for repairing the waterproof gasket.
- For stopping water leaks through joints between tunnel segments.
- For curtain injections behind tunnel segments.
- Injection of LDPE or HDPE membranes in tunnel construction.
- Joint and crack dimensions: HA Flex SLV AF: Cracks < 0.5 mm.

Application

Before commencing the injection, consult the Technical Data Sheets and MSDS to be familiar with the materials at hand.

- Always shake the HA Flex Cat AF well before use.

1. Surface Preparation

- Remove surface contaminants and debris to establish the pattern of the crack or joint. Active leaking cracks above 1 mm need to be sealed with an approved method.
- Drill holes of the correct diameter for the selected packer. Drill at an angle of 45°. Preferably the holes should be drilled staggered around the crack to insure good coverage of the crack in case it is not perpendicular to the concrete surface.
- The depth of the bore should be approximately half of the thickness of the concrete. As a rule of thumb the distance of the drill point from the crack is 1/2 the wall thickness.
- Distance between holes can vary by 15 to 90 cm, depending on the actual situation.
- Insert the correctly sized packer into the hole up to 2/3 of its length. Tighten with a wrench or spanner by turning clockwise until enough tension has been reached to keep the packer in place during injection.
- Check to assure that the crack or joint to be injected is sufficiently wet before injecting HA Flex SLV AF. If this is not the case, pre-inject water until the crack or joint is saturated with water.
- Use of a separate pump for pre-injection with water is strongly recommended due to the water reacting character of HA Flex SLV AF.

2. Resin and Equipment Preparation

- Prepare the resin with the predetermined amount of catalyst. Shake HA Flex Cat AF well before use. No reaction with the resin will occur until the resin comes into contact with water.
- Do not prepare more resin than can be injected within 4 hours after mixing HA Flex Cat AF in the resin. Avoid mixing full drums, it is recommended to batch mix smaller quantities in a separate pail or in the pump reservoir.
- Protect the resin from water, since this will trigger a reaction in the container used and might cause the resin to harden or foam prematurely within the injection equipment.
- It is highly recommended to use separate pumps for the water and the resin injection to prevent cross contamination and blockages.
- The pumps should be thoroughly primed with Washing Agent to lubricate and dry the system before injection. We recommend the use of pneumatic or electric 1-component pumps.

3. Injection

- Start the injection at the first packer.
- Start injecting at the lowest pressure setting of the pump. Slowly increase the pressure until the resin begins to flow. Pressures may vary from 14 bars to 200 bars depending on the size of the crack, the thickness of the concrete and the general condition of the concrete.
- A little leakage of resin through the concrete or crack is useful in showing the extent of resin travel. Large leaks should be plugged with rags, wait for the resin to set, then inject again.
- During the injection water will first flow from the crack, followed by foaming resin. After this, pure resin will flow from the crack.
- Stop pumping when the pure resin reaches the next packer.
- Move to the next packer and repeat the procedure.
- After injecting through a few of the packers, go back to the first one and re-inject the packers with resin.
- After the resin injection, water can be re-injected into the packers to cure the resin.
- Let the resin cure thoroughly before removing packers. The resulting holes can be filled with hydraulic cement.
- When the injection is finished, clean all tools and equipment which have been in contact with the resin with DE NEEF® Washing Agent. This should be done within 30 minutes. Never leave the pump filled with resin overnight or for periods beyond 1 shift. Do not use solvents or other cleaning products since they give fewer positive results and can create hazardous situations.
- Products should be disposed according to local legislation. See MSDS for further recommendations.

4. Reactivity

Temperature	HA Flex Cat AF %	Start reaction	End reaction	Expansion
At 5°C	2 5	Approx. 1’30” Approx. 50”	Approx. 6’30” Approx. 3’25”	Approx. 14V Approx. 16V
At 15°C	2 5	Approx. 1’10” Approx. 35”	Approx. 5’10” Approx. 2’35”	Approx. 16V Approx. 16V
At 25°C	2 5	Approx. 1’00” Approx. 35”	Approx. 4’30” Approx. 2’20”	Approx. 16V Approx. 17V
At 30°C	2 5	Approx. 50” Approx. 30”	Approx. 4”20” Approx. 2’00”	Approx. 16V Approx. 17V
At 35°C	2 5	Approx. 50” Approx. 25”	Approx. 3’35” Approx. 1’45”	Approx. 17V Approx. 18V

Technical Data / Properties

PROPERTY	Unit	VALUE	Standard
HA Flex SLV AF			
Solids	%	100	EN ISO 3251
Viscosity at 25°C (mPas)	mPas	Approx. 200	EN ISO 3219
Density (kg/dm^3)	Kg/dm^3	Approx. 1.075	EN ISO 2811
Flash Point (°C)	°C	132	EN ISO 2719
HA Flex Cat AF			
Viscosity at 25°C (mPas)	mPas	Approx. 15	EN ISO 3219
Density (kg/dm^3)	Kg/dm^3	Approx. 0.950	EN ISO 2811
Flash Point (°C)	°C	105	EN ISO 2719
Cured material			
Density (kg / dm^3)	Kg/dm^3	Approx. 1.00	EN ISO 1183
Tensile Strength (N / mm^2)	mPa	Approx. 1.2	EN ISO 527
Elongation (%)	%	Approx. 100	EN ISO 527

Appearance

HA Flex SLV AF: yellow liquid
HA Flex Cat AF: grey transparent liquid.

Consumption

Must be estimated by the engineer or operator and depends on width and depth of the cracks and voids, which need to be injected and on the expansion rate of the chosen resin.

Packaging

HA Flex SLV AF

5kg or 25kg metal drums

1 Pallet	180 x 5kg drum 24 x 25kg drum

HA Flex Cat AF

0.25 or 1L plastic bottle

1 box	15 x 0.25L
1 box	16 x 1L
1 Pallet	84 boxes with 0.25L bottles 24 boxes with 1L bottles

Storage

HA Flex SLV AF is moisture sensitive and should be stored in original containers in a dry area. Storage temperature must be between 5°C and 30°C. Once the packaging has been opened, the useful life of the material is greatly reduced and should be used as soon as possible.
Shelf life: 2 years.

Accessories

To be ordered separately

- Pumps
- Packers and connectors.
- DE NEEF® Washing Agent

(Please consult the relevant data sheet).

Health and Safety

Users must read and understand the product label and safety data sheet (SDS) for each system component before use. All users should acquaint themselves with this information prior to working with the material. Carefully read detailed precaution statements on the product label and SDSs before use. The most current SDSs can be obtained from the GCP website at gcpat.com or by contacting GCP at +1-703-741-5970.

We hope the information here will be helpful. It is based on data and knowledge considered to be true and accurate, and is offered for consideration, investigation and verification by the user, but we do not warrant the results to be obtained. Please read all statements, recommendations, and suggestions in conjunction with our conditions of sale, which apply to all goods supplied by us. No statement, recommendation, or suggestion is intended for any use that would infringe any patent, copyright, or other third party right.

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gcpat.com.au/solutions/products/de-neef-waterproofing-injection-solutions/de-neef-ha-flex-slv-af