HIT-HY 200 R V3
INJECTION MORTAR

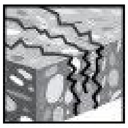
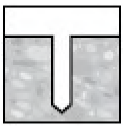
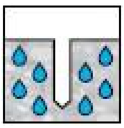
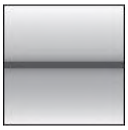
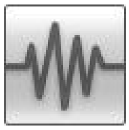
Technical Datasheet

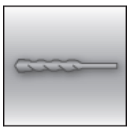
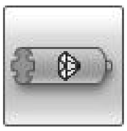
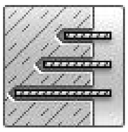
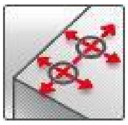
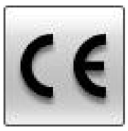
Update: June-22

HIT-HY 200-R V3 injection mortar

Anchor design (EN 1992-4) / Rebar elements / Concrete

Injection mortar system		Benefits
	Hilti HIT-HY 200-R V3 330 ml foil pack (also available as 500 ml foil pack)	- **SafeSet** technology: Simplified method of borehole preparation using either Hilti hollow drill bit for hammer drilling or Roughening tool for diamond cored applications - Assessed following the EAD 330499-00-0601. - ETA seismic approval C1 - Suitable for cracked and uncracked concrete C 12/15 to C 50/60 - Suitable for dry and water saturated concrete - In service temperature range up to 120°C short term / 72°C long term - Large diameter applications
	Rebar B500 B (ϕ8 - ϕ32)	

Base material				Load conditions			
							
Concrete (uncracked)	Concrete (cracked)	Dry concrete	Wet concrete	Static/ quasi-static	Seismic, ETA-C1	Fire resistance	100 Years Design Life

Installation conditions					Other informations		
							
Hammer drilling	Diamond drilled holes[a)]	Variable embedment depth	Hilti **SafeSet** technology	Small edge distance and spacing	European Technical Assessment	CE conformity	PROFIS Rebar design Software

a) Diamond drilling only with Roughening Tool (RT).

Approvals / certificates

Description	Authority / Laboratory	No. / date of issue
European technical assessment [a)]	DIBt, Berlin	ETA-19/0601 / 2021-12-02
European technical assessment [b)]	DIBt, Berlin	ETA-19/0600 / 2021-05-21

a) All data given in this section according to the ETA-19/0601, issue 2021-12-02.
b) All data given in this section according to ETA-19/0600 issue 2021-05-21.

Updated: May-22

Static and quasi-static loading (for a single anchor)

All data in this section applies to
-Correct setting (See setting instruction)
-No edge distance and spacing influence
-*Steel* failure
-Base material thickness, as specified in the table
-One typical embedment depth, as specified in the table
-One anchor material, as specified in the tables
-Concrete C 20/25, $f_{ck,cube}$ = 25 N/mm²
-Temperate range I
(min. base material temperature -40°C, max. long term/short term base material temperature: +24°C/40°C)

Embedment depth and base material thickness for static and quasi-static loading data

Anchor size		ϕ8	ϕ10	ϕ12	ϕ14	ϕ16	ϕ20	ϕ25	ϕ26	ϕ28	ϕ30	ϕ32
Typical embedment depth	[mm]	80	90	110	125	125	170	210	240	270	270	300
Base material thickness	[mm]	110	120	140	160	170	220	280	310	340	350	380

Characteristic resistance

Anchor size		ϕ8	ϕ10	ϕ12	ϕ14	ϕ16	ϕ20	ϕ25	ϕ26	ϕ28	ϕ30	ϕ32
Uncracked concrete												
Tensile N_{Rk}	[kN]	24,1	33,9	49,8	66,0	68,7	109	150	183	218	218	256
Shear V_{Rk}	[kN]	*14,0*	*22,0*	*31,0*	*42,0*	*55,0*	*86,0*	*135*	*146*	*169*	*194*	*221*
Cracked concrete												
Tensile N_{Rk}	[kN]	-	14,1	29,0	38,5	44,0	74,8	105	128	153	153	179
Shear V_{Rk}	[kN]	-	*22,0*	*31,0*	*42,0*	*55,0*	*86,0*	*135*	*146*	*169*	*194*	*221*

Design resistance

Anchor size		ϕ8	ϕ10	ϕ12	ϕ14	ϕ16	ϕ20	ϕ25	ϕ26	ϕ28	ϕ30	ϕ32
Uncracked concrete												
Tensile N_{Rd}	[kN]	16,1	22,6	33,2	44,0	45,8	72,7	99,8	122	146	146	170
Shear V_{Rd}	[kN]	9,3	14,7	20,7	28,0	36,7	57,3	90,0	97,3	113	129	147
Cracked concrete												
Tensile N_{Rd}	[kN]	-	9,4	19,4	25,7	29,3	49,8	69,9	85,4	102	102	119
Shear V_{Rd}	[kN]	-	14,7	20,7	28,0	36,7	57,3	90,0	97,3	113	129	147

Seismic loading (for a single anchor)

All data in this section applies to:
- Correct setting (See setting)
- No edge distance and spacing influence
- *Steel* failure
- Minimum base material thickness
- Concrete C 20/25, $f_{ck,cube}$ = 25 N/mm²

-Temperate range I
(min, base material temperature -40°C, max, long term/short term base material temperature: +24°C/40°C)
- α_{gap} = 1,0

Embedment depth and base material thickness in case of seismic performance category C1

Anchor size		ϕ8	ϕ10	ϕ12	ϕ14	ϕ16	ϕ20	ϕ25	ϕ26	ϕ28	ϕ30	ϕ32
Typical embedment depth	[mm]	-	90	110	125	125	170	210	240	270	270	300
Base material thickness	[mm]	-	120	140	160	170	220	280	310	340	350	380

Characteristic resistance in case of seismic performance category C1

Anchor size		ϕ8	ϕ10	ϕ12	ϕ14	ϕ16	ϕ20	ϕ25	ϕ26	ϕ28	ϕ30	ϕ32
Tensile $N_{Rk, seis}$	[kN]	-	12,4	25,3	33,5	38,3	65,2	99,6	120	145	145	170
Shear $V_{Rk, seis}$		-	*15,0*	*22,0*	*29,0*	*39,0*	*60,0*	*95,0*	*102*	*118*	*136*	*155*

Design resistance in case of seismic performance category C1

Anchor size		ϕ8	ϕ10	ϕ12	ϕ14	ϕ16	ϕ20	ϕ25	ϕ26	ϕ28	ϕ30	ϕ32
Tensile $N_{Rd, seis}$	[kN]	-	8,3	16,9	22,4	25,6	43,4	66,4	79,7	96,6	96,8	113
Shear $V_{Rd, seis}$		-	10,0	14,7	19,3	26,0	40,0	63,3	68,0	78,7	90,7	103

Materials

Mechanical properties

Anchor size		ϕ8	ϕ10	ϕ12	ϕ14	ϕ16	ϕ20	ϕ25	ϕ26	ϕ28	ϕ30	ϕ32
Nominal tensile strength f_{uk}	[N/mm²]	550	550	550	550	550	550	550	550	550	550	550
Yield strength f_{yk}	[N/mm²]	500	500	500	500	500	500	500	550	500	550	500
Stressed cross-section A_s	[mm²]	50,3	78,5	113	154	201	314	491	531	616	707	804
Moment of resistance W	[mm³]	50,3	98,2	170	269	402	785	1534	1726	2155	2651	3217

Material quality

Part	Material
Rebar EN 1992-1-1:2004 and AC:2010	Bars and de-coiled rods class B or C according to NDP or NCL of EN 1992-1-1/NA

Setting information

Installation temperature range
- 10°C to + 40°C

Service temperature range

Hilti 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.

Temperature range	Base material temperature	Max, long term base material temperature	Max, 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

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

Curing and working time

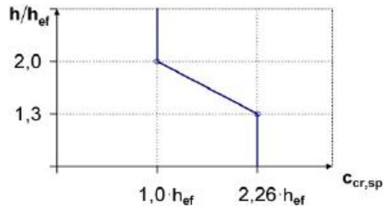
Temperature of the base material	HIT-HY 200-RV3	
	Maximum working time t_{work}	minimum curing time t_{cure}
- 10°C < T_{BM} ≤ - 5°C	3 h	20 h
- 5°C < T_{BM} ≤ 0°C	1,5 h	8 h
0°C < T_{BM} ≤ 5°C	45 min	4 h
5°C < T_{BM} ≤ 10°C	30 min	2,5 h
10°C < T_{BM} ≤ 20°C	15 min	1,5 h
20°C < T_{BM} ≤ 30°C	9 min	1 h
30°C < T_{BM} ≤ 40°C	6 min	1 h

Installation equipment

Anchor size	ϕ8	ϕ10	ϕ12	ϕ14	ϕ16	ϕ20	ϕ25	ϕ26	ϕ28	ϕ30	ϕ32
Rotary hammer	TE 2 (-A) – TE 16 (-A)					TE 40 – TE 80					
Other tools	Compressed air gun, blow out pump Set of cleaning brushes, dispenser										

Setting details

Anchor size			Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø26	Ø28	Ø30	Ø32
Nominal diameter of drill bit	d_0	[mm]	10 / 12 [a]	12 / 14 [a]	14 / 16 [a]	18	20	25	32	32	35	37	40
Effective anchorage and drill hole depth range [b]	$h_{ef,min}$	[mm]	60	60	70	75	80	90	100	104	112	120	128
	$h_{ef,max}$	[mm]	160	200	240	280	320	400	500	520	560	600	640
Minimum base material thickness	h_{min}	[mm]	h_{ef} + 30 mm ≥ 100 mm			h_{ef} + 2 d_0							
Minimum spacing	s_{min}	[mm]	40	50	60	70	80	100	125	130	140	150	160
Minimum edge distance	c_{min}	[mm]	40	45	45	50	50	65	70	75	75	80	80
Critical spacing for splitting failure	$s_{cr,sp}$	[mm]	2 $c_{cr,sp}$										
Critical edge distance for splitting failure [c]	$c_{cr,sp}$	[mm]	**1,0 · h_{ef}**			for h / h_{ef} ≥ 2,0							
			4,6 h_{ef} - 1,8 h			for 2,0 > h / h_{ef} > 1,3							
			2,26 h_{ef}			for h / h_{ef} ≤ 1,3							
Critical spacing for concrete cone failure	$s_{cr,N}$	[mm]	2 $c_{cr,N}$										
Critical edge distance for concrete cone failure [d]	$c_{cr,N}$	[mm]	1,5 h_{ef}										



For spacing (edge distance) smaller than critical spacing (critical edge distance) the design loads have to be reduced,

a) Both given values for drill bit diameter can be used
b) $h_{ef,min}$ ≤ h_{ef} ≤ $h_{ef,max}$ (h_{ef}: embedment depth)
c) h: base material thickness (h ≥ h_{min})
d) The critical edge distance for concrete cone failure depends on the embedment depth h_{ef} and the design bond resistance, The simplified formula given in this table is on the save side.