HILTI

PRODUCT TECHNICAL DATASHEET

HIT-CT 100
INJECTION MORTAR

Concrete-to-concrete
Update: Mar-26

HIT-CT 100 injection mortars

Rebar design (EN 1992-1, TR 086 and EN 1998-1) / Rebar elements / Concrete

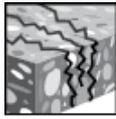| Injection mortar system		Benefits
	Hilti HIT-CT 100	- Makes installation steps faster, simpler, and safer. Automatic borehole cleaning with hollow drill bits and accurate dosing with HDE.
	(330 / 500 ml foil pack)	- Suitable for concrete C12/15 to C50/60.
		- Suitable for dry and water saturated concrete.
		- For rebar diameters up to 25 mm for static design according to EN 1992-1-1.
		- Non-corrosive to rebars.
		- Good load capacity at elevated temperatures.
	Rebar ($\phi 8$ - $\phi 25$)	- Suitable for embedment lengths up to 700 mm.
		- Suitable for applications down to -5 °C concrete temperature.

Application condition

Base material
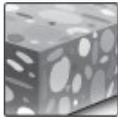
Concrete (uncracked) Concrete (cracked)
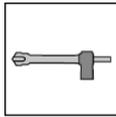
Load conditions

Static/ quasi-static Fire Resistance

Installation conditions

Hammer drilled holes Hollow drill bit drilling Dry Water saturated

Other information

100/120 YEARS
ETA Working life 100/120 years

PROFIS Engineering design Software

Concrete-to-concrete Handbook

Linked Approvals/Certificates

Approval no	Application / loading condition	Authority / Laboratory	Date of issue
ETA-24/0147	Static and quasi-static / Fire 50 / 100 years	CSTB, Paris	28-11-2025
ETA-25/1035	Static and quasi-static / Fire 120 years	CSTB, Paris	28-11-2025

Linked Instructions for use

Material			
Injection mortar	IFU Hilti HIT-CT 100		
Dispenser	IFU HDM	IFU HDE 500-22	IFU HDE 500-A12

Links/QR codes to Hilti Webpage

Injection mortars / Dispenser			
Hilti HIT-CT 100	HDE 500-22	HDE 500-A12	HDM 500

Mechanical properties and dimensions rebar

Mechanical properties and dimensions of the rebars are standardized and can be taken from the ETA

Material quality

Part	Material
Rebar	Bars and de-coiled rods class B or C according to NDP or NCL of EN 1992-1-1

Static and quasi-static loading based on ETA-24/0147 and ETA-25/1035. Design according to EN 1992-1-1 and TR 086.

Note the following for the data in this section:
- According to EN 1992-1-1 for good bond conditions. For all other bond conditions multiply the values by 0,7
- Hammer drilling, Hammer drilling with Hilti hollow drill bit (TE-CD, TE-YD), Compressed air drilling
- Design values of the bond strength for a working life of 50 /100 / 120 years

Design bond strength in N/mm² for good bond conditions for all drilling methods according to mortar IFU.

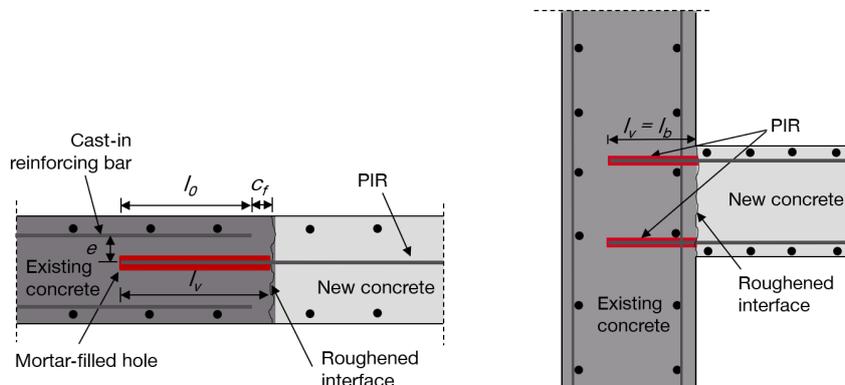| Rebar - size	Concrete class								
	C12/15	C16/20	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/60
[mm]	$f_{bd,PIR}$ [N/mm²]								
$\phi 8 - \phi 25$	1,6	2,0	2,3	2,7	3,0	3,0	3,0	3,0	3,0

Minimum anchorage length and minimum lap length

Post-installed rebar applications as per EN 1992-1-1	Typical examples
Lap splice applications	
End anchorage applications simply supported / compression load-only connections	

The minimum anchorage length $\ell_{b,min}$ and the minimum lap length $\ell_{0,min}$ according for applications designed as per EN 1992-1-1 shall be multiplied by relevant **Amplification factor α_{lb}** in the table below.

Amplification factor α_{lb} for the min. anchorage length and min. lap length for all drilling methods.

Rebar - size	Concrete class								
	C12/15	C16/20	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/60
[mm]	α_{lb} [-]								
$\phi 8 - \phi 25$	1,0			1,2	1,4				

Refer to the table for data on dispensers and corresponding maximum embedment depth $\ell_{v,max}$ due to mortar installation limitations

Anchorage length and lap length for characteristic steel strength f_{yk} = 500 N/mm² for good bond conditions

$l_{b,min}$ Minimum anchorage length for simply supported connections under tension loading assuming $\sigma_{sd} = f_{yd}$

$l_{0,min}$ Minimum anchorage length for overlap splice joint assuming $\sigma_{sd} = f_{yd}$

$l_{bd.y}$ Anchorage length for simply supported connections (design for yielding)

$l_{0,PIR,y}$ Anchorage length for overlap joint (design for yielding)

α_2 Coefficient related to Concrete Cover

For specific design cases refer to PROFIS Engineering

For detailed technical contents, refer to Concrete-to-Concrete connections Handbook

Rebar-size [mm]	Concrete class	Design Resistance (Yielding) [kN]	$l_{b,min}$[1] [mm]	$l_{0,min}$[2] [mm]	$l_{bd,y}$ (α_2=1)[3] [mm]	$l_{bd,y}$ (α_2=0.7)[4] [mm]	$l_{0,PIR,y}$ (α_2=1)[5] [mm]	$l_{0,PIR,y}$ (α_2=0.7)[6] [mm]
φ8	C20/25	21,9	112	200	375	262	562	394
	C30/37 to C50/60		140	280	291	204	436	305
φ10	C20/25	34,1	141	211	469	328	703	492
	C30/37 to C50/60		153	280	364	255	545	382
φ12	C20/25	49,2	169	253	562	394	843	590
	C30/37 to C50/60		183	280	436	305	654	458
φ14	C20/25	66,9	197	295	656	459	984	689
	C30/37 to C50/60		214	321	509	356	763	534
φ16	C20/25	87,4	225	337	750	525	1124	787
	C30/37 to C50/60		244	366	582	407	873	611
φ18	C20/25	110,6	253	380	843	590	1265	886
	C30/37 to C50/60		275	412	654	458	982	687
φ20	C20/25	136,6	281	422	937	656	1406	984
	C30/37 to C50/60		305	458	727	509	1091	763
φ22	C20/25	165,3	309	464	1031	722	1546	1082
	C30/37 to C50/60		336	504	800	560	1200	840
φ24	C20/25	196,7	337	506	1124	787	1687	1181
	C30/37 to C50/60		366	550	873	611	1309	916
φ25	C20/25	213,4	351	527	1171	820	1757	1230
	C30/37 to C50/60		382	573	909	636	1363	954

The highlighted values exceed the maximum length given in ETA-24/0147 and IFU.
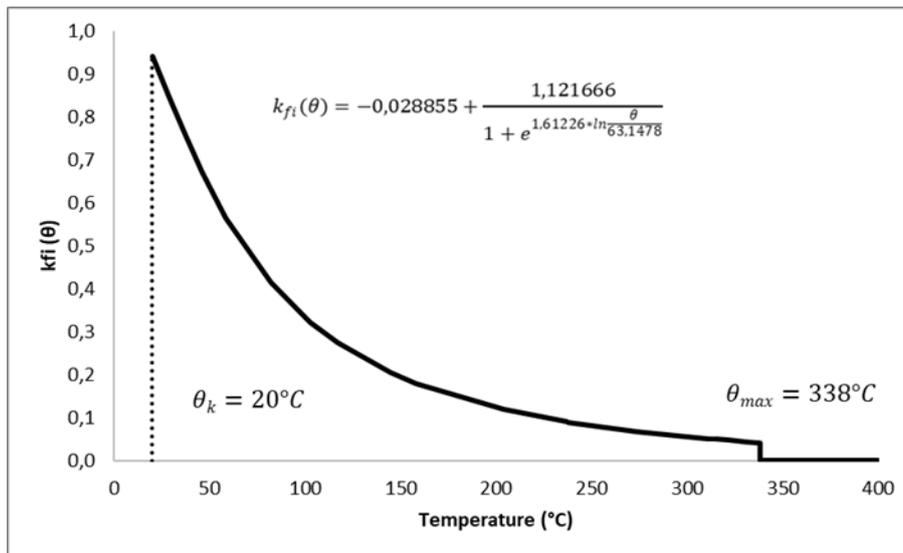
Fire resistance based on ETA-24/0147 and ETA-25/1035. Design according to EN 1992-1-2 and TR 086

For evidence under fire exposure the anchorage length should be calculated according to EN 1992-1 1:2004+AC:2010 Equation 8.3 using the temperature-dependent bond resistance $f_{bd,fi}$. for a working life of 50/ 100/ 120 years

For specific design cases refer to PROFIS Engineering

For detailed technical contents, refer to Concrete-to-Concrete connections Handbook

Temperature reduction factor k_{fi} (θ) for concrete class C20/25 for good bond conditions

$$k_{fi}(\theta) = -0,028855 + \frac{1,121666}{1 + e^{1,61226 * ln\frac{\theta}{63,1478}}}$$

$\theta_k = 20°C$

$\theta_{max} = 338°C$

The design value of the bond strength $f_{bd,fi}$ under fire exposure have to be calculated by the following equation:

$$f_{bd,fi} = k_{b,fi}(\theta) \cdot f_{bd,PIR} \cdot \frac{\gamma_c}{\gamma_{M,fi}}$$

With θ ≤338°C:

$$k_{fi}(\theta) = \frac{f_{bm}(\theta)}{f_{bd,PIR} \cdot 4,3} \leq 1,0$$

Where:

$$f_{bm}(\theta) = -0,28538 + \frac{11,09328}{1 + e^{1,61226 * ln\frac{\theta}{63,1478}}}$$

$\theta > 338°C$

$$k_{fi}(\theta) = 0,0$$

$f_{bd,fi}$	=	Design value of the bond resistance in case of fire in N/mm²
θ	=	Temperature in °C in the mortar layer
$k_{b,fi}(\theta)$	=	Reduction factor under fire exposure
$f_{bd,PIR}$	=	Design value of the bond resistance in N/mm² in cold condition considering the concrete classes, rebar diameter, the drilling method, and the bond conditions according to EN 1992-1-1
γ_c	=	Partial safety factor according to EN 1992-1-1
$\gamma_{M,fi}$	=	Partial safety factor according to EN 1992-1-2

Bond strength $f_{bd,fi}$ in N/mm² for fire design for concrete classes C20/25 to C50/60

Rebar Temperature	50°C	100°C	150°C	200°C	250°C	338°C (θ$_{max}$)
$f_{bd,fi}$ [N/mm²]	2,20	1,15	0,67	0,42	0,28	0,14

Setting information

Installation temperature range
-5°C to +40°C

Service temperature range
Hilti HIT-CT 100 injection mortar may be applied in the temperature ranges given below. An elevated base material temperature may lead to a reduction of the design bond resistance.

Temperature range	Base material temperature	Maximum long-term base material temperature	Maximum short-term base material temperature
Temperature range I	-40 °C to +80 °C	+50 °C	+80 °C

Maximum short term base material temperature
Short-term elevated base material temperatures are those that occur over brief intervals, e.g., as a result of diurnal cycling.

Maximum long term base material temperature
Long-term elevated base material temperatures are roughly constant over significant periods of time.

Curing and working time [a]

Temperature of the base material			Maximum working time	Minimum curing time
T			t_{work}	t_{cure} [a]
-5°C	to	0°C	30 min	6 h
> 0°C	to	5°C	20 min	5 h
> 5°C	to	10°C	15 min	4 h
> 10°C	to	20°C	8 min	4 h
> 20°C	to	30°C	4 min	3,5 h
> 30°C	to	40°C	1,5 min	3 h

a) The curing time data are valid for dry base material only. In wet material the curing times must be doubled.

Dispensers and corresponding maximum embedment depth $\ell_{v,max}$

| Rebar	Dispenser	
	HDM 330, HDM 500	**HDE 500**
	$\ell_{v,max}$ [mm]	$\ell_{v,max}$ [mm]
$\phi8 - \phi16$	700	700
$\phi18 - \phi25$	500	700
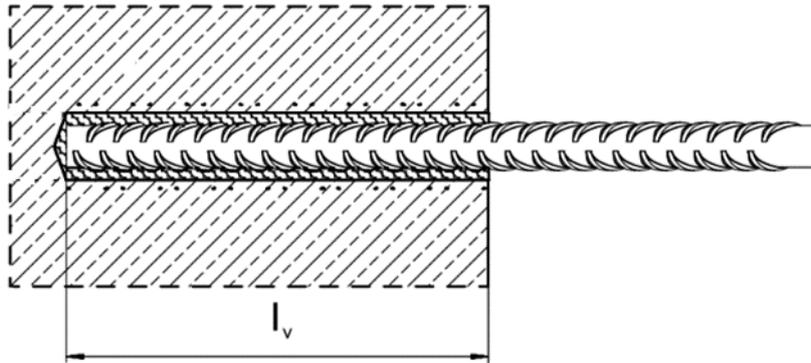
For detailed setting information on installation see instructions for use (IFU) given with the product. Approved installation methods can be found in the specific ETA/Certificate definitions.

Drilling and Installation equipment

Rotary Hammers (Corded and Cordless)		TE 2 - TE 80
Dispenser		HDE HDM
Other tools		Blow out pump, Compressed air gun, Set of cleaning brushes
		Hammer drill bit TE-CX, TE-YX, TE-C, TE-Y
		Hollow drill bit TE-CD, TE-YD
		Piston plug

Minimum concrete cover c_{min} of the post-installed rebar

Drilling method	Bar diameter [mm]	Minimum concrete cover c_{min} [mm]		
		Without drilling aid	With drilling aid	
Hammer drilling **(HD)** and **(HDB)**	$\phi < 25$	$30 + 0{,}06 \cdot l_v \geq 2 \cdot \phi$	$30 + 0{,}02 \cdot l_v \geq 2 \cdot \phi$	
	$\phi = 25$	$40 + 0{,}06 \cdot l_v \geq 2 \cdot \phi$	$40 + 0{,}02 \cdot l_v \geq 2 \cdot \phi$	
Compressed air drilling **(CA)**	$\phi < 25$	$50 + 0{,}08 \cdot l_v$	$50 + 0{,}02 \cdot l_v$	
	$\phi = 25$	$60 + 0{,}08 \cdot l_v \geq 2 \cdot \phi$	$60 + 0{,}02 \cdot l_v \geq 2 \cdot \phi$	
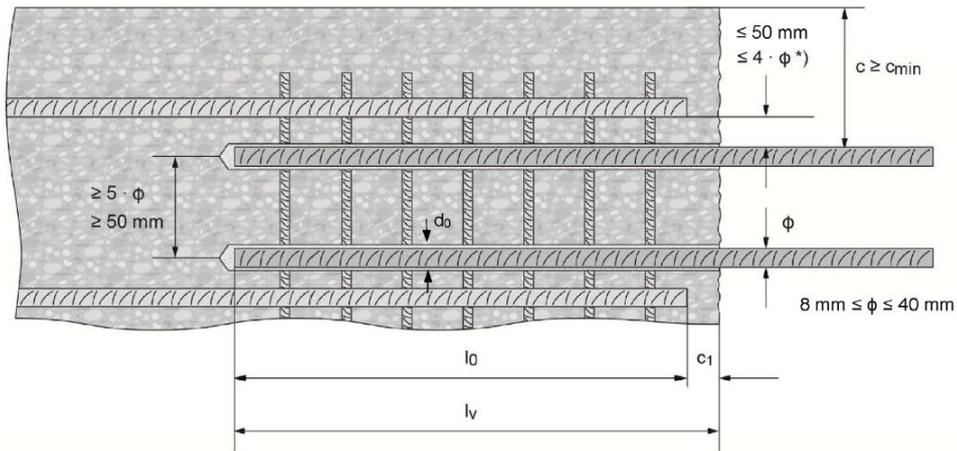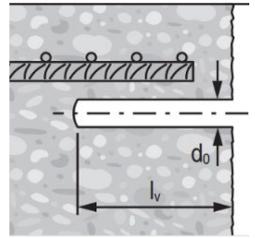
*) If the clear distance between lapped bars exceeds $4 \cdot \phi$ or 50 mm, then the lap length shall be increased by the difference between the clear bar distance and the smaller of $4 \cdot \phi$ or 50 mm.

Where, c is concrete cover of post-installed rebar
$c_1 = c_f$ is the end-cover of existing rebar
d_o is the nominal drill bit diameter
l_0 is the lap length
l_v is the installation length