

HA Cut

1-component, low viscosity, hydrophobic, aqua-reactive, rigid polyurethane injection grout for cutting off gushing water leaks with a high flow rate and/or high hydrostatic pressure.



• field of application

- Designed for cutting off gushing water leaks with a high flow rate and/or high pressure.
- Used to block water leaks in diaphragm walls.
- Filling large voids such as rock fissures, crushed faults, gravel layers, joints, cracks and honeycombs in concrete structures that are not subject to settlement or movement.
- Injection of LDPE or HDPE membranes in tunnel construction.
- Pre-injections for waterproofing and consolidation in front of the TBM, with drill-and-blast and NATM under wet condition.
- In combination with cement and micro-fine cement for Combi-grouting.
- For Ischebeck anchoring in wet and dry conditions.
- For curtain injection into gravel for containing chemicals under wet or dry conditions.
- For soil stabilisation and anchoring in gravel.
- For screen injection behind porous structures when high velocity water streams are present.

• advantages

- HA Cut forms a rigid gasket with high strength in the joint or crack.
- Non-flammable, solvent free.
- User friendly: 1-component material.
- Controllable reaction times : by using catalyst curing times can be reduced.
- Cured compound is resistant to most organic solvents, mild acids, alkalis and microorganisms.*

• description

In its uncured form, HA Cut is a dark brown, non-flammable liquid. When it comes in contact with water, the grout expands and quickly (depending on temperature and the amount of catalyst HA Cut Cat used) cures to a tough, rigid, closed-cell polyurethane foam that is generally unaffected by corrosive environments.

• application

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

Always shake the catalyst well before use.

1. Surface preparation.

- Remove surface contaminants and debris to establish the pattern of the crack or joint. Active leaking cracks larger than 3 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 sufficient tension has been reached to keep the packer in place during injection.
- Flush the crack with water before injecting with resin. This will flush out dust, debris and prime the crack for the injection resin and improve penetration of the product into the crack. Water in the crack will activate the resin.

2. Resin and equipment preparation.

- Prepare the resin with the predetermined amount of catalyst. Shake HA Cut Cat well before use. No reaction with the resin will occur until the resin comes into contact with water.
- Keep the resin protected 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 Eco to lubricate and dry the system before injection. We recommend the use of pneumatically or electrically driven 1-component pumps equipped with a static mixer.

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 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.
- 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 with resin.
- After the resin injection, water can be reinjected into the ports to cure resin left behind.
- 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 within 30 minutes. 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 are worn when handling chemical products. See MSDS for further recommendations.

4. Reactivity.

Reactivity	HA Cut Cat	Approx. polymerisation time
At 10°C	2%	19'00"
	6%	7'40"
	10%	4'30"
At 20°C	2%	9'50"
	6%	4'05"
	10%	2'24"
At 30°C	2%	6'00"
	6%	2'25"
	10%	1'33"

• technical data/properties

Property	Value	Norm
Uncured		
HA Cut		
Solids	100%	ASTM D-1010
Viscosity at 25°C	< 190 mPas	ASTM D-1638
Density	Approx. 1,12 kg/dm ³	ASTM D-1638
Flash Point	> 185°C	ASTM D-93
HA Cut Cat		
Viscosity at 25 °C	Approx. 15 mPas	ASTM D-1638
Density	1,015-1,025 kg/dm ³	
Flash Point	C.O.C. 160°C	
Cured		
Density confined	Approx. 1 kg/dm ³	ASTM D-3574
Tensile Strength	Approx. 3,1 N/mm ²	ASTM C-190-1963
Compressive Strength (confined)	Approx. 6,3 N/mm ²	
Flexural Strength	Approx. 1,5 N/mm ²	
Bond strength to mortar joints: • Flexural bond strength • Shear bond strength	Approx. 0,7 N/mm ² Approx. 1,8 N/mm ²	
Contact with Potable Water	WRC approved	BS6920

• appearance

HA Cut : Dark brown liquid.
HA Cut Cat : Pink transparent liquid.

• consumption

Has to be estimated by the engineer or operator and depends on the size of the cracks and voids, which need injecting and on the expansion rate of the chosen resin.

• packaging	<p>HA Cut : 200 kg - 25 kg metal drum. HA Cut Cat : 20 kg metal drum - 2,5 l plastic jerry-can</p> <p>1 pallet HA Cut =</p> <ul style="list-style-type: none">• 24 x 25 kg drums• 4 x 200 kg drums <p>HA Cut Cat 1 box : 5 x 2,5 l jerry-cans</p> <p>1 pallet HA Cut Cat =</p> <ul style="list-style-type: none">• 40 boxes• 24 x 20kg drums
• storage	<p>HA Cut 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 the product should be used as soon as possible.</p> <p>Shelf life : 2 years.</p>
• accessories	<p>To be ordered separately:</p> <ul style="list-style-type: none">• IP 1C-100-H hand pump. (Please consult the relevant data sheet).• IP 1C-210-E electrical airless diaphragm pump. (Please consult the relevant data sheet).• Packers and connectors. (Please consult the relevant data sheet).
• health & safety	<p>HA Cut is classified as harmful. HA Cut Cat is classified as corrosive. Always wear protective clothing, gloves and goggles.</p> <p>For full information, consult the relevant Material Safety Data Sheet.</p> <p>(*) For chemical resistances please contact your De Neef representative.</p>