



MAXFIX -V

STYRENE-FREE VINYLESTER RESIN FOR FASTENING OF THREADED RODS AND REBARS IN CONCRETE AND MASONRY

DESCRIPTION

MAXFIX -V is a bicomponent system of styrene-free vinylester resin packed in a cartridge for use by injection means. It can be used on any base material which can be solid or hollow. Application resin is made in a easy and quick way by means a hand gun.

APPLICATION FIELDS

- Fastening of anchor plates, angles and profiles to concrete and masonry.
- Fastening of reinforcing bars (rebars) to concrete.
- Fastening of anchors on ventilating façade.
- Placement of fences and pre-fences
- Fastening of banisters and rails.
- Fastening of installations, lift rails, bathroom fittings, etc.
- Fastening of awnings, lights, street furniture, street lighting, etc.

ADVANTAGES

- Packed resin into injection cartridge for use directly with hand gun.
- Easy and handy application, it does not need premixing.
- Quick job-place for anchored objects.
- Its good thixotropy allows the application on wall and ceiling.
- It is suitable for fastening on common materials used in construction: concrete, stone, masonry, hollow brick, solid brick, wood, etc.
- It does not produce any expansion tensile into base material.
- It allows short distances from edges and anchor spacing.
- Good adherence, even on wet supports.
- A cartridge can be used for many applications.

APPLICATION INSTRUCTIONS

Surface preparation:

Make sure that material on which application is going to be done is sound and also is not deteriorated.

Solid materials

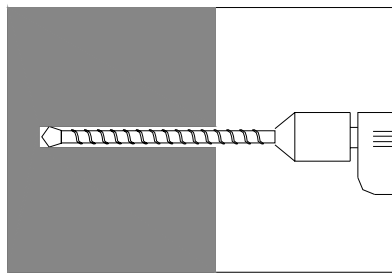
1. Drill a hole into base material with a rotary electric or pneumatic hammer drill. According to the object which is being fastened, the hole should have the suitable diameter and depth (see Table 1).
2. Clean the hole, just before setting the threaded rods/rebars, using brushes and blowing out the dust.
3. Make sure that both bit and threaded rods/rebars are free of any contaminants, oils, greases, dust, etc.

Table 1.Data for fixing in solid materials											
Threaded rods	M8	M10	M12	M16	M20	Rebars	φ10	φ12	φ16	φ20	φ25
Rod size (mm)	8	10	12	16	20	Rebar size (mm)	10	12	16	20	25
Diameter of hole (mm)	10	12	14	18	24	Diameter of hole (mm)	12	16	20	26	32
Standard hole depth (mm)	90	100	115	130	190	Standard hole depth (mm)	180	220	280	360	440
Minimum thickness for base material (mm)	110	120	140	180	230	Minimum thickness for base material (mm)	230	270	330	420	500

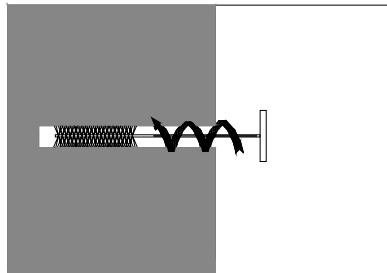
Hollow Materials

1. Drill a hole into base material with a rotary electric or pneumatic hammer drill. According to the object, which is being fastened, the hole should have the suitable diameter and depth (length of the plastic sleeve, see Table 2).
2. Clean the hole, just before setting the threaded rods/rebars, using brushes and blowing out the dust.
3. Make sure that both bit and threaded rods/rebars are free of any contaminants, oils, greases, dust, etc.

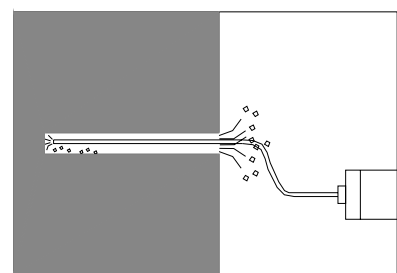
Table 2. Data for fixing in hollow materials			
Threaded rods	M8	M10	M12
Threaded rod size (mm)	8	10	12
Diameter of hole (mm)	16	16	16
Standard hole depth (mm)	90	90	90
Minimum thickness for base material (mm)	120	120	120



1. Drill the hole



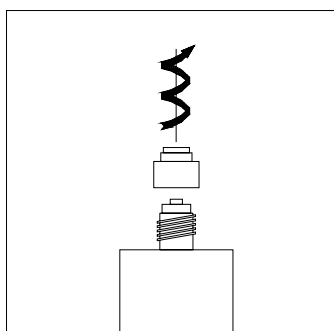
2a. Clean with a brush



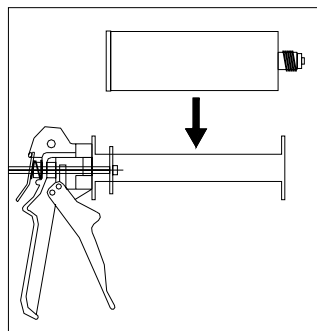
2b. Blow the dust

Procedure for the injection system

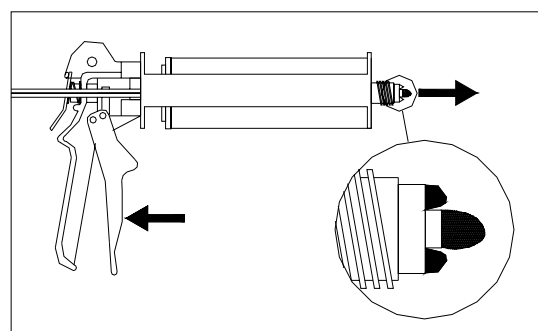
1. Pressing the release lever, pull back the piston of the hand gun
2. Unscrew the protection top and insert the cartridge into the hand gun.
3. Before screwing the mixing nozzle, make sure that both component A and component B are coming out accurately from the cartridge.
4. Screw the mixing nozzle.
5. In order to get a suitable mixing, squeeze out resin until the product becomes uniform in colour (5 cm). A couple of trigger pulls could be necessary.
6. Once all these steps have been done, system is ready for use.
Proceed in the same way for each change in mixing nozzle.



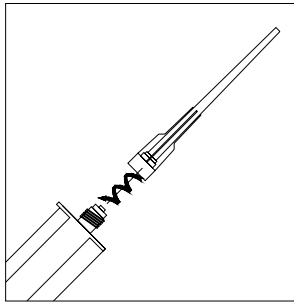
Unscrew the protection top



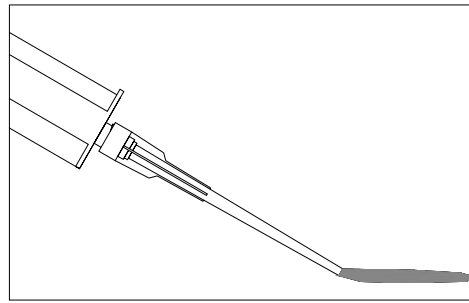
Put cartridge into hand gun



Make sure two components are coming out



Screw the mixing nozzle



Throw away the first trigger pulls

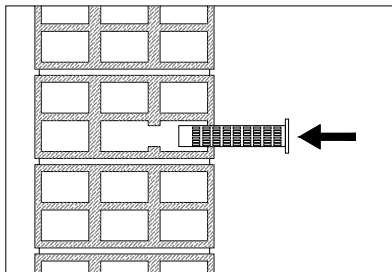
Application

Solid Materials

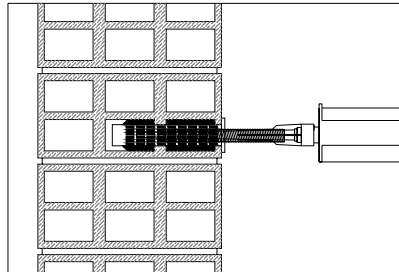
1. a) For solid materials, insert the mixing nozzle into the hole.
b) For hollow materials, insert the plastic sleeve into the hole and then insert the mixing nozzle.
2. Insert the mixing nozzle at the end of the hole. As hole is full of resin the hand gun should be removed.
3. For placing the threaded rods/rebars into the hole, a light twisting motion should be done. Make sure that metal objects are free of grease, rust and dust.
4. Before touching the threaded rods/rebar, wait the curing time.
5. Once resin has cured totally, any object can be placed on the fastening and then a torque tight should be applied.
6. Once the fastenings have been done, remove the mixing nozzle and screw the protection top.

For new applications, a new mixing nozzle must be used.

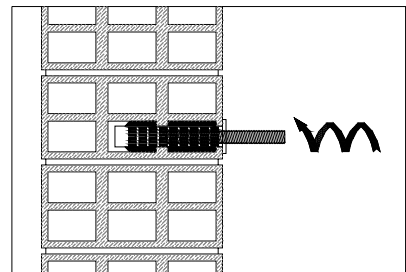
Hollow materials



Placing of plastic sleeve

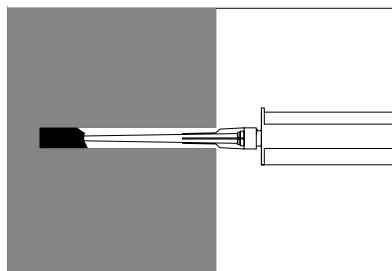


Injection of **MAXFIX -V**

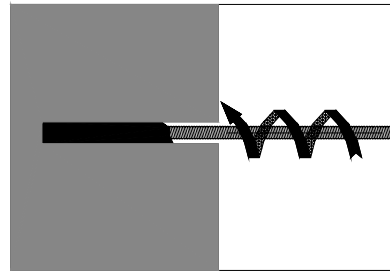


Insertion of rod/rebar

Solid materials



Injection of **MAXFIX -V**



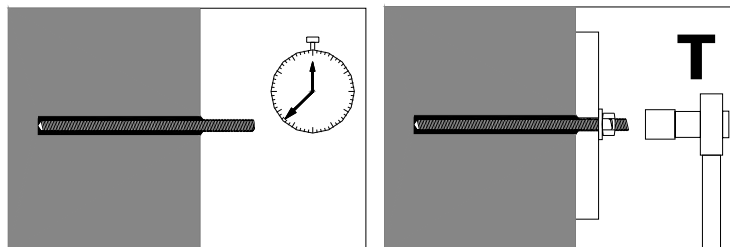
Insertion of the rod/rebar

Application Conditions

During application, the cartridge should be in the temperature range from +5 °C to +30 °C.

Curing

The curing time varies depending on temperature. High temperatures speed up the reaction while low temperatures slow down the reaction. Before applying the torque tight on the fastening the curing time must be observed. The pot life matches with the setting time in which the resin has not still begun to harden. In order to harden completely resin employs the designated final setting time.



Wait the setting time

Apply the torque tight

Support temperature (°C)	Pot life (min)	Setting time (h)
5	25	5 – 6
10	15	4 – 5
20	7	3
25	5	2
30	4	1

Cleaning Tools

Before pot life finishes tools and equipments should clean with a duster. Once **MAXFIX -V** hardens, it can only be removed by mechanical means.

CONSUMPTION

Many fastenings can be done with a **MAXFIX -V** cartridge of 380 ml. The number of fastenings depends on both the metrics and depth (see, Tables 3 and 4).

Tabla 3. Base material: Solid											
Threaded rods	M8	M10	M12	M16	M20	Rebars	φ10	φ12	φ16	φ20	φ25
Rod size (mm)	8	10	12	16	20	Rebar size (mm)	10	12	16	20	25
Diameter of hole (mm)	10	12	14	18	24	Diameter of hole (mm)	12	16	20	26	32
Standard hole depth (mm)	90	100	115	130	190	Standard hole depth (mm)	180	220	280	360	440
Number of fastenings	±65	±42	±30	±16	±6	Number of fastenings	±24	±12	±6	±3	±1,5

Tabla 4. Base material: Hollow			
Threaded rods	M8	M10	M12
Rod size (mm)	8	10	12
Diameter of hole (mm)	16	16	16
Standard hole Depth (mm)	85	85	85
Number of fastenings	20	20	20

IMPORTANT INDICATIONS

- When resin has reacted into the mixing nozzle, a new one must be used for more applications.
- Technical data are from numerous laboratory tests on common materials. If in doubt about material in which fastening is going to be applied, some tests should be done. These tests will indicate if the system is suitable.
- Fastenings can be done on damp surfaces, but running water is not allowed.
- Follow the instructions given herein of the applications. If in doubt or any other further information, consult Technical Department

PACKAGING

Two-component cartridge of 380 ml.

STORAGE

Twelve months in its original unopened packaging. It should be stored in a dry, fresh and covered place, protected from sun light. Temperature range for storage should be from 5 °C to 30 °C.

SAFETY AND HEALTH

Vinylester resin can irritate to skin, so that protective rubber gloves and goggles must be used to handle and apply the resin. In case of skin contact, wash affected areas with soap and water, but do not rub. If irritation continues, seek medical attention. In case of eye contact, rinse thoroughly with clean water for at least 15 min, but do not rub and seek medical attention. In case of inhalation, supply fresh air.

For further information, Safety Data Sheet of *MAXFIX -V* is available.

Disposal of the product and its empty containers must be made according to official regulations. This disposal must be made by the final user.

TECHNICAL DATA

Table 5. Recommended load of the fastening											
Base material: Uncracked concrete C20/25											
Threaded rods-Quality 5.8	M8	M10	M12	M16	M20	Rebars B 500	φ10	φ12	φ16	φ20	φ25
Rod size (mm)	8	10	12	16	20	Rebar size (mm)	10	12	16	20	25
Diameter of hole (mm)	10	12	14	18	24	Diameter of hole (mm)	12	16	20	26	32
Standard hole depth (mm)	90	100	115	130	190	Standard hole depth (mm)	180	220	280	360	440
Recommended load*						Resistencia Recomendada*					
N _{rec} : Tensile (kN)	6,2	7,7	11,1	17,5	26,0	N _{rec} : Tensile (kN)	10,6	15,0	28,8	43,2	65,0
V _{rec} : Shear (kN)	3,5	5,0	7,5	12,5	18,0	V _{rec} : Shear (kN)	6,5	9,4	16,7	26,2	40,9
Base material: Solid brick y masonry						Base material: Hollow brick using plastic sleeve					
Threaded rod Quality 5.8	M8		M10		M12	Reinforced Bars B 500	M8		M10		M12
Rod size (mm)	8		10		12	Rebar size (mm)	8		10		12
Diameter of hole (mm)	10		12		14	Diameter of hole (mm)	16		16		16
Depth (mm)	90		100		115	Standard depth (mm)	85		85		85
Torque (Nm)	7		15		25	Torque (Nm)	5		7,5		10
Recommended Load*						Recommended Load*					
N _{rec} : Tensile (kN)	2,0		2,6		2,8	N _{rec} : Tensile (kN)	0,9		0,9		0,9
V _{rec} : Shear (kN)	3,0		3,4		3,9	V _{rec} : Shear (kN)	2,0		2,0		2,5

* For tensile load and shear load the applied safety coefficients are $\gamma = 4$ and $\gamma = 3$ respectively. In presence of water, loads have to be cut by 20%. Data for a fastening in the centre of a base material without influence factors such as edges and the distance between anchors.

Reduced loads

For anchor design, the reduced load, F_{red} , is equal to the recommended load, F_{rec} , multiplied by the following load correction factors; distance between anchor centres, edge distance, concrete and anchoring depth.

$$F_{red} = F_{rec} * f_a * f_b * f_c * f_d$$

Correction factor of anchor spacing f_a

$$f_a = 0,5 * \frac{S_{red}}{S_{cr}} + 0,5 \leq 1$$

Standard centre spacing (mm): $S_{cr} = 20 * d$

d : Anchor size (mm).

S_{red} : Reduced centre spacing (mm)

Correction factors of distance from an edge f_b

<u>Tensile Loads</u>	<u>Shear Loads</u>
$f_{b,N} = 0,75 * \frac{C_{red}}{C_{cr}} + 0,25 \leq 1$	$f_{b,V} = \frac{C_{red}}{C_{cr}} \leq 1$

Standard edge distance (mm): $C_{cr} = 10 * d$

d : Anchor size (mm).

C_{red} : Reduced edge distance (mm)

Minimum edge distance (mm): $C_{min} = 0,5 * h_{st}$

h_{st} = Anchoring depth (mm)

Correction factor of concrete compressive strength f_c

Strength data for anchors on concrete C20/25. For higher concrete strengths the suitable correction factor must be applied.

Concrete	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/55
f_c	Shear loads	1,00	1,10	1,22	1,34	1,41	1,48
	Tensile loads: rebars	1,00	1,02	1,06	1,09	1,12	1,14
	Tensile loads: rods	1,00	1,05	1,12	1,20	1,25	1,30

Correction factors of anchoring depth f_d

The tensile strength of anchors is directly proportional to anchoring depth. The shear strength does not vary if an anchoring depth, h (mm), longer than standard anchoring depth, h_{st} , is used.

Tensile Loads

$$f_{d,N} = \frac{h}{h_{st}}$$

$$h_{st} \leq h \leq 2h_{st}$$

Shear Loads

$$f_{d,V} = 1$$

GUARANTEE

The information contained in this leaflet is based on our experience and technical knowledge, obtained through laboratory testing and from bibliographic material. DRIZORO reserves the right to introduce changes without prior notice. Any use of this data beyond the purposes expressly specified in the leaflet will not be the Company's responsibility unless authorised by us. We shall not accept responsibility exceeding the value of the purchased product.



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