



Kimisteel INOX X-BAR

ST6-0221

Helical inox steel bars for structural reinforcement



DESCRIPTION

Kimisteel INOX X-BAR is an AISI 304 or AISI 316 stainless steel circular-helical section element used in both new and historical-monumental construction for anchoring systems. To meet different requirements, **Kimisteel INOX X-BAR** is available in different diameters.

The helical bars are tested according to EN 845-1: 2003, EN 10002-1: 2001, EN 846-5: 2000, EN 846-7: 2000.

ADVANTAGES

- Maintaining the elasticity of the structure with absorption of any other shocks; No chance of rust and long-lasting.
- Versatile: The bars can be used in many cases.
- Kimia can customize length bars from a minimum of 0.25m to a maximum of 2m.
- Fast application, they are inserted only using an electric hammer.

USES

- Anchoring on masonry and concrete structure;
- Connection of structural elements;
- Reinforced grouting.

WORKS

- Crack stitching on masonry structures ([SA108](#))
- Improving connection between masonry panels ([SA109](#))

APPLICATION

For "dry" connections in structural and non-structural reinforcement systems, proceed as follows:

- Drill pilote holes with a diameter 2 mm smaller than the bar's diameter (e.g. for bar Ø 10, a hole diameter of 8 mm will be made)*.
- Cut the helical bars respecting the required length and insert by means of a drill with a mandrel for helical bars **Kimisteel SDS DRILL** or manual bar pushers **Kimisteel MANUAL DRILL**.

After installing the Kimisteel SDS Drill on an SDS Plus plug-in drill, install the bar inside the pre-hole, with only percussion until it is completely inserted.

- Seal the hole, once screwed the bar, with proper Kimitech resins or Betonfix, Limepor, Tectoria mortars.

Kimisteel INOX X-BAR Ø6, thanks to its flexibility, can be put inside the joints of masonry walls so as to realize reinforced repointing works of facades.

*In particular situations, facing at very solid and resistant supports like concrete or stone, we suggest to drill the pilot hole with a diameter only 1 mm smaller than the diameter of the bar.

PACKAGING

- AISI 304 steel bars: diameter 6, 8, 10, 12 mm; length max. 2 m.
- AISI 316 stainless steel bars: diameter 6, 8, 10, 12 mm; length max 2 m.

STORAGE

Store indoor in a dry place.

Characteristics	Kimisteel INOX X-BAR			
Steel used	AISI 304 / AISI 316			
Appearance	helical bars			
Length [cm]	25 – 200			
Nominal diameter [mm]	6	8	10	12
Nominal area of the bar [mm ²]	7,4	10	13	27,5
Failure tensile load [KN]	8,60	11	15,1	24,25
Failure tensile stress [N/mm ²]	1165	1101	1164	882
Shear failure load [KN]	5,1	6,1	7,5	12,5

Yield stress [N/mm ²]	957	1013	955	718
Shear resistance [MPa]	685,1	610	576,9	
Final deformation [mm]	2,5	2,9	2,4	2,8
Modulus of elasticity[Gpa]	107	114	>150	>140

Pull-out test*	Tensile load			
Nominal diametre [mm]	6	8	10	12
Brick ≥ 10 Mpa (> 400 kg/m ³) [EN 771-1]	1000 N	1250 N	1500 N	1500 N
Mortar ≥ 27 Mpa [EN 998-1]	1000 N	1250 N	1500 N	1500 N

*Bars installed orthogonally to the support

Pull-out test**	Tensile load			
Nominal diametre [mm]	6	8	10	12
Brick ≥ 20 Mpa (> 400 kg/m ³) [EN 771-1]	2000 N	2350 N	1800 N	1500 N
Tuff blocks ≥ 6 Mpa	1500 N	980 N	1100 N	1000 N

**Bars installed with a 45° angle with respect to the support

WARNING

Product intended for professional use.

The product is an item according to the definitions of Regulation (EC) n. 1907/2006 and therefore does not require a Safety Data Sheet.

The use of protective gloves and goggles is recommended during the use of this product.

In case bars longer than 50 cm have to be inserted, the deformability of the bars may affect the application. It is recommended to use suitable spindle extensions or to put the bars inside hollow pipes so as to avoid bending during the insertion of **Kimisteel INOX X-BAR**.

When using the **Kimisteel SDS DRILL** mandrel, it is advisable to use a hammer drill (combined or pickaxe) with SDS Plus connection, with a minimum of 3 J at least 700W. The marking obligations are not linked to the nature of a product, but rather to the specific use of a certain product. Before proceed with the formal order, the client must submit all the necessary documentation to the Project Manager in order to make officially endorse the use of the product for the specific purpose indicated in the project.

The information and requirements indicated in this Technical Data Sheet are based on our current knowledge and experience and are to be considered, in any case,

purely indicative. They cannot guarantee the final result of the applied product and they have to be confirmed by exhaustive practical applications; therefore the user must test the suitability of the product for the intended application and its purpose. Users must always refer to the latest version of the local technical data sheet related to the product.

TECHNICAL SPECIFICATIONS

SK108 - Crack stitching on masonry structures

SK109 - Improving connection between masonry panels

(SK108) Drill the pilot holes across the crack with adequate inclination with respect to the crack direction (in order to avoid the loosening of the bar) where the masonry is solid and sound. Drill the holes with a depth bigger or equal to the bar length and respecting the numerosness indicated in the project. The holes, with a diameter smaller than the diameter of the bars, will be inclined upwards or downwards following a specific alternate way designed in the project. Install the bar, with the adequate diameter and length, using the especially designed mandrel Kimisteel SDS DRILL by Kimia S.p.A. or a similar product.

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Once the bars are installed, grout the hole with adequate lime-based mortar of Tectoria or Limepor ranges by Kimia S.p.A or similar product or using an epoxy adhesive from Kimitech range by Kimia S.p.A. or a similar product, in order to guarantee a perfect sealing. In presence of pass-through-cracks, proceed sealing the crack with adequate mortar, according to the support nature, and use injectable slurry to consolidate the internal part.

The stainless steel circular-helical bars will guarantee the following characteristics

- Nature of the steel: AISI 304;
- Nominal diameter [mm]: 10;
- Length [cm]: 25 cm – 200 cm;
- nominal section [mm²]: 13;
- Failure tensile load [kN]: 15,1;
- Failure tensile strength [N/mm²]: 1164;
- Failure shear load [kN]: 7,5;
- Tensile stress at yield [N/mm²]: 955;
- Shear resistance of the bar [Mpa]: 576,9;
- Failure elongation [mm]: 2,4;
- elastic modul [Gpa] > 150.

Circular-helical bars tested in accordance with EN 845-1:2003, EN 10002-1:2001, EN 846-5:2000, EN 846-7:2000.