PRODUCT TECHNICAL DATASHEET

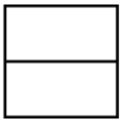
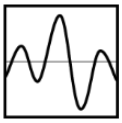
HIT-HY 170 INJECTION MORTAR

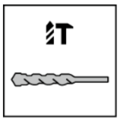
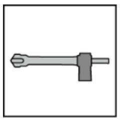
Concrete-to-concrete
Update: Feb-26

HIT-HY 170 injection mortar

Rebar design (EN 1992-1) / Rebar elements / Concrete

Injection mortar system		Benefits
	Hilti HIT-HY 170 330 ml foil pack (also available as 500 ml foil pack)	- Suitable for concrete C12/15 to C50/60 - Suitable for dry and water saturated concrete - High loading capacity and fast cure - High corrosion resistant - For rebar diameters up to 32 mm - Automatic borehole cleaning using Hilti hollow drill bit for hammer drilling and accurate dosing with HDE
	Rebar (ϕ8 - ϕ32)	- Manual cleaning for drill hole sizes ≤ 20 mm and embedment depth h_{ef} ≤ 10d - Suitable for embedment depth up to 1250 mm depending on the rebar diameter

Base material	Load conditions		
 Concrete	 Static/ quasi-static	 Seismic	 Fire resistance

Installation conditions				Other informations	
 Hammer drilled holes	 Hollow drill-bit drilling [1)]	 Dry	 Water saturated	 PROFIS Engineering design Software	 Concrete-to-concrete Handbook

[1)]Hollow Drill Bit (HDB) drilling is only for diameter range 8 mm – 25 mm

Linked Approvals/Certificates and Instructions for use.

Approval no.	Application / Loading condition	Authority / Laboratory	Date of issue
ETA-15/0297	Static and quasi-static / Seismic / Fire	DIBt, Berlin	25-07-2025

The instructions for use can be viewed using the link in the instructions for use table or the QR code/link in the Hilti webpage table

Instructions for use(IFU)

Material			
Injection mortar	IFU HIT-HY 170		
Dispenser	IFU HDM	IFU HDE 500-A12	IFU HDE-500 22

Link to Hilti Webpage

Injection mortars / Dispenser			
Hilti HIT-HY 170	HDE 500-22	HDE 500-A12	HDM 500

Mechanical properties and dimensions rebar
Mechanical properties and dimensions of the rebars can be taken from the ETA.

Material quality

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

Static and quasi-static loading as per ETA 15/0297. Design according to EN 1992-1-1

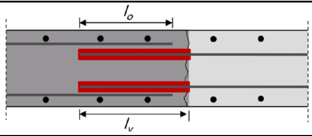
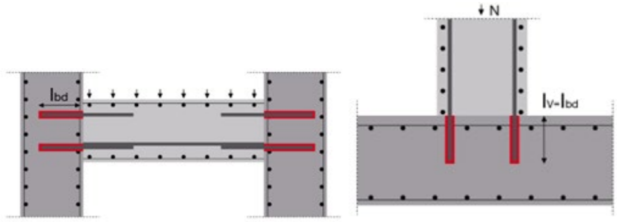
All data in this section applies to:

- 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 Years

Design bond strength in N/mm² for above methods of drilling techniques according to mortar IFU & ETA-15/0297.

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]								
ϕ 8 - ϕ 12	1,6	2,0	2,3	2,7	3,0	3,4	3,7	3,7	3,7
ϕ 14 - ϕ 25	1,6	2,0	2,3	2,7	3,0	3,4	3,4	3,4	3,4
ϕ 26 - ϕ 32	1,6	2,0	2,3	2,7	2,7	2,7	2,7	2,7	2,7

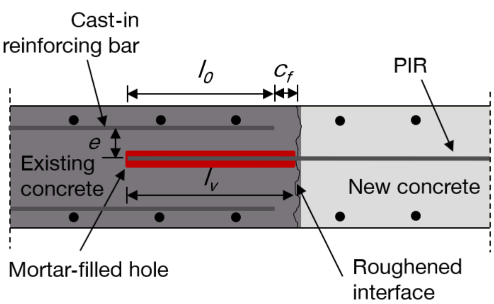
Minimum anchorage length and minimum lap length

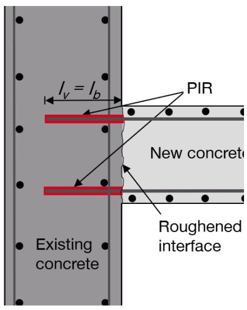
Post-installed rebar applications as per EN 1992-1-1	Typical examples
Lap splice applications	
End anchorage applications – simply supported / compression load-only connections	

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 according to mortar IFU & ETA-15/0297.

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} [-]								
ϕ 8 - ϕ 32	1,0								





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

HILTI

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} Anchorage length for simply supported connections

$l_{0,PIR}$ Anchorage length for overlap joint

α_2 Coefficient of concrete cover

For specific design cases refer to PROFIS Engineering

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

Rebar Size	Concrete Class	Design Resistance	Steel utilization	$l_{b,min}$	$l_{0,min}$	l_{bd} (α_2=1)	l_{bd} (α_2=0.7)	$l_{0,PIR}$ (α_2=1)	$l_{0,PIR}$ (α_2=0.7)
[mm]		[kN]	[%]	[mm]					
8	C20/25	21,9	100	113	200	378	265	567	397
		15,3	70	100	200	265	185	397	278
		10,9	50	100	200	189	132	284	199
	C50/60	21,9	100	100	200	235	165	353	247
		15,3	70	100	200	165	115	247	173
		10,9	50	100	200	118	82	176	123
10	C20/25	34,1	100	142	213	473	331	709	496
		23,9	70	100	200	331	232	496	348
		17,1	50	100	200	236	165	355	248
	C50/60	34,1	100	100	200	294	206	441	309
		23,9	70	100	200	206	144	309	216
		17,1	50	100	200	147	103	220	154
12	C20/25	49,2	100	170	255	567	397	851	596
		34,4	70	120	200	397	278	596	417
		24,6	50	120	200	284	199	426	298
	C50/60	49,2	100	120	200	353	247	529	370
		34,4	70	120	200	247	173	370	259
		24,6	50	120	200	176	123	265	185
14	C20/25	66,9	100	199	298	662	463	993	695
		46,9	70	140	210	463	324	695	487
		33,5	50	140	210	331	232	496	348
	C50/60	66,9	100	140	210	448	313	672	470
		46,9	70	140	210	313	219	470	329
		33,5	50	140	210	224	157	336	235
16	C20/25	87,4	100	227	340	757	530	1135	794
		61,2	70	160	240	530	371	794	556
		43,7	50	160	240	378	265	567	397
	C50/60	87,4	100	160	240	512	358	768	537
		61,2	70	160	240	358	251	537	376
		43,7	50	160	240	256	179	384	269
18	C20/25	110,6	100	255	383	851	596	1277	894
		77,4	70	180	270	596	417	894	626
		55,3	50	180	270	426	298	638	447
	C50/60	110,6	100	180	270	576	403	864	605
		77,4	70	180	270	403	282	605	423
		55,3	50	180	270	288	202	432	302

The highlighted values exceed the maximum length given in ETA-15/0297 and IFU

Rebar Size [mm]	Concrete Class	Design Resistance [kN]	Steel utilization [%]	$l_{b,min}$ [mm]	$l_{0,min}$ [mm]	l_{bd} (a_2=1) [mm]	l_{bd} (a_2=0.7) [mm]	$l_{0,PIR}$ (a_2=1) [mm]	$l_{0,PIR}$ (a_2=0.7) [mm]
20	C20/25	136,6	100	284	426	946	662	1418	993
		95,6	70	200	300	662	463	993	695
		68,3	50	200	300	473	331	709	496
	C50/60	136,6	100	200	300	640	448	960	672
		95,6	70	200	300	448	313	672	470
		68,3	50	200	300	320	224	480	336
22	C20/25	165,3	100	312	468	1040	728	1560	1092
		115,7	70	220	330	728	510	1092	765
		82,6	50	220	330	520	364	780	546
	C50/60	165,3	100	220	330	704	493	1056	739
		115,7	70	220	330	493	345	739	517
		82,6	50	220	330	352	246	528	369
24	C20/25	196,7	100	340	511	1135	794	1702	1192
		137,7	70	240	360	794	556	1192	834
		98,3	50	240	360	567	397	851	596
	C50/60	196,7	100	240	360	768	537	1151	806
		137,7	70	240	360	537	376	806	564
		98,3	50	240	360	384	269	576	403
25	C20/25	213,4	100	355	532	1182	827	1773	1241
		149,4	70	250	375	827	579	1241	869
		106,7	50	250	375	591	414	887	621
	C50/60	213,4	100	250	375	800	560	1199	840
		149,4	70	250	375	560	392	840	588
		106,7	50	250	375	400	280	600	420
26	C20/25	230,8	100	369	553	1229	861	1844	1291
		161,6	70	260	390	861	602	1291	904
		115,4	50	260	390	615	430	922	645
	C50/60	230,8	100	314	471	1047	733	1571	1100
		161,6	70	260	390	733	513	1100	770
		115,4	50	260	390	524	367	785	550
28	C20/25	267,7	100	397	596	1324	927	1986	1390
		187,4	70	280	420	927	649	1390	973
		133,9	50	280	420	662	463	993	695
	C50/60	267,7	100	338	508	1128	789	1692	1184
		187,4	70	280	420	789	553	1184	829
		133,9	50	280	420	564	395	846	592

The highlighted values exceed the maximum length given in ETA-15/0297 and IFU.

Rebar Size [mm]	Concrete Class	Design Resistance [kN]	Steel utilization [%]	$l_{b,min}$ [mm]	$l_{0,min}$ [mm]	l_{bd} (a_2=1) [mm]	l_{bd} (a_2=0.7) [mm]	$l_{0,PIR}$ (a_2=1) [mm]	$l_{0,PIR}$ (a_2=0.7) [mm]
30	C20/25	307,3	100	426	638	1418	993	2128	1489
		215,1	70	300	450	993	695	1489	1043
		153,7	50	300	450	709	496	1064	745
	C50/60	307,3	100	363	544	1208	846	1813	1269
		215,1	70	300	450	846	592	1269	888
		153,7	50	300	450	604	423	906	634
32	C20/25	349,7	100	454	681	1513	1059	2270	1589
		244,8	70	320	480	1059	741	1589	1112
		174,8	50	320	480	757	530	1135	794
	C50/60	349,7	100	387	580	1289	902	1933	1353
		244,8	70	320	480	902	632	1353	947
		174,8	50	320	480	644	451	967	677

The highlighted values exceed the maximum length given in ETA-15/0297 and IFU

Seismic loading based on ETA-15/0297. Seismic design according to EN 1998-1

All data in this section applies to:

- 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 Years

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

For specific design cases refer to PROFIS Engineering

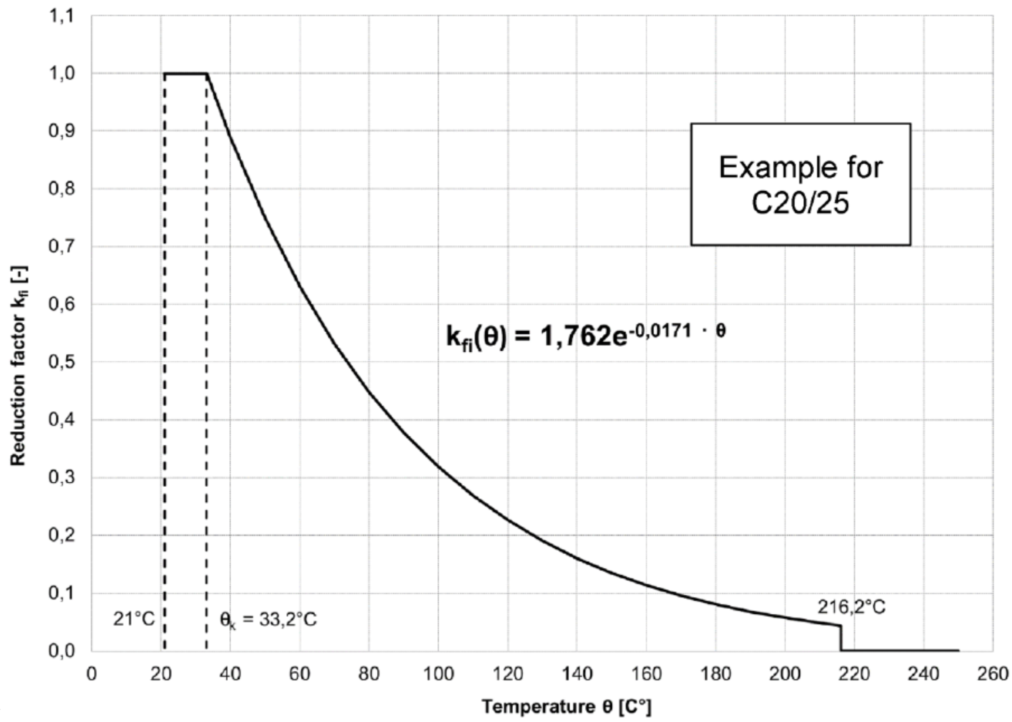
Design bond strength in N/mm^2 for good bond conditions for above methods of drilling techniques according to mortar IFU & ETA-15/0297

Rebar Size	Concrete class							
	C16/20	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/60
[mm]	$f_{bd,PIR,seis}$ [N/mm²]							
ϕ 10	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
ϕ 12 to ϕ 16	2,0	2,3	2,7	2,7	2,7	2,7	2,7	2,7
ϕ 18 to ϕ 30	2,0	2,3	2,3	2,3	2,3	2,3	2,3	2,3
ϕ 32	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0

Fire resistance based on ETA-17/0297 for working life of 50 years

For evidence under fire exposure the anchorage length shall be calculated according to
EN 1992-1- 1:2004+AC:2010 Equation 8.3 using the temperature-dependent bond resistance $f_{bd,fi}$.

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



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 ≤216,2°C:

$$k_{bfi}(\theta) = \frac{1{,}762 \cdot e^{-0{,}0171 \cdot \theta}}{f_{bd,PIR} \cdot 4{,}3} \leq 1{,}0$$

θ>216,2°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 C12/15 to C50/60

<table>
<tr><th>Rebar Temperature</th><th>Concrete class</th><th>50 °C</th><th>100 °C</th><th>150 °C</th><th>200 °C</th><th>216,2°C (θ_{max})</th></tr>
<tr><td rowspan="3">$f_{bd,fi}$ [N/mm²]</td><td>C12/15</td><td>2,40</td><td rowspan="3">1,1</td><td rowspan="3">0,47</td><td rowspan="3">0,20</td><td rowspan="3">0,15</td></tr>
<tr><td>C20/25</td><td rowspan="2">2,61</td></tr>
<tr><td>C50/60</td></tr>
</table>

Setting information

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

Service temperature range
Hilti HIT-HY 170 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.

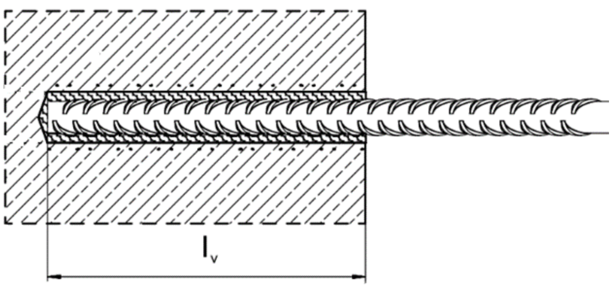
Curing and working time a) b)

Temperature of the base material	Maximum working time	Minimum curing time a)
T	t_{work}	t_{cure}
-5 °C to 0 °C	10 min	12 h
> 0 °C to 5 °C	10 min	5 h
>5 °C to 10 °C	8 min	2,5 h
>10°C to 20 °C	5 min	1,5 h
>20 °C to 30 °C	3 min	45 min
>30 °C to 40 °C	2 min	30 min

a) The curing time data are valid for dry base material only. In wet base material the curing times must be doubled.
b) The minimum temperature of the injection mortar Hilti HIT-HY 170 during installation is + 5 °C

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

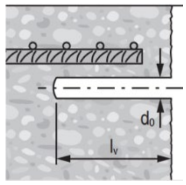
Rebar	Dispenser HDM 330, HDM 500, HDE 500	
	$\ell_{v,max}$ [mm]	
T °C	-5 °C to 40 °C	5 °C to 25 °C
ϕ8 to ϕ16	1000	1250
ϕ18 to ϕ25	700	1000
ϕ26 to ϕ32	600	750



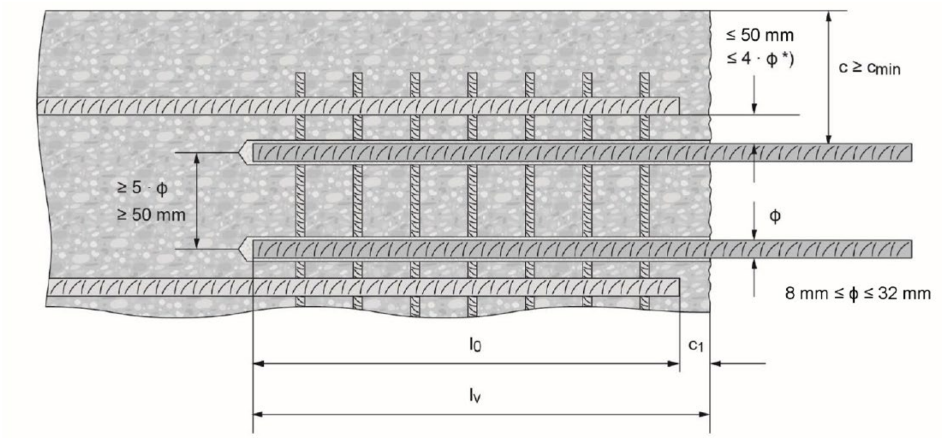
Drilling and Installation equipment
For detailed setting information on installation see instructions for use given with the product.

Rotary Hammers (Corded and Cordless)		TE 2 - TE 70
Dispenser		HDE HDM
Other tools		Blow out pump, Compressed air gun Set of cleaning brushes and other accessories
		Hammer drill bit TE-CX, TE-YX, TE-C, TE-Y
		Hollow drill bit TE-CD, TE-YD
		Piston plug and HIT-VL Extension hose

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)**	$\phi < 25$	$30 + 0{,}06 \cdot l_v \geq 2 \cdot \phi$	$30 + 0{,}02 \cdot l_v \geq 2 \cdot \phi$	
	$\phi \geq 25$	$40 + 0{,}06 \cdot l_v \geq 2 \cdot \phi$	$40 + 0{,}02 \cdot l_v \geq 2 \cdot \phi$	
Compressed air drilling **(CA)**	$\phi < 25$	$50 + 0{,}08 \cdot l_v$	$50 + 0{,}02 \cdot l_v$	
	$\phi \geq 25$	$60 + 0{,}08 \cdot l_v \geq 2 \cdot \phi$	$60 + 0{,}02 \cdot l_v \geq 2 \cdot \phi$	

The minimum concrete cover acc. EN 1992-1-1.
The same minimum concrete covers apply for rebar elementsin the case of seismic loading, i.e. $c_{min,seis} = 2\ \phi$



*) 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: concrete cover of post-installed rebar
c_1: concrete cover at end-face of existing rebar
c_{min}: minimum concrete cover
ϕ: diameter of reinforcement bar
l_0: lap length according to EN 1992-1-1 for static loading and according to EN 1998-1, section 5.6.3 for seismic action
l_v effective embedment depth $\geq l_0 + c_1$
d_0 nominal drill bit diameter, see IFU section for more details