PRODUCT TECHNICAL DATASHEET

HIT-HY 200-A V3
HIT-HY 200-R V3
INJECTION MORTAR

Concrete-to-concrete
Update: Jan-26

HIT-HY 200-A V3 and HIT-HY 200-R V3 injection mortars

Rebar design (EN 1992-1, EOTA TR 069, EN 1998-1) / Rebar elements / Concrete

Injection mortar system		Benefits
	Hilti HIT-HY 200-A V3	- SPEC2.SITE faster, simpler and safer borehole drilling method using either Hilti hollow drill bit for hammer drilling or Roughening tool for diamond coring. - HY 200-R V3 version is formulated for best handling and cure time specifically for rebar applications.
	Hilti HIT-HY 200-R V3 (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 40 mm for static design according to EN 1992-1-1. - Non-corrosive to rebars. - Good load capacity at elevated temperatures. - Suitable for embedment lengths up to 1000 mm, and for HIT-HY 200-R V3 suitable up to 1300 mm for ϕ34 - ϕ40.
	Rebar (ϕ8 - ϕ40)	- Suitable for applications down to -10 °C concrete temperature. - Higher bond-splitting performance (EOTA TR 069) makes more optimized embedment depths. - Fire loading requirements up to 240 min as per EOTA TR 069

Application condition

Base material

- Concrete (uncracked)
- Concrete (cracked)

Load conditions

- Static/ quasi-static
- Seismic
- Fire resistance

Installation conditions

- Hammer drilling
- Hollow drill bit drilling
- Diamond cored with roughening
- Dry
- Water saturated

Other information

- ETA Working life 100/120 years
- PROFIS Engineering design Software
- Concrete-to-concrete Handbook

Linked Approvals/Certificates and Instructions for use.

Approvals/certificates

Approval no	Application / Loading condition	Working life / Design method	Authority / Laboratory	Date of issue
ETA-19/0600	Static and quasi-static / Seismic / Fire	50 and/or 100 years Eurocode	DIBt, Berlin	15-07-2025
ETA-19/0665	Static and quasi-static	50 and/or 100 years EOTA TR 069	iTAB, Milan	07-10-2025
ETA-25/0534	Static and quasi-static / Seismic / Fire	120 years Eurocode	DIBt, Berlin	29-07-2025
ETA-25/0408	Fire	50 and/or 100 years EOTA TR 069	CSTB, Marne la Vallée	22-08-2025

Instructions for use(IFU)

Material			
Injection mortar	IFU Hilti HIT-HY 200 A V3		IFU Hilti HIT-HY 200-R V3
Dispenser	IFU HDM	IFU HDE 500-22	IFU HDE 500-A12

Link to Hilti Webpage

Injection mortars / Dispenser				
HIT-HY 200-A V3	HIT-HY 200-R V3	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 EN 1992-1-1:2004	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-19/0600 / ETA-25/0534. Design according to EN 1992-1-1

All data in this section applies to:

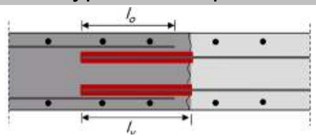
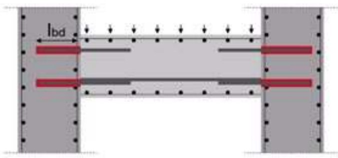
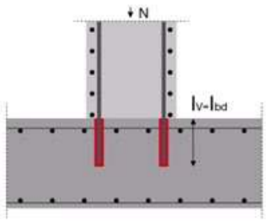
- According to EN 1992-1-1 for good bond conditions. For all other bond conditions multiply the values by 0,7
- Hammer drilling, Hammer drilling with Hilti hollow drill bit(TE-CD, TE-YD), Compressed air drilling,
- Diamond coring with roughening with Hilti Roughening tool TE-YRT
- The data for rebar ϕ34 - ϕ40 is only suitable with HIT-HY 200-R V3; it is not valid for HIT-HY 200-A V3 due to the shorter working time
- Design values of the bond strength for a working life of 50 /100 / 120 years.

For specific design cases refer to PROFIS Engineering

Design bond strength in N/mm² for above methods of drilling techniques according to mortar IFU & ETA -19/0600, ETA-25/0534

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]								
ϕ8 - ϕ32	1,6	2,0	2,3	2,7	3,0	3,4	3,7	4,0	4,3
ϕ34	1,6	2,0	2,3	2,7	2,9	3,3	3,6	3,9	4,2
ϕ36	1,6	1,9	2,2	2,6	2,9	3,3	3,6	3,8	3,8
ϕ40	1,5	1,8	2,1	2,5	2,8	3,1	3,4	3,4	3,4

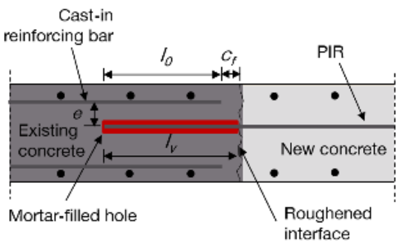
Minimum anchorage length and minimum lap length

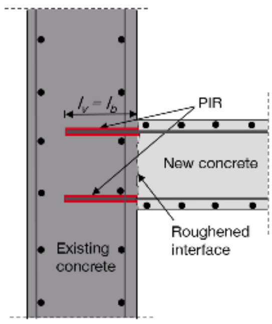
Post-installed rebar applications as per EN 1992-1-1	Typical examples
Lap splice applications	
End anchorage applications – simply supported / compression load-only connections	 

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

Amplification factor α_{lb} for the min. anchorage length and min. lap length according to mortar IFU & ETA -19/0600.

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} [-]								
ϕ8 - ϕ40	1,0								





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]	$l_{b,min}$ [mm]	$l_{0,min}$ [mm]	$l_{bd,y}$ (α_2=1) [mm]	$l_{bd,y}$ (α_2=0,7) [mm]	$l_{0,PIR,y}$ (α_2=1) [mm]	$l_{0,PIR,y}$ (α_2=0,7) [mm]
ϕ8	C20/25	21,9	113	200	378	265	567	398
	C50/60		100	200	202	142	303	213
ϕ10	C20/25	34,1	142	213	473	331	710	497
	C50/60		100	200	253	177	380	266
ϕ12	C20/25	49,2	170	255	567	397	851	596
	C50/60		120	200	303	212	455	318
ϕ13	C20/25	57,2	184	277	615	430	922	645
	C50/60		130	200	329	230	493	345
ϕ14	C20/25	66,9	198	298	662	463	993	695
	C50/60		140	210	354	248	531	372
ϕ16	C20/25	87,4	227	340	756	529	1134	794
	C50/60		160	240	404	283	606	425
ϕ18	C20/25	110,6	255	383	851	595	1277	893
	C50/60		180	270	455	319	683	479
ϕ19	C20/25	123,3	270	404	898	629	1348	943
	C50/60		190	285	481	336	721	505
ϕ20	C20/25	136,6	284	426	945	662	1418	993
	C50/60		200	300	506	354	759	531
ϕ22	C20/25	165,3	312	468	1040	728	1560	1092
	C50/60		220	330	556	389	834	584
ϕ24	C20/25	196,7	340	511	1134	794	1701	1191
	C50/60		240	360	607	425	911	638
ϕ25	C20/25	213,4	354	532	1181	827	1772	1241
	C50/60		250	375	632	442	948	663
ϕ26	C20/25	230,8	369	553	1229	860	1844	1290
	C50/60		260	390	657	460	986	690
ϕ28	C20/25	267,7	397	596	1323	926	1985	1389
	C50/60		280	420	708	495	1062	743
ϕ29	C20/25	287,2	411	617	1371	960	2057	1440
	C50/60		290	435	733	513	1100	770
ϕ30	C20/25	307,3	425	638	1418	992	2127	1488
	C50/60		300	450	758	531	1137	797
ϕ32	C20/25	349,7	454	681	1512	1059	2268	1589
	C50/60		320	480	809	566	1214	849
ϕ34	C20/25	394,7	482	723	1607	1125	2411	1688
	C50/60		340	510	880	616	1320	924

Rebar-size [mm]	Concrete class	Design Resistance (Yielding) [kN]	$l_{b,min}$ [mm]	$l_{0,min}$ [mm]	$l_{bd,y}$ (α_2=1) [mm]	$l_{bd,y}$ (α_2=0,7) [mm]	$l_{0,PIR,y}$ (α_2=1) [mm]	$l_{0,PIR,y}$ (α_2=0,7) [mm]
ϕ36	C20/25	442,6	534	801	1779	1245	2669	1868
	C50/60		360	540	1030	721	1545	1082
ϕ40	C20/25	546,4	621	932	2070	1449	3105	2174
	C50/60		400	600	1279	895	1919	1343

The highlighted values exceed the maximum length given in ETA-19/0600 and IFU.

Seismic loading based on ETA-19/0600 and ETA-25/0534. 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,
- Diamond coring with roughening with Hilti Roughening tool TE-YRT
- The data for rebar ϕ34 - ϕ40 is only suitable with HIT-HY 200-R V3; it is not valid for HIT-HY 200-A V3 due to the shorter working time
- Design values of the bond strength 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

Seismic reduction factor $k_{b,seis}$ for above methods of drilling techniques according to mortar IFU & ETA-19/0600

Rebar - size	Reduction factor $k_{b,seis}$							
	Concrete class							
	C16/20	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/60
ϕ10 - ϕ19	1,0				0,90	0,82	0,76	0,71
ϕ20 - ϕ30	1,0						0,92	0,86
ϕ32	1,0							
ϕ34	1,0				0,90	0,83	0,76	0,71
ϕ36	1,0				0,90	0,82	0,76	0,71
ϕ40	1,0			0,91	0,80	0,73	0,67	0,63

Design bond strength in N/mm² for above methods of drilling techniques according to mortar IFU & ETA-19/0600

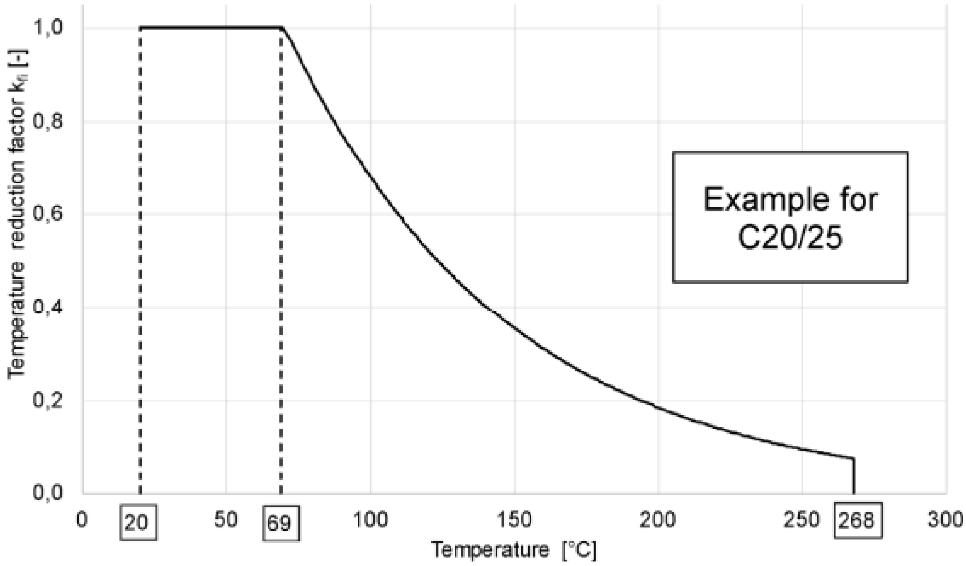
Rebar - size	Bond resistance $f_{bd,seis}$							
	Concrete class							
	C16/20	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/60
ϕ10 - ϕ19	2,0	2,3	2,7	3,0				
ϕ20 - ϕ30	2,0	2,3	2,7	3,0	3,4	3,7		
ϕ32	2,0	2,3	2,7	3,0	3,4	3,7	4,0	4,3
ϕ34	2,0	2,3	2,7	2,9	3,0			
ϕ36	1,9	2,2	2,6	2,9				
ϕ40	1,8	2,1	2,5					

Fire resistance based on ETA-19/0600 / ETA-25/0534. Design according to EN 1992-1-2

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 $f_{bd,fi.}$ and design working life of 50 /100 / 120 years

For specific design cases refer to PROFIS Engineering

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:

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

With θ ≤ 268°C: $k_{fi}(\theta) = 24{,}661 \cdot \frac{e^{(-0{,}013 \cdot \theta)}}{f_{bd,PIR} \cdot 4{,}3} \leq 1{,}0$

$\theta > 268°C$ $k_{fi}(\theta) = 0{,}0$

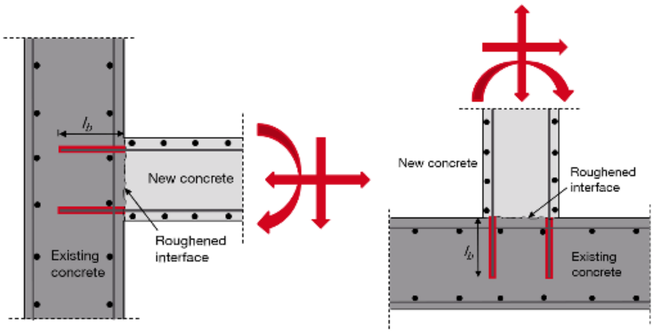
$f_{bd,fi}$	=	Design value of the bond resistance in case of fire in N/mm²
θ	=	Temperature in °C in the mortar layer
$k_{b,fi}(\theta)$	=	Reduction factor under fire exposure
$f_{bd,PIR}$	=	Design value of the bond resistance in N/mm² in cold condition considering the concrete classes, rebar diameter, 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/mm^2 for fire design for concrete classes C20/25 to C50/60

Rebar Temperature	Concrete class	50°C	100°C	150°C	200°C	250°C	268°C (θ_{max})
$f_{bd,fi}$ [N/mm²]	C20/25	3,45	2,34	1,22	0,64	0,33	0,26
	C30/37	4,49					
	C50/60						

Static and quasi-static resistance based on ETA-19/0665. Design according to EOTA TR 069

For post-installed rebar solutions beyond provisions of EN 1992-1-1, such as end-anchorage applications with bi-axial and uni-axial bending and shear loads with compression or tension forces without the limitation of using strut-and-tie design approach can be designed using EOTA TR 069



Anchorage length $l_{bd,y}$ as per EOTA TR 069 Design provisions (Improved bond-splitting failure mode) for characteristic steel strength f_{yk}=500 N/mm^2 for good bond conditions

All data in this section applies to:

- Hammer drilling,
- Effect of transverse reinforcement is not considered
- Effect of sustained loads are not considered
- Minimum spacing between rebars considered as 100 mm
- Minimum anchorage length $l_{b,min}$ shall apply as per EN 1992-1-1
- The maximum recommended installation length shall be applicable
- Concrete breakout resistance is not considered (it shall be calculated depending on the boundary conditions of the actual concrete application)
- In-service temperature range I (min. base material temperature -40°C, max. long/short term base material temperature: +24°C/+40°C)
- Material and installation factors: γ_{Ms}=1,15 , γ_{Mc}=1,5 , γ_{inst}=1,0
- Minimum concrete cover shall apply as per EOTA TR 069 and EN 1992-1-1
- Working life of 50 years

For specific design cases refer to PROFIS Engineering.

Rebar-size [mm]	Concrete class	Design Resistance (Yielding) [kN]	Cracked concrete bond resistance as per ETA			Uncracked concrete bond resistance as per ETA		
			$l_{bd,y}$ (c_d=3ϕ)) [mm]	$l_{bd,y}$ (c_d=5ϕ) [mm]	$l_{bd,y}$ (c_d=8ϕ) [mm]	$l_{bd,y}$ (c_d=3ϕ) [mm]	$l_{bd,y}$ (c_d=5ϕ) [mm]	$l_{bd,y}$ (c_d=8ϕ) [mm]
ϕ8	C20/25	21,9	-	253	253	-	129	109
	C50/60		-	212	212	-	100	100
ϕ10	C20/25	34,1	-	314	314	-	171	136
	C50/60		-	263	263	-	124	124
ϕ12	C20/25	49,2	-	320	320	-	206	163
	C50/60		-	269	269	-	149	149
ϕ13	C20/25	57,7	-	346	346	-	234	177
	C50/60		-	291	291	-	161	161
ϕ14	C20/25	66,9	484	373	373	484	263	190
	C50/60		340	314	314	313	173	173
ϕ16	C20/25	87,4	605	426	426	605	325	218
	C50/60		361	359	359	361	198	198
ϕ18	C20/25	110,6	728	480	480	728	391	245
	C50/60		435	403	403	435	233	223
ϕ19	C20/25	123,3	794	507	507	794	426	259
	C50/60		474	426	426	474	255	235

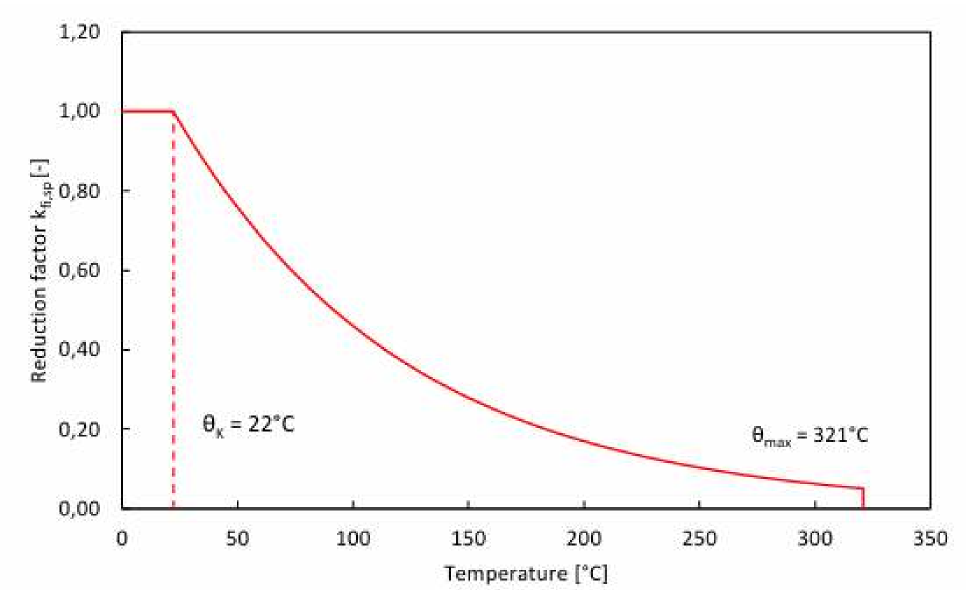
Rebar-size [mm]	Concrete class	Design Resistance (Yielding) [kN]	Cracked concrete bond resistance as per ETA			Uncracked concrete bond resistance as per ETA		
			$l_{bd,y}$ (c_d=3ϕ)) [mm]	$l_{bd,y}$ (c_d=5ϕ) [mm]	$l_{bd,y}$ (c_d=8ϕ) [mm]	$l_{bd,y}$ (c_d=3ϕ) [mm]	$l_{bd,y}$ (c_d=5ϕ) [mm]	$l_{bd,y}$ (c_d=8ϕ) [mm]
ϕ20	C20/25	136,6	861	487	487	861	462	272
	C50/60		514	409	409	514	276	247
ϕ25	C20/25	213,4	1225	658	557	1225	658	371
	C50/60		731	483	483	731	393	309
ϕ26	C20/25	230,8	1304	700	580	1304	700	395
	C50/60		778	502	502	778	418	322
ϕ28	C20/25	267,7	1465	787	624	1465	787	444
	C50/60		875	541	541	875	470	346
ϕ29	C20/25	287,2	1549	832	647	1549	832	470
	C50/60		925	560	560	925	496	359
ϕ30	C20/25	307,3	1635	877	669	1635	877	496
	C50/60		975	580	580	975	524	371
ϕ32	C20/25	349,7	1810	972	596	1810	972	548
	C50/60		1080	580	542	1080	580	396

The highlighted values exceed the maximum length given in ETA-19/0665 and IFU.

Fire resistance based on ETA-25/0408. Design according to EOTA TR 069

Reduction factors under fire exposure for a working life of 50 /100 years for concrete classes C20/25 to C50/60 for all drilling techniques. Rebar size from 8 mm to 32 mm.

For specific design cases refer to PROFIS Engineering



$\theta \leq 22$ °C: $k_{fi\,sp} = 1{,}0$

With 22°C < θ ≤ 321 °C: $k_{fi,sp} = 1{,}25 \cdot e^{-0{,}01\theta}$

$\theta > 321$ °C $k_{fi,sp} = 0{,}0$

θ = Temperature in °C in the mortar layer
$k_{fi,Sp}$ = Reduction factor under fire exposure for bond-splitting resistance

Setting information

Installation temperature range
-10 °C to + 40 °C (ϕ 8 to ϕ 32 mm)
+5 °C to + 40 °C (ϕ 34 to ϕ 40 mm)

Service temperature range
Hilti HIT-HY 200-A V3 and HIT-HY 200-R V3 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.

ETA-19/0600 / ETA-25/0534 / ETA-25/0408

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

ETA-19/0665

Temperature range	Base material temperature	Maximum long-term base material temperature	Maximum short-term base material temperature
Temperature range I	-40 °C to +40 °C	+24 °C	+40 °C
Temperature range II	-40 °C to +80 °C	+50 °C	+80 °C
Temperature range III	-40 °C to +120 °C	+72 °C	+120 °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.

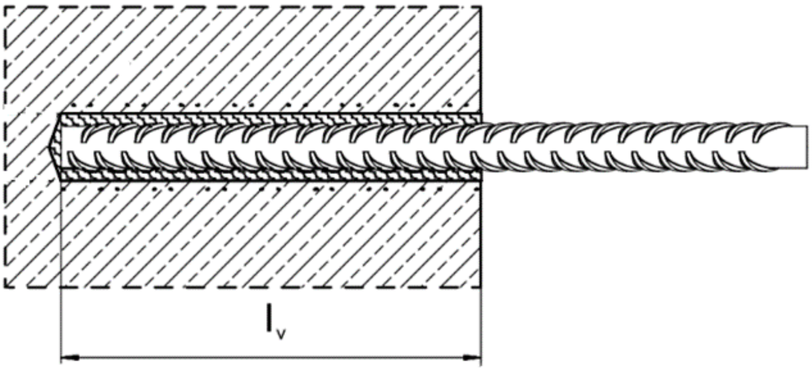
Curing and working time

Temperature of the base material a)	HIT-HY 200-A V3		HIT-HY 200-R V3	
	Maximum working time	Minimum curing time	Maximum working time	Minimum curing time
T	t_{work}	t_{cure}	t_{work}	t_{cure}
- 10°C to - 5°C	1,5 h	7 h	3 h	20 h
> 5°C to 0°C	50 min	4 h	1,5 h	8 h
> 0°C to 5°C	25 min	2 h	45 min	4 h
> 5°C to 10°C	15 min	75 min	30 min	2,5 h
> 10°C to 20°C	7 min	45 min	15 min	1,5 h
> 20°C to 30°C	4 min	30 min	9 min	1 h
> 30°C to 40°C	3 min	30 min	6 min	1 h

a) The Minimum Foil pack temperature is 0°C

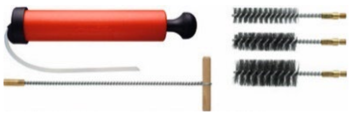
Dispensers and corresponding maximum embedment depth $\ell_{v,max}$

Injection mortar system	Rebar	Dispenser		
		HDM 330, HDM500, HDM 500	HDE 500	
		Concrete temperature		
		≥ -10 °C	≥ 0 °C	5 °C to 25 °C
		$\ell_{v,max}$ [mm]		
HIT-HY 200-A/ R V3	ϕ8 - ϕ32	700	1000	
HIT-HY 200 R V3	ϕ34 - ϕ40	-		1300



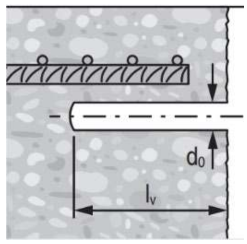
For detailed setting information on installation see instructions for use (IFU) given with the product.
Approved installation methods can be found in the specific ETA/Certificate definitions.

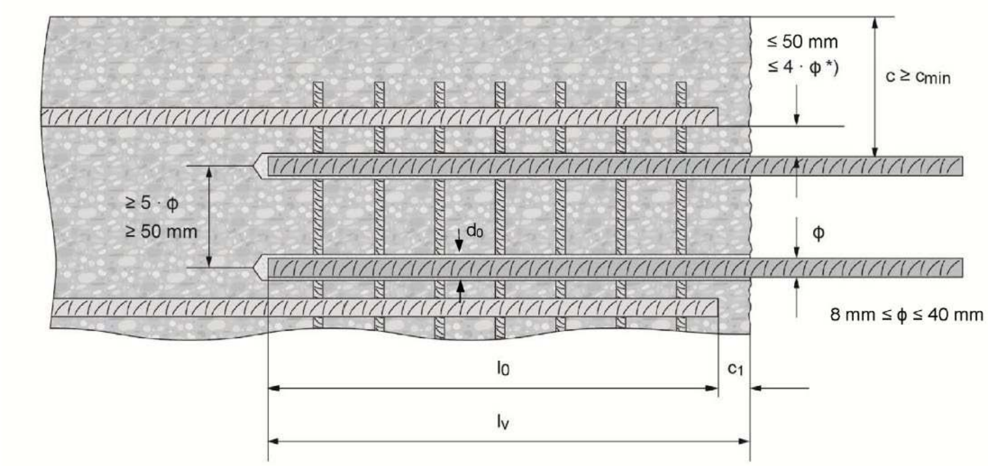
Drilling and Installation equipment

Rotary Hammers (Corded and Cordless)		TE 2 - TE 70
Diamond Coring Machines		DD EC-1, DD 100 … DD 160
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
		Diamond core bit SP-L, SP-HX, SP-H, P-U
		Roughening tools TE-YRT
		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)**	$\phi < 25$	$30 + 0{,}06 \cdot l_v \geq 2 \cdot \phi$	$30 + 0{,}02 \cdot l_v \geq 2 \cdot \phi$
	$\phi \geq 25$	$40 + 0{,}06 \cdot l_v \geq 2 \cdot \phi$	$40 + 0{,}02 \cdot l_v \geq 2 \cdot \phi$
Compressed air drilling **(CA)**	$\phi < 25$	$50 + 0{,}08 \cdot l_v$	$50 + 0{,}02 \cdot l_v$
	$\phi \geq 25$	$60 + 0{,}08 \cdot l_v \geq 2 \cdot \phi$	$60 + 0{,}02 \cdot l_v \geq 2 \cdot \phi$
Diamond coring with roughening with Hilti Roughening tool TE-YRT **(RT)**	$\phi < 25$	$30 + 0{,}06 \cdot l_v \geq 2 \cdot \phi$	$30 + 0{,}02 \cdot l_v \geq 2 \cdot \phi$
	$\phi \geq 25$	$40 + 0{,}06 \cdot l_v \geq 2 \cdot \phi$	$40 + 0{,}02 \cdot l_v \geq 2 \cdot \phi$





*) 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

ϕ diameter of reinforcement bar

l_0 is the lap length

l_v is the installation length