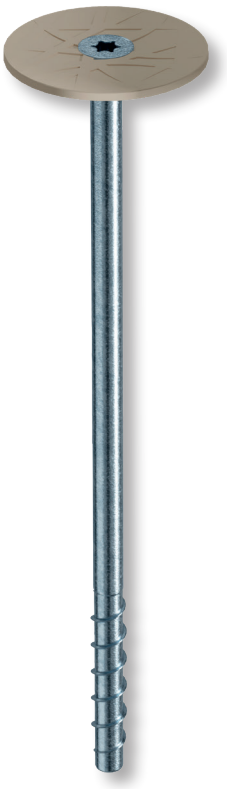
TOGE TIS

Inuslating screw for cold-, heat- and fire-protection



Fire protection

A fixed metal plate under the plastic cap ensures fire protection up to fire resistance class R120.

Variable

Two different embedment depths of 25 mm or 35 mm allow variable load bearing for different panel thicknesses.

Maximum thickness

Screw lengths up to 325 mm enable the fastening of insulating panels up to a thickness of 300 mm.

Adjustable

The screw thread allows adjustment of the insulation panels at any time during or after installation. For an even installation pattern over the entire surface.

Cover Cap

Cover caps with textured structure made of polyethylene in three different colors for a coherent look of the entire surface.

Easy Installation

The patented thread allows quick and easy installation with a standard cordless screwdriver without special tools. The TOGE TIS can be removed just as easily without leaving any residue.

No more reinforcement hits

The low embedment depths of 25 mm and 35 mm allow particularly user-friendly processing completely WITHOUT reinforcement hits.

Fast installation

The small drilling diameter of only 6 mm allows fast, uncomplicated installation.

Approval

Approval

European technical assessment ETA-20/0779.

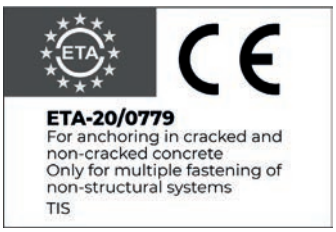
General technical approval Z-21.8.1971.

Base Materials

Approval for concrete strength classes from C20/25 to C50/60.

Cracked and non-cracked concrete.

TIS KORR coated for use in corrosivity categorie C3.



Technical Characteristics

Without fire exposure for multiple fastening TIS according ETA-20/0779

Screw size TIS			6	
Nominal embedment depth	h_{nom}	[mm]	$h_{nom,1}$ [1]	$h_{nom,2}$
			25	**35**
Nominal diameter of drill bit	d_0	[mm]	6	
Depth of drill hole	h_1 min	[mm]	28	38
Effective anchorage depth	h_{ef}	[mm]	19	27
Diameter of clearance hole in the fixture	d_f max	[mm]	8	
Approved tension load in cracked concrete [2) 3)]	N_{zul}	[kN]	0,4	1,0
Approved shear load in cracked concrete [2) 3)]	V_{zul}	[kN]	1,4	2,3
Approved tension load in non-cracked concrete [2) 3)]	N_{zul}	[kN]	1,0	1,9
Approved shear load in non-cracked concrete [2) 3)]	V_{zul}	[kN]	1,9	3,3
Approved bending resistance	M_{zul}	[kN]	6,3	
Minimum edge distance	C_{min}	[mm]	30	
Minimum spacing	S_{min}	[mm]	30	
Minimum thickness of member	h_{min}	[mm]	80	

[1)] Only for use in dry conditions

[2)] The partial safety factor for material resistance from the approval γM=1,5 as well a partial safety factor for load actions γF=1,4 were considered for determining the load.

[3)] These values apply without influence of the spacing and edge distances.

Without fire exposure for multiple fastening TIS according Z-21.8-1971

Screw size TIS			6	
Nominal embedment depth	h_{nom}	[mm]	$h_{nom,1}$	$h_{nom,2}$
			25	**35**
Nominal diameter of drill bit	d_0	[mm]	6	
Depth of drill hole	h_1 min	[mm]	28	38
Diameter of clearance hole in the fixture	d_f max	[mm]	8	
Approved load in all directions in cracked concrete [3) 4)]	F_{zul}	[kN]	0,4	1,0
Minimum edge distance	C_{min}	[mm]	30	
Minimum spacing	S_{min}	[mm]	30	
Minimum thickness of member	h_{min}	[mm]	80	

[3)] These values apply without influence of the spacing and edge distances

[4)] The partial safety factor for load actions γF=1,35 was considered for determining the load.

Technical characteristics

Under fire exposure for multiple fastening TIS according ETA-20/0779

Screw size TIS				6	
Nominal embedment depth		h_{nom}	[mm]	$h_{nom,1}$ [1)]	$h_{nom,2}$
				25	35
Approved load under tensile and shear use ($F_{zul,fi} = N_{zul,fi} = V_{zul,fi}$)					
Fire resistance class					
R 30	Approved load [2)]	$F_{zul,fi\ 30}$	[kN]	0,23	0,27
R 60		$F_{zul,fi\ 60}$	[kN]	0,23	0,27
R 90		$F_{zul,fi\ 90}$	[kN]	0,22	
R 120		$F_{zul,fi\ 120}$	[kN]	0,17	
R 30		$M_{zul,fi\ 30}$	[Nm]	0,22	
R 60		$M_{zul,fi\ 60}$	[Nm]	0,22	
R 90		$M_{zul,fi\ 90}$	[Nm]	0,18	
R 120		$M_{zul,fi\ 120}$	[Nm]	0,14	
Edge distance					
R 30 bis R 120		$C_{cr,fi}$	[mm]	2 x h_{ef}	
The edge distance must be at least 300 mm if the fire load attacks from more than one side.					
Spacing					
R 30 bis R 120		$S_{cr,fi}$	[mm]	4 x h_{ef}	
Concrete pry-out failure					
R 30 bis R 120		k	[-]	1,0	
For wet concrete, the anchoring depth must be increased by at least 30 mm					

[1)] Only for use in dry conditions.

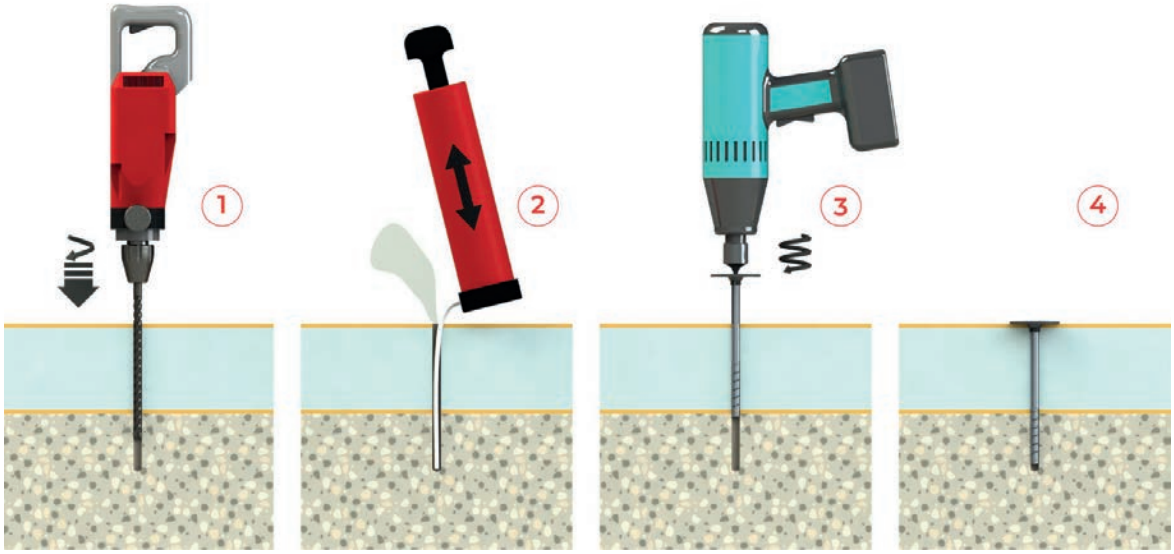
[2)] The partial safety factor for material resistance from the approval γM=1,5 as well a partial safety factor for load actions γF=1,4 were considered for determining the load.

Under fire exposure for multiple fastening TIS according Z-21.8-1971

Screw size TIS				6	
Nominal embedment depth		h_{nom}	[mm]	$h_{nom,1}$	$h_{nom,2}$
				25	35
Approved load under tensile and shear use ($F_{zul,fi} = N_{zul,fi} = V_{zul,fi}$)					
Fire resistance class					
R 30	Approved load [2)]	$F_{zul,fi\ 30}$	[kN]	0,27	
R 60		$F_{zul,fi\ 60}$	[kN]	0,27	
R 90		$F_{zul,fi\ 90}$	[kN]	0,22	
R 120		$F_{zul,fi\ 120}$	[kN]	0,17	
Edge distance					
R 30 bis R 120		$C_{cr,fi}$	[mm]	60	
The edge distance must be at least 300 mm if the fire load attacks from more than one side.					
Spacing					
R 30 bis R 120		$S_{cr,fi}$	[mm]	120	

[2)] The partial safety factor for material resistance from the approval γM=1,5 as well a partial safety factor for load actions γF=1,4 were considered for determining the load.

Installation Instructions



1) Create borehole.

2) Thoroughly clean borehole.

3) Screw in the TOGE TIS with a standard cordless screwdriver – without special tools.

4) The screw head must rest completely on the attachment.