HA Multigel NF

1-component, multi-ratio, hydrophilic, environmentally safe, polyurethane grout which cures into a flexible gel with properties dependent on the mixing ratio with water.

• field of application

- For sealing water leaks through the joints between concrete tunnel segments.
- For curtain injections behind tunnel segments.
- For curtain injections and chemical containment in normal sand and soil in dry or wet conditions.
- Soil stabilisation where a secondary pressure caused by an expanding grout is not allowed.
- Filling of honeycombs below ground water level.
- Waterproofing of porous structures and structures in masonry.
- For sanitary sewer joint sealing, manhole water control and storm sewer sealing.

• advantages

- Different mixing ratio with water will give different gel properties.
- Solvent free.
- Non-flammable.
- V.O.C. compliant, environmentally safe.
- Very high penetrability.
- Fixed reaction times, accelerator available for faster setting times (contact your De Neef representative for more details).
- Reinforcing Agent (latex based) available to enhance the strength of the gel mass.

• description

HA Multigel NF is a single component, multi ratio, low viscosity, high solid content hydrophilic, polyurethane gel. After curing HA Multigel NF forms an inert, flexible gel which forms a flexible gasket and water barrier. HA Multigel NF is pumped with variable ratio pumps. By changing the HA Multigel NF to water ratio from 1/1 to 1/8; the gel strength can be changed.

• application

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

1. Preparation

To improve adhesion of the resin to the surface, the surface needs to be sound, clean and free from dust, debris, grease, oils and laitance.

Mixing ratio influences the gel strength.

HA Multigel NF is water cured. Large quantities of water can however be absorbed into the reaction mass and determine the properties of the cured product.

At a 1:1 ratio HA Multigel: Water a flexible foam with good tear resistance is obtained. In the 1/2 to 1/8 range, a strong gel is obtained.

Foam		Strong Gel			Flaccid Gel	
Recommended range						
1/1	1/2	1/4	1/6	1/8	1/10	1/12

	Mixing Ratio Multigel NF / water		
	1/1	1/5	1/8
°C	Geltime	Geltime	Geltime
5	2'27"	1'55"	2'01"
10	1'47"	1'25"	1'35"
15	1'12"	1'00"	1'15"
20	1'02"	45"	1'03"
25	52"	43"	46"

Important

Add HA Multigel NF Reinforcing Agent only to the water side.

2. Injection

- 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 sufficient tension has been reached to keep the packer in place during 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 bar 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.
- 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 with resin.
- Let the resin cure thoroughly before removing packers. The resulting holes can be filled with a hydraulic cement.
- When the injection is finished, clean all tools and equipment, which have been in contact with the resin with HA Washing Agent ECO. This should be done immediately. Do not use solvents or other cleaning products since they give less positive results and can create hazardous situations.

Products should be disposed off according to local legislation. Refer to Material Safety Data Sheet for general recommendations.

In case of spills and accidents, refer to the Material Safety Data Sheet of the products or when in doubt contact the De Neef Division responsible for your territory.

Always wear appropriate protective gear for the job at hand according to local guidelines and regulations. We recommend that gloves and protective goggles should be worn when handling chemical products. See MSDS for further recommendations.

• technical data/properties

Property	Value	Norm
HA Multigel NF uncured		
Solids	78 %	ASTM D-1010
Viscosity @ 20 °C	200 mPas	ASTM D-1638
Density	1,08 kg / dm^3	ASTM D-1638
Flash point	107 °C	ASTM D-93
HA Flexgel Cat W		
Viscosity @ 20 °C	6 mPas	ASTM D-1638
Flash point	> 177 °C	ASTM D-93
Reinforcing Agent		
Viscosity @ 25 °C	20 - 50 mPas	ASTM D-1638
Flash point	100 °C	ASTM D-93
Cured compound		
Wet tensile strength 1/6 ratio	0.16 - 0.24 N / mm^2 (10 % Reinforcing Agent) 0.20 - 0.35 N/ mm^2 (20 % Reinforcing Agent)	
Gel time at 20 °C / pH 7 / ratio 1/2 to 1/6	50 seconds	Test DNC
Shrinkage at 20 °C and 100 % RH	Non	Test DNC
Compressive strength in soil 1/1 1/6	 2.7 N / mm^2 1.4 N / mm^2	

Remarks

- All raties are given as HA Multigel NF/Water.
- Gel time increases from ratio larger than 1/6. HA Flexgel Cat W catalyst is available to decrease gel time. Please contact your De Neef representative for correct ratios.
- No gelification in strongly acid (pH <3) or highly alkaline (pH >10) environments.
- The cured material is resistant to normal sewer effluents.

• appearance

HA Multigel NF : Yellow liquid.
HA Flexgel Cat W : Pale white liquid.
Reinforcing Agent : Milky white liquid.

• consumption

Has to be estimated by the engineer or operator and depends on width and depth of the cracks and voids, which need to be injected.

• packaging

HA Multigel NF : 25 kg metal drum .
Flexgel Cat W : 2,5 l plastic jerry-can.
Reinforcing Agent : 10 kg plastic pail.
HA Multigel NF : 1 pallet = 24 x 25 kg drums.
HA Flexgel Cat W : 1 box = 5 x 2,5 l jerry-cans.
: 1 pallet = 40 boxes.
Reinforcing Agent : 1 pallet = 72 x 10 kg jerry-cans.

• storage

HA Multigel NF is moisture sensitive.

HA Multigel NF should be stored in a dry and frost free area, free from ground.

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.

• **health & safety**	HA Multigel NF is classified as harmful. Flexgel Cat W is classified as corrosive. All persons in contact with the materials should wear the appropriate protective clothing and gloves. Spills should be washed immediately with abundant quantities of clean water. For full information, consult the relevant Material Safety Data Sheet.

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