



## HA Cut™ AF

Next generation, phthalate free, closed cell, 1-component, high performance, low viscosity, hydrophobic, hydro-active, rigid polyurethane injection grout for cutting off gushing water leaks with a high flow rate and/or high hydrostatic pressure

### Product Description

In its uncured form, HA Cut™ AF is a dark brown, non-flammable liquid without phthalate plasticisers. HA Cut AF is a next generation 1-component injection resin with improved waterproofing and water cutting performance. When it comes in contact with water, the grout expands and quickly (depending on temperature and the amount of catalyst HA Cut Cat AF used) cures to a tough, rigid, closed-cell polyurethane foam that is generally unaffected by corrosive environments.

### Product Advantages

- ADR free transport
- Next generation resin with improved waterproofing performance
- Improved cell structure of the cured compound resulting in better mechanical properties and durability
- Phthalate free resins, REACH compliant
- Improved performance at temperatures below 5 °C, no crystallisation of HA Cut Cat AF
- Fast, Extra-Fast and Super Extra-Fast catalysts available for applications where the standard catalyst reaction speed is insufficient due to low temperatures or very high water flow. (See respective Technical Data Sheet)
- HA Cut AF 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 micro-organisms (\*)
- KTW Potable Water approved

(\*) For chemical resistances please contact your Grace representative.

### 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 tie-back and screw rod 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.

### Application

Before commencing the injection, consult the Technical Data Sheets and Material Safety Data Sheet (MSDS) in order to be familiar with the materials at hand. Always shake HA Cut 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 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 half 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.
- 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 re-injected into the ports to cure resin left behind.
- 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 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.

## 2. Resin and Equipment Preparation

- Prepare the resin with the predetermined amount of catalyst. Shake HA Cut Cat AF well before use.
- No reaction with the resin will occur until the resin comes into contact with water.
- 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 Eco to lubricate and dry the system before injection. We recommend the use of pneumatic or electric 1-component pumps. 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.

## Appearance

HA Cut AF: Dark brown liquid.

HA Cut Cat AF: Red 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.

## Storage

HA Cut AF is sensitive to moisture 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

## Technical Data / Properties

Property	Value	Norm
<b>HA Cut AF</b>		
<b>Uncured</b>		
Solids	100%	EN ISO 3251
Viscosity at 25°C (mPas)	Approx. 200	EN ISO 3219
Density (kg/dm <sup>3</sup> )	Approx. 1.100	EN ISO 2811
Flash Point (°C)	145	EN ISO 2719
<b>HA Cut Cat AF</b>		
Viscosity at 25°C (mPas)	Approx. 15	EN ISO 3219
Density (kg/dm <sup>3</sup> )	Approx. 0.950	EN ISO 2811
Flash Point (°C)	70°C	
<b>Cured</b>		
Density (kg/dm <sup>3</sup> )	Approx. 1.000	EN ISO 1183
Compressive Strength (MPa)	Approx. 30	EN 12190
Flexural Strength (MPa)	Approx. 16	EN 12190

### 3. Reactivity

Reactivity	% HA Cut Cat AF	Start Reaction	End Reaction	Foam Factor
At 5°C	2	Approx. 2'20"	Approx. 13'20"	Approx. 15V
	3	Approx. 1'40"	Approx. 11'00"	Approx. 21V
	5	Approx. 1'10"	Approx. 5'35"	Approx. 22V
	10	Approx. 45"	Approx. 3'05"	Approx. 25V
At 10°C	2	Approx. 2'00"	Approx. 11'30"	Approx. 19V
	3	Approx. 1'20"	Approx. 9'10"	Approx. 21V
	5	Approx. 55"	Approx. 5'00"	Approx. 24V
	10	Approx. 40"	Approx. 2'50"	Approx. 28V
At 15°C	2	Approx. 1'40"	Approx. 9'40"	Approx. 20V
	3	Approx. 1'10"	Approx. 7'45"	Approx. 22V
	5	Approx. 50"	Approx. 4'45"	Approx. 25V
	10	Approx. 35"	Approx. 2'35"	Approx. 28V
At 20°C	2	Approx. 1'20"	Approx. 8'00"	Approx. 20V
	3	Approx. 1'00"	Approx. 6'30"	Approx. 23V
	5	Approx. 45"	Approx. 4'35"	Approx. 27V
	10	Approx. 30"	Approx. 2'10"	Approx. 29V
At 25°C	2	Approx. 1'10"	Approx. 7'35"	Approx. 21V
	3	Approx. 55"	Approx. 6'10"	Approx. 24V
	5	Approx. 40"	Approx. 4'00"	Approx. 28V
	10	Approx. 30"	Approx. 2'05"	Approx. 30V
At 30°C	2	Approx. 1'00"	Approx. 7'10"	Approx. 22V
	3	Approx. 50"	Approx. 5'35"	Approx. 25V
	5	Approx. 35"	Approx. 3'35"	Approx. 29V
	10	Approx. 25"	Approx. 1'55"	Approx. 30V
At 35°C	2	Approx. 55"	Approx. 5'40"	Approx. 22V
	3	Approx. 45"	Approx. 4'45"	Approx. 25V
	5	Approx. 30"	Approx. 2'55"	Approx. 29V
	10	Approx. 20"	Approx. 1'50"	Approx. 30V

### Accessories

#### To be ordered separately

- IP 1C - Manual hand pump.
- IP 1C - Compact electric airless diaphragm pump.
- IP 1C - Pro electric airless diaphragm pump.
- Packers and connectors.

(Please consult the relevant data sheet).

### Packaging

#### HA Cut AF

5kg, 25kg or 200kg metal drums  
 1 Pallet: 180 x 5kg drum  
                   24 x 25kg drum  
                   4 x 200kg drum

#### HA Cut Cat AF

0.5 or 2.5L plastic bottle or 20kg metal drum  
 1 box = 8 x 0.5L  
 1 box = 5 x 2.5L  
 1 Pallet: 84 boxes with 0.5L bottles  
                   40 boxes with 2.5L bottles  
                   24 x 20kg metal drums

## Health and Safety

HA Cut AF is classified as harmful.

HA Cut Cat AF is classified as irritant.

In case of spills and accidents, refer to the Material Safety Data Sheet of the products or when in doubt contact your local GCP representative.

Always wear protective clothing, gloves and protective goggles when handling chemical products.

For full information, consult the relevant MSDS.

[gcpat.com](http://gcpat.com) | For technical information: [asia.enq@gcpat.com](mailto:asia.enq@gcpat.com)

Australia 1800 855 525 email: [au.sbmsales@gcpat.com](mailto:au.sbmsales@gcpat.com) New Zealand +64 9 448 1146 China Mainland +86 21 3158 2888  
Hong Kong +852 2675 7898 India +91 124 488 5900 Indonesia +62 21 893 4260 Japan +81 3 5226 0231 Korea +82 32 820 0800  
Malaysia +60 3 9074 6133 Philippines +63 49 549 7373 Singapore +65 6265 3033 Thailand +66 2 709 4470 Vietnam +84 8 3710 6168

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