



# HIT-RE 100 injection mortar

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

## Injection mortar system



Hilti HIT-RE 100  
330 ml foil pack  
(also available as  
500 ml and 1400  
ml foil pack)

Rebar B500 B  
( $\phi 8 - \phi 40$ )

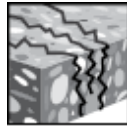
## Benefits

- Suitable for concrete C 12/15 to C 50/60
- High loading capacity
- Suitable for dry and water saturated concrete
- For rebar diameters up to 40 mm
- Non corrosive to rebar elements
- Long working time at elevated temperatures
- Suitable for embedment length till 3200 mm

## Base material



Concrete  
(non-cracked)



Concrete  
(cracked)

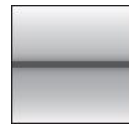


Dry concrete



Wet concrete

## Load conditions

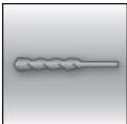


Static/  
quasi-static



Fire  
resistance

## Installation conditions



Hammer  
drilling



Diamond  
coring

## Other information



European  
Technical  
Assessment



CE  
conformity

## Approvals / certificates

Description	Authority / Laboratory	No. / date of issue
European technical assessment <sup>a)</sup>	DIBt, Berlin	ETA – 15/0883 / 2016-04-21
Fire report	MFPA, Leipzig	GS 3.2/15-431-4 / 2016-04-29

a) All data given in this section according to the approvals mentioned above ETA-15/0883 issue 2016-04-21.

## Basic design data

### Static EC2 design

Design bond strength in N/mm<sup>2</sup> according to ETA 15/0883 for good bond conditions

Rebar-size	Concrete class								
	C12/15	C16/20	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/60
<b>All allowed hammer drilling methods</b>									
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	2,6	2,9	3,3	3,6	3,9	4,2
φ36	1,5	1,9	2,2	2,6	2,9	3,3	3,6	3,8	4,1
φ40	1,5	1,8	2,1	2,5	2,8	3,1	3,4	3,7	4,0
<b>Diamond coring wet</b>									
φ8 - φ32	1,6	2,0	2,3	2,7					
φ34	1,6	2,0	2,3	2,6					
φ36	1,5	1,9	2,2	2,6					
φ40	1,5	1,8	2,1	2,5					

For poor bond conditions multiply the values by 0,7. Values valid for non-cracked and cracked concrete

### Minimum anchorage length and minimum lap length

The minimum anchorage length  $\ell_{b,min}$  and the minimum overlap length  $\ell_{0,min}$  according to EN 1992-1-1 shall be multiplied by the relevant **Amplification factor** in the table below.

**Amplification factor  $\alpha_{lb}$  for the min. anchorage length and min. lap length according to EN 1992-1-1 for:**

Rebar - size	Concrete class								
	C12/15	C16/20	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/60
<b>All allowed hammer drilling methods</b>									
φ8 - φ40	1,0								
<b>Diamond coring dry and wet</b>									
φ8 - φ40	1,5								

### Pre-calculated values<sup>1)</sup> – anchorage length

Rebar yield strength  $f_{yk}=500$  N/mm<sup>2</sup>, concrete C25/30, good bond conditions

Rebar-size	Anchorage length	Design value	Mortar volume <sup>2)</sup>	Anchorage length	Design value	Mortar volume <sup>2)</sup>	
	$\ell_{bd}$ [mm]	$N_{Rd}$ [KN]	$V_M$ [ml]		$\ell_{bd}$ [mm]	$N_{Rd}$ [KN]	$V_M$ [ml]
	$\alpha_1=\alpha_2=\alpha_3=\alpha_4=\alpha_5=1,0$				$\alpha_1=\alpha_3=\alpha_4=1,0 \quad \alpha_2 \text{ or } \alpha_5=0,7$		
φ8	100	6,8	8	100	9,7	8	
	170	11,5	13	140	13,6	11	
	250	17,0	19	180	17,4	14	
	<b>322,1</b>	21,9	24	<b>225,4</b>	21,9	17	
φ10	121	10,3	11	121	14,7	11	
	220	18,7	20	170	20,6	15	
	310	26,3	28	230	27,9	21	
	<b>402,6</b>	34,1	36	<b>281,8</b>	34,1	25	
φ12	145	14,8	15	145	21,1	15	
	260	26,5	27	210	30,5	22	
	370	37,7	39	270	39,3	29	
	<b>483,1</b>	49,2	51	<b>338,2</b>	49,2	36	
φ14	169	20,1	20	169	28,7	20	
	300	35,6	36	240	40,7	29	
	430	51,1	52	320	54,3	39	
	<b>563,6</b>	66,9	68	<b>394,5</b>	66,9	48	

**Pre-calculated values<sup>1)</sup> – anchorage length**

Rebar yield strength  $f_{yk}=500 \text{ N/mm}^2$ , concrete C25/30, good bond conditions

Rebar-size	Anchorage length	Design value	Mortar volume <sup>2)</sup>	Anchorage length	Design value	Mortar volume <sup>2)</sup>
	$l_{bd}$ [mm]	$N_{Rd}$ [KN]	$V_M$ [ml]		$l_{bd}$ [mm]	$N_{Rd}$ [KN]
	$\alpha_1=\alpha_2=\alpha_3=\alpha_4=\alpha_5=1,0$			$\alpha_1=\alpha_3=\alpha_4=1,0 \quad \alpha_2 \text{ or } \alpha_5=0,7$		
φ16	193	26,2	26	193	37,4	26
	340	46,1	46	280	54,3	38
	490	66,5	67	370	71,7	50
	<b>644</b>	87,4	87	<b>450,9</b>	87,4	61
φ18	217	33,1	33	217	47,3	33
	380	58	57	310	67,6	47
	540	82,4	81	410	89,4	62
	<b>724,6</b>	110,6	109	<b>507,2</b>	110,6	76
φ20	242	41,1	51	242	58,6	51
	390	66,2	83	350	84,8	74
	550	93,3	117	460	111,5	98
	<b>805,2</b>	136,6	171	<b>563,6</b>	136,6	120
φ22	266	49,6	75	266	70,9	75
	410	76,5	116	380	101,3	107
	560	104,5	158	500	133,3	141
	<b>885,7</b>	165,3	250	<b>620</b>	165,3	175
φ24	290	59	122	290	84,3	122
	430	87,5	182	420	122,1	177
	560	114	236	550	160	232
	<b>966,2</b>	196,7	408	<b>676,3</b>	196,7	286
φ25	302	64	114	302	91,5	114
	430	91,2	162	430	130,3	162
	570	120,9	214	570	172,7	214
	<b>1006,4</b>	213,4	378	<b>704,5</b>	213,4	265
φ28	350	83,1	145	338	114,7	140
	595	141,3	247	480	162,9	200
	875	207,8	364	635	215,5	264
	<b>1127,2</b>	267,7	469	<b>789</b>	267,7	328
φ30	374	95,2	165	374	136	165
	635	161,6	281	528	191,9	233
	935	237,9	413	700	254,5	309
	<b>1207,7</b>	307,3	534	<b>845,4</b>	307,3	374
φ32	400	108,6	217	400	155,1	217
	680	184,6	369	580	224,9	315
	1000	271,4	543	800	310,2	434
	<b>1288,2</b>	349,7	699	<b>901,8</b>	349,7	490
φ36	450	132,3	387	440	184,8	379
	765	225	658	640	268,8	551
	1125	330,8	968	900	378,1	774
	<b>1505,0</b>	442,6	1295	<b>1053,5</b>	442,6	907
φ40	500	157,1	520	485	217,7	505
	850	267	884	700	314,2	728
	1000	314,2	1040	990	444,3	1030
	<b>1739,1</b>	546,4	1810	<b>1217,4</b>	546,4	1267

1) Values corresponding to the minimum anchorage length. The maximum permissible load is valid for "good bond conditions" as described in EN 1992-1-1. For all other conditions multiply by the value by 0,7.

2) The volume of mortar corresponds to the formula " $1,2 \cdot (d_o^2 - d_s^2) \cdot \pi \cdot l_b / 4$ " for hammer drilling

**Pre-calculated values – overlap length**

Rebar yield strength  $f_{yk}=500$  N/mm<sup>2</sup>, concrete c25/30, good bond conditions

Rebar-size	Overlap length	Design value	Mortar volume <sup>2)</sup>	Overlap length	Design value	Mortar volume <sup>2)</sup>
	$l_0$ [mm]	$N_{Rd}$ [KN]	$V_M$ [ml]		$l_0$ [mm]	$N_{Rd}$ [KN]
	$\alpha_1=\alpha_2=\alpha_3=\alpha_4=\alpha_5=1,0$			$\alpha_1=\alpha_3=\alpha_4=1,0 \quad \alpha_2 \text{ or } \alpha_5=0,7$		
φ8	200	13,6	15	200	19,4	15
	240	16,3	18	210	20,4	16
	280	19	21	220	21,3	17
	<b>322,1</b>	21,9	24	<b>225,4</b>	21,9	17
φ10	200	17	18	200	24,2	18
	270	22,9	24	230	27,9	21
	340	28,8	31	250	30,3	23
	<b>402,6</b>	34,1	36	<b>281,8</b>	34,1	25
φ12	200	20,4	21	200	29,1	21
	290	29,5	31	250	36,4	26
	390	39,7	41	290	42,2	31
	<b>483,1</b>	49,2	51	<b>338,2</b>	49,2	36
φ14	210	24,9	25	210	35,6	25
	330	39,2	40	270	45,8	33
	450	53,4	54	330	56	40
	<b>563,6</b>	66,9	68	<b>394,5</b>	66,9	48
φ16	240	32,6	33	240	46,5	33
	370	50,2	50	310	60,1	42
	510	69,2	69	380	73,7	52
	<b>644</b>	87,4	87	<b>450,9</b>	87,4	61
φ18	270	41,2	41	270	58,9	41
	410	62,6	62	350	76,3	53
	560	85,5	84	430	93,8	65
	<b>724,6</b>	110,6	109	<b>507,2</b>	110,6	76
φ20	300	50,9	64	300	72,7	64
	430	72,9	91	390	94,5	83
	570	96,7	121	480	116,3	102
	<b>805,2</b>	136,6	171	<b>563,6</b>	136,6	120
φ22	330	61,6	93	330	88	93
	450	84	127	430	114,6	122
	580	108,2	164	520	138,6	147
	<b>885,7</b>	165,3	250	<b>620</b>	165,3	175
φ24	360	73,3	152	360	104,7	152
	470	95,7	198	470	136,7	198
	590	120,1	249	570	165,8	241
	<b>966,2</b>	196,7	408	<b>676,3</b>	196,7	286
φ25	375	79,5	141	375	113,6	141
	430	91,2	162	480	145,4	181
	570	120,9	214	590	178,7	222
	<b>1006,4</b>	213,4	378	<b>704,5</b>	213,4	265
φ28	420	99,8	175	420	142,5	175
	595	141,3	247	530	179,8	220
	875	207,8	364	635	215,5	264
	<b>1127,2</b>	267,7	469	<b>789</b>	267,7	328

### Pre-calculated values – overlap length

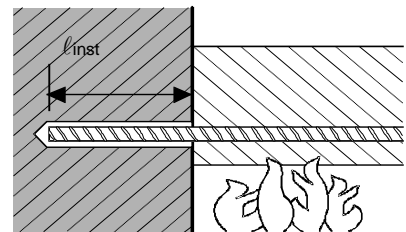
Rebar yield strength  $f_{yk}=500 \text{ N/mm}^2$ , concrete c25/30, good bond conditions

Rebar-size	Overlap length	Design value	Mortar volume <sup>2)</sup>	Overlap length	Design value	Mortar volume <sup>2)</sup>
	$l_0$ [mm]	$N_{Rd}$ [KN]	$V_M$ [ml]		$l_0$ [mm]	$N_{Rd}$ [KN]
	$\alpha_1=\alpha_2=\alpha_3=\alpha_4=\alpha_5=1,0$			$\alpha_1=\alpha_3=\alpha_4=1,0 \quad \alpha_2 \text{ or } \alpha_5=0,7$		
$\phi 30$	450	114,5	199	450	163,6	199
	635	161,6	281	528	191,9	233
	935	237,9	413	700	254,5	309
	<b>1207,7</b>	<b>307,3</b>	<b>534</b>	<b>845,4</b>	<b>307,3</b>	<b>374</b>
$\phi 32$	480	130,3	261	480	186,1	261
	680	184,6	369	650	252	353
	1000	271,4	543	800	310,2	434
	<b>1288,2</b>	<b>349,7</b>	<b>699</b>	<b>901,8</b>	<b>349,7</b>	<b>490</b>
$\phi 36$	540	158,8	465	540	218,1	465
	765	225,0	658	720	290,0	620
	1125	330,8	968	900	363,5	774
	<b>1505,0</b>	<b>442,6</b>	<b>1295</b>	<b>1053,5</b>	<b>442,6</b>	<b>907</b>
$\phi 40$	600	188,5	624	600	269,3	624
	850	267,0	884	750	336,6	780
	1000	314,2	1040	990	444,3	1030
	<b>1739,1</b>	<b>505,9</b>	<b>1676</b>	<b>1217,4</b>	<b>546,4</b>	<b>1267</b>

- 1) Values corresponding to the minimum anchorage length. The maximum permissible load is valid for "good bond conditions" as described in EN 1992-1-1. For all other conditions multiply by the value by 0,7.
- 2) The volume of mortar corresponds to the formula " $1,2 \cdot (d_0^2 - d_s^2) \cdot \pi \cdot l_b / 4$ " for hammer drilling

## Fire resistance

### a) Anchoring application



Anchoring application beam-wall connections with a concrete cover of 20 mm

Maximum force ( $F_{s,T,max}$ ) in rebar in conjunction with HIT-RE 100 as a function of embedment depth ( $l_{inst}$ ) for the fire resistance classes F30 to F240 according to EC2.

Rebar-size	$F_{s,T,max}$ [kN]	$l_{inst}$ [mm]	Fire resistance of bar [kN]					
			R30	R60	R90	R120	R180	R240
$\phi 8$	<b>16,8</b>	100	3,4	1,0	0,2	-	-	-
		110	4,3	1,7	0,5			
		140	6,9	4,2	2,2	0,9	0,5	-
		160	8,6	6,0	3,9	2,1		
		260	16,8	14,6	12,5	10,7	7,7	5,3
		290		16,8	15,1	13,3	10,3	7,9
		310	16,8		16,8	15,1	12,1	9,6
		330		16,8		13,8	16,8	14,8
		370						

Maximum force ( $F_{s,T,max}$ ) in rebar in conjunction with HIT-RE 100 as a function of embedment depth ( $l_{inst}$ ) for the fire resistance classes F30 to F240 according to EC2.

Rebar-size	$F_{s,T,max}$ [kN]	$l_{inst}$ [mm]	Fire resistance of bar [kN]					
			R30	R60	R90	R120	R180	R240
φ10	26,2	400						16,8
		110	5,3	2,1	0,6	-	-	-
		140	8,6	5,3	2,7	1,2	-	-
		160	10,8	7,4	4,8	2,7	0,6	-
		260	21,6	18,3	15,7	13,4	9,7	6,6
		290	24,8	21,5	18,9	16,7	12,9	9,9
		310		23,7	21,1	18,8	15,1	12,0
		340			24,3	22,1	18,3	15,3
		360	26,2	26,2		24,2	20,5	17,5
		380			26,2	26,2	22,7	19,6
φ12	37,7	130	9,0	5,0	2,2	0,8	-	-
		140	10,3	6,3	3,2	1,4	-	-
		160	12,9	8,9	5,8	3,2	0,8	-
		260	25,9	21,9	18,8	16,1	11,6	7,9
		360		35,0	31,8	29,1	24,6	20,9
		390	37,7	37,7	35,7	33,0	28,5	24,8
		450		37,7	37,7	37,7	36,3	32,6
		500			37,7	37,7	37,7	37,7
φ14	51,3	160	15,1	10,4	6,8	3,7	0,9	-
		260	30,2	25,6	21,9	18,8	13,5	9,3
		360	45,4	40,8	37,1	33,9	28,7	24,4
		400		46,8	43,2	40,0	34,8	30,5
		450	51,3	51,3	50,8	47,6	42,4	38,1
		500		51,3	51,3	51,3	50,0	45,7
		550			51,3	51,3	51,3	51,3
φ16	67,0	180	20,7	15,4	11,2	7,6	2,7	0,9
		260	34,5	29,3	25,1	21,5	15,5	10,6
		360	51,9	46,6	42,4	38,8	32,8	27,9
		450		62,2	58,0	54,4	48,4	43,5
		500	67,0	67,0	66,7	63,1	57,1	52,2
		550		67,0	67,0	67,0	65,8	60,9
		600			67,0	67,0	67,0	67,0
φ18	84,8	200	27,2	21,2	16,5	12,4	5,9	2,6
		260	38,9	32,9	28,2	24,1	17,4	11,9
		360	58,4	52,4	47,7	43,6	36,9	31,4
		500		79,7	75,0	71,0	64,2	58,7
		550	84,8	84,8	84,8	80,7	74,0	68,5
		600		84,8	84,8	84,8	83,8	78,2
		650			84,8	84,8	84,8	84,8
φ20	104,7	220	34,5	27,9	22,7	18,2	10,7	5,5
		260	43,2	36,6	31,3	26,8	19,4	13,2
		360	64,9	58,3	53,0	48,5	41,0	34,9
		550		99,4	94,2	89,7	82,2	76,1
		600	104,7	104,7	104,7	100,5	93,1	86,9
		650		104,7	104,7	104,7	103,9	97,8
		700			104,7	104,7	104,7	104,7
φ22	126,7	240	42,7	35,5	29,7	24,7	16,5	9,9
		360	71,3	64,1	58,3	53,3	45,1	38,4
		500	104,7	97,5	91,7	86,7	78,5	71,8
		600		121,3	115,5	110,6	102,4	95,6
		650	126,7	126,7	126,7	122,5	114,3	107,5
		700		126,7	126,7	126,7	126,2	119,5
		750			126,7	126,7	126,7	126,7
φ24	150,8	270	54,4	46,5	40,2	34,8	25,8	18,5
		360	77,8	69,9	63,6	58,2	49,2	41,9
		650		145,3	139,1	133,6	124,7	117,3

Maximum force ( $F_{s,T,max}$ ) in rebar in conjunction with HIT-RE 100 as a function of embedment depth ( $l_{inst}$ ) for the fire resistance classes F30 to F240 according to EC2.

Rebar-size	$F_{s,T,max}$ [kN]	$l_{inst}$ [mm]	Fire resistance of bar [kN]					
			R30	R60	R90	R120	R180	R240
		700				146,6	137,7	130,3
		750	150,8	150,8	150,8	150,8	150,7	143,3
		800					150,8	150,8
φ25	163,6	280	59,4	51,1	44,6	38,9	29,6	22,0
		360	81,1	72,8	66,3	60,6	51,3	43,6
		700			158,4	152,8	143,4	135,8
		750	163,6	163,6	163,6	163,6	157,0	149,3
		800			163,6	163,6	163,6	162,9
		850					163,6	163,6
φ26	177,0	290	64,6	56,0	49,2	43,3	33,6	25,6
		360	84,3	75,7	68,9	63,0	53,3	45,4
		700		171,5	164,7	158,9	149,2	141,2
		750	177,0	177,0	177,0	173,0	163,2	155,3
		800		177,0	177,0	177,0	177,0	169,4
		850					177,0	177,0
φ27	190,9	300	70,0	61,1	54,0	47,9	37,8	29,6
		500	128,5	119,6	112,5	106,4	96,4	88,1
		750			185,7	179,6	169,5	161,2
		800	190,9	190,9	190,9	190,9	184,2	175,9
		850			190,9	190,9	190,9	190,5
		900					190,9	190,9
φ28	205,3	300	75,6	66,4	59,0	52,7	42,3	33,7
		500	133,3	124,0	116,7	110,4	99,9	91,3
		750		199,9	192,6	186,3	175,8	167,2
		800	205,3	205,3	205,3	201,4	191,0	182,4
		850			205,3	205,3	205,3	197,6
		900					205,3	205,3
φ30	235,6	330	87,5	77,6	69,8	63,0	51,8	42,6
		500	142,8	132,9	125,0	118,3	107,1	97,9
		800		230,4	222,6	215,8	204,6	195,4
		850	235,6	235,6	235,6	232,1	220,9	211,7
		900				235,6	235,6	227,9
		950					235,6	235,6
φ32	268,1	350	100,3	89,7	81,4	74,1	62,2	
		500	152,3	141,8	133,4	126,2	114,2	104,4
		850		263,2	254,8	247,5	235,6	225,8
		900	268,1	268,1	268,1	264,9	252,9	243,1
		950				268,1	268,1	260,5
φ34	302,6	370	113,9	102,7	93,8	86,1	73,4	63,0
		500	161,8	150,6	141,7	134,0	121,3	110,9
		900		298,0	289,1	281,4	268,8	258,3
		950	302,6	302,6	302,6	299,9	287,2	276,8
φ36	339,3	400	132,3	120,5	111,0	102,9	89,5	78,4
		600	210,4	198,5	189,1	180,9	167,5	156,5
		800	288,4	276,5	267,1	259,0	245,5	234,5
		950	339,3	335,1	325,6	317,5	304,1	293,0
φ40		450	168,7	155,5	145,1	136,0	121,1	108,8
		600	233,8	220,6	210,1	201,0	186,1	173,9
		800	320,5	307,3	296,8	287,8	272,8	260,6
		950	385,5	372,3	361,8	352,8	337,9	325,6

\*For additional values please check GS 3.2/15-431-4 fire report.

Characteristic yield strength  $f_{yk} = 500 \text{ N/mm}^2$

Steel failure

### b) Overlap joint application

Max. bond stress,  $f_{bd, FIRE}$ , depending on actual clear concrete cover for classifying the fire resistance.

It must be verified that the actual force in the bar during a fire,  $F_{s, T}$ , can be taken up by the bar connection of the selected length,  $l_{inst}$ . Note: Cold design for ULS is mandatory.

$$F_{s, T} \leq (l_{inst} - c_f) \cdot \phi \cdot \pi \cdot f_{bd, FIRE} \quad \text{where: } (l_{inst} - c_f) \geq l_s;$$

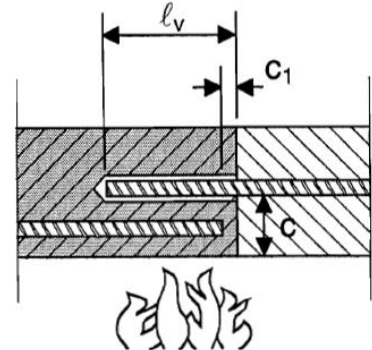
$l_s$  = lap length

$\phi$  = nominal diameter of bar

$l_{inst} - c_f$  = selected overlap joint length; this must be at least  $l_s$ ,

but may not be assumed to be more than  $80 \phi$

$f_{bd, FIRE}$  = bond stress when exposed to fire



**Critical temperature-dependent bond stress,  $f_{bd, FIRE}$ , concerning “overlap joint” for Hilti HIT-RE 100 injection adhesive in relation to fire resistance class and required minimum concrete coverage c.**

Clear concrete cover c [mm]	Max. bond stress, $\tau_c$ [N/mm <sup>2</sup> ]					
	R30	R60	R90	R120	R180	R240
50	0,9					
60	1,7					
70	2,7					
80		1,0				
90		1,6				
100		2,3	1,0			
110		3,0	1,4	0,7		
120			1,9	1,0		
130			2,5	1,4		
140			3,1	1,9	0,7	
150				2,4	1,0	
160				2,9	1,3	
170	3,5			3,4	1,7	0,9
180					2,1	1,1
190		3,5			2,5	1,4
200					2,9	1,7
210			3,5		3,3	2,1
220				3,5		2,5
230						2,8
240					3,5	3,1
250						
260						3,5

### Materials

#### Material quality

Part	Material
Rebar EN 1992-1-1:2004+AC:2010	Bars and de-coiled rods class B or C with $f_{yk}$ and $k$ according to NDP or NCL of EN 1992-1-1/NA:2013 $f_{uk} = f_{tk} = k \cdot f_{yk}$



## Fitness for use

Some creep tests have been conducted in accordance with ETAG guideline 001 part 5 and TR 023 in the following conditions: **in dry environment at 50 °C during 90 days.**

These tests show an excellent behaviour of the post-installed connection made with HIT-RE 100: low displacements with long term stability, failure load after exposure above reference load.

### Resistance to chemical substances

Chemical	Resistance	Chemical	Resistance
Acetic acid 100%	o	Methanol 100%	o
Acetic acid 10%	+	Peroxide of hydrogen 30%	o
Hydrochloric Acid 20%	+	Solution of phenol (sat.)	-
Nitric Acid 40%	-	Sodium hydroxide pH=14	+
Phosphoric Acid 40%	+	Solution of chlorine (sat.)	+
Sulphuric acid 40%	+	Solution of hydrocarbons (60 % vol Toluene, 30 % vol Xylene, 10 % vol Methyl naphthalene)	+
Ethyl acetate 100%	o	Salted solution 10% sodium chloride	+
Acetone 100%	-	Suspension of concrete (sat.)	+
Ammoniac 5%	o	Chloroform 100%	+
Diesel 100%	+	Xylene 100%	+
Gasoline 100%	+		
Ethanol 96%	o		
Machine oils 100%	+		

- + resistant
- o resistant in short term (max. 48h) contact
- not resistant

### Electrical Conductivity

HIT-RE 100 in the hardened state **is not conductive electrically**. Its electric resistivity is  $1,4 \cdot 10^{10} \Omega \cdot m$  (DIN IEC 93 – 12.93). It is adapted well to realize electrically insulating anchorings (ex: railway applications, subway).

### Installation temperature range:

+5°C to +40°C

### Service temperature range

Hilti HIT-RE 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

### 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.

### Working time and curing time<sup>a)</sup>

Temperature IN the base material $T_{BM}$	Maximum working time $t_{work}$	Initial curing time $t_{cure,ini}^{b)}$	Minimum curing time $t_{cure}$
$-5\text{ °C} \leq T_{BM} < 9\text{ °C}$	2 hours	18 hours	72 hours
$10\text{ °C} \leq T_{BM} < 14\text{ °C}$	1,5 hours	12 hours	48 hours
$15\text{ °C} \leq T_{BM} < 19\text{ °C}$	30 min	8 hours	24 hours
$20\text{ °C} \leq T_{BM} < 24\text{ °C}$	25 min	6 hours	12 hours
$25\text{ °C} \leq T_{BM} < 29\text{ °C}$	20 min	5 hours	10 hours
$30\text{ °C} \leq T_{BM} \leq 39\text{ °C}$	12 min	4 hours	8 hours
$40\text{ °C}$	12 min	2 hours	4 hours

- a) The curing time data are valid for dry base material only. In wet base material the curing times must be doubled.  
b) After  $t_{cure,ini}$  has elapsed preparation work may continue

### Setting information

#### Installation equipment








Rebar – size	$\phi 8\text{-}\phi 16$	$\phi 18\text{-}\phi 40$
Rotary hammer	TE2(-A) – TE30(-A)	TE40 – TE80
	Blow out pump ( $h_{ef} \leq 10 \cdot d$ )	-
Other tools	Compressed air gun <sup>a)</sup> Set of cleaning brushes <sup>b)</sup> , dispenser, piston plug	

- a) Compressed air gun with extension hose for all drill holes deeper than 250 mm (for  $\phi 8$  to  $\phi 12$ ) or deeper than  $20 \cdot \phi$  (for  $\phi > 12$  mm)  
b) Automatic brushing with round brush for all drill holes deeper than 250 mm (for  $\phi 8$  to  $\phi 12$ ) or deeper than  $20 \cdot \phi$  (for  $\phi > 12$  mm)

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

Drilling method	Rebar – size [mm]	Minimum concrete cover $c_{min}$ [mm]		
		Without drilling aid	With drilling aid	
Hammer drilling (HD)	$\phi < 25$	$30 + 0,06 \cdot l_v \geq 2 \cdot \phi$	$30 + 0,02 \cdot l_v \geq 2 \cdot \phi$	
	$\phi \geq 25$	$40 + 0,06 \cdot l_v \geq 2 \cdot \phi$	$40 + 0,02 \cdot l_v \geq 2 \cdot \phi$	
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 dry (PCC) or wet (DD)	$\phi < 25$	Drill stand is used as drilling aid	$30 + 0,02 \cdot l_v \geq 2 \cdot \phi$	
	$\phi \geq 25$		$40 + 0,02 \cdot l_v \geq 2 \cdot \phi$	

### Drilling and cleaning diameters

Rebar [mm]	Hammer drill (HD)	Compressed air drill (CA)	Diamond core		Brush HIT-RB	Air nozzle HIT-RB
			Wet (DD)	Dry (PCC) <sup>b)</sup>		
			d <sub>0</sub> [mm]		size	
						
φ8	12 (10 <sup>a)</sup> )	-	12 (10 <sup>a)</sup> )	-	12 (10 <sup>a)</sup> )	12 (10 <sup>a)</sup> )
φ10	14 (12 <sup>a)</sup> )	-	14 (12 <sup>a)</sup> )	-	14 (12 <sup>a)</sup> )	14 (12 <sup>a)</sup> )
φ12	16 (14 <sup>a)</sup> )	-	16 (14 <sup>a)</sup> )	-	16 (14 <sup>a)</sup> )	16 (14 <sup>a)</sup> )
	-	17	-	-	18	16
φ14	18	17	18	-	18	18
φ16	20	-	20	-	20	20
	-	20	-	-	22	20
φ18	22	22	22	-	22	22
φ20	25 (24 <sup>a)</sup> )	-	25	-	25 (24 <sup>a)</sup> )	25 (24 <sup>a)</sup> )
	-	26	-	-	28	25
φ22	28	28	28	-	28	28
φ24	32	32	32	35	32	32
φ25	32 (30 <sup>a)</sup> )	32 (30 <sup>a)</sup> )	32 (30 <sup>a)</sup> )	35	32 (30 <sup>a)</sup> )	
φ26	35	35	35	35	35	
φ28	35	35	35	35	35	
φ30	-	35	35	35	35	
	37	-	-		37	
φ32	40	40	40	47	40	
φ34	-	42	42	47	42	
	45	-	-		45	
φ36	45	45	-	47	45	
	-	-	47		47	
φ40	-	-	52	52	52	
	55	57	-		55	

- a) Both of a given values can be used.  
b) No cleaning required.

### Dispenser and corresponding maximum embedment depth $l_{v,max}$

Rebar	Dispenser	
	HDM 330, HDM 500	HDE 500
	$l_{v,max}$ [mm]	
φ8 to φ10	1000	1000
φ12 to φ14		1200
φ16		1500
φ18 to φ20	700	1300
φ22 to φ25		1000
φ26 to φ28	500	700
φ30 to φ32		-
φ34 to φ40	-	500

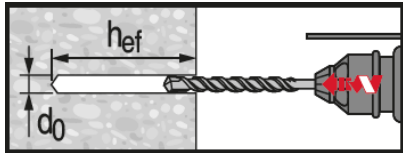
Setting instructions

\*For detailed information on installation see instruction for use given with the package of the product.

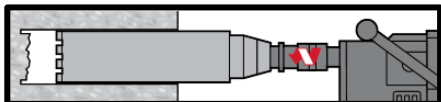


**Safety regulations.**

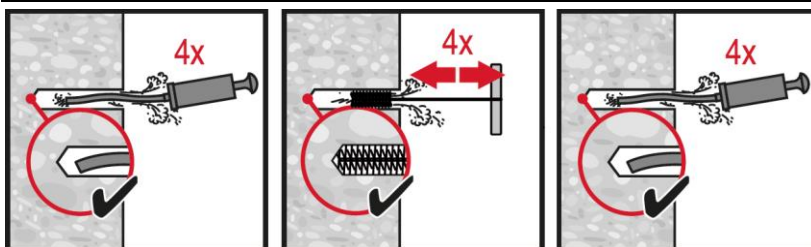
Review the Material Safety Data Sheet (MSDS) before use for proper and safe handling! Wear well-fitting protective goggles and protective gloves when working with Hilti HIT-RE 100.



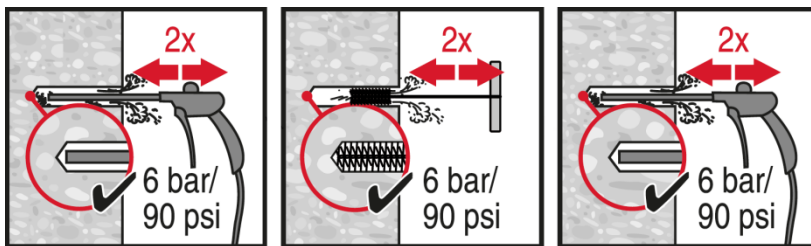
**Hammer drilled hole (HD)**



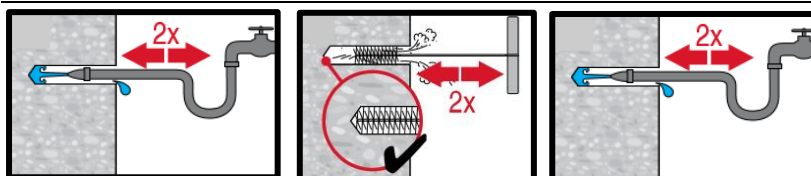
**Diamond Drilling (DD)**



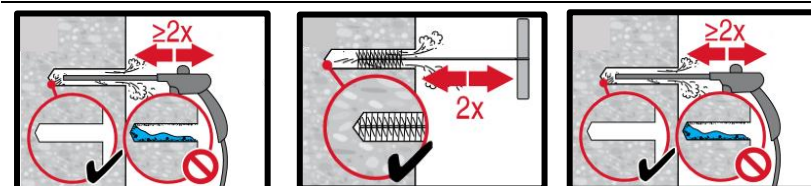
**Hammer Drilling:  
Manual cleaning (MC)**  
for drill diameters  $d_0 \leq 20$  mm and drill hole depth  $h_0 \leq 10 \cdot d$ .



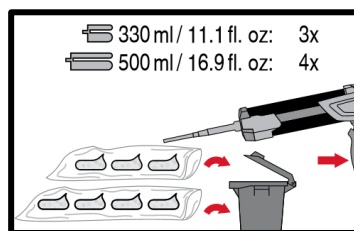
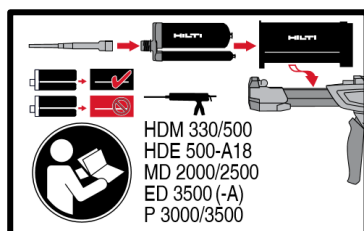
**Hammer Drilling:  
Compressed air cleaning (CAC)**  
for all drill hole diameters  $d_0$  and drill hole depths  $h_0 \leq 20 \cdot d$ .



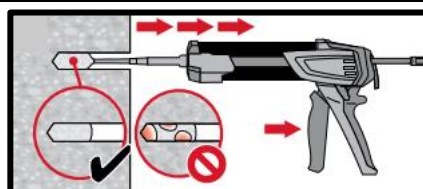
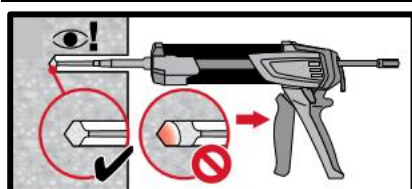
**Wet diamond coring:  
Compressed air cleaning (CAC)**  
for all drill hole diameters  $d_0$  and drill hole depths  $h_0$ .



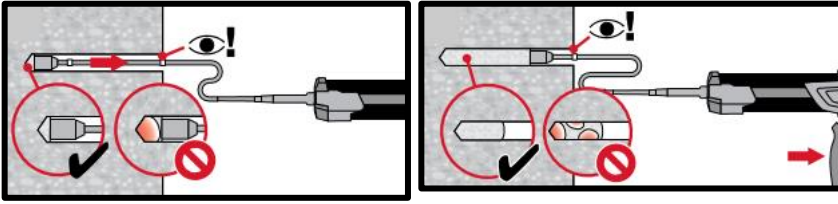
**Dry diamond coring:  
Compressed air cleaning (CAC)**  
for all drill hole diameters  $d_0$  and drill hole depths  $h_0$ .



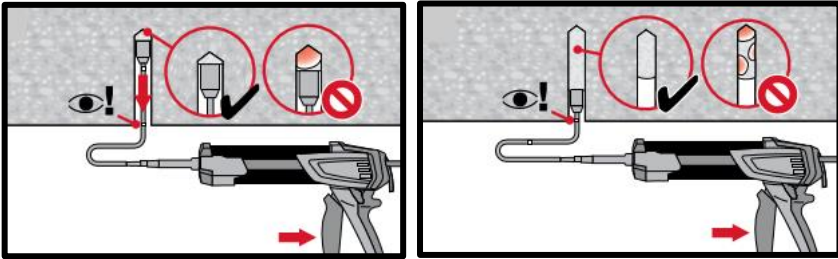
**Injection system preparation.**



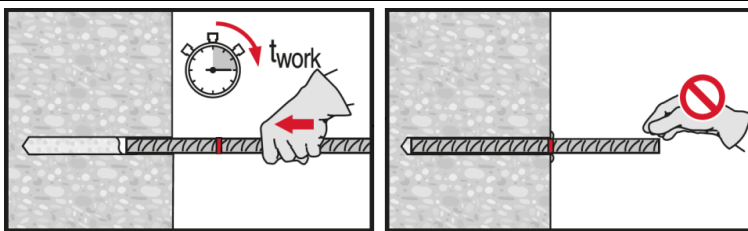
**Injection method for drill hole depth**  
 $h_{ef} \leq 250$  mm.



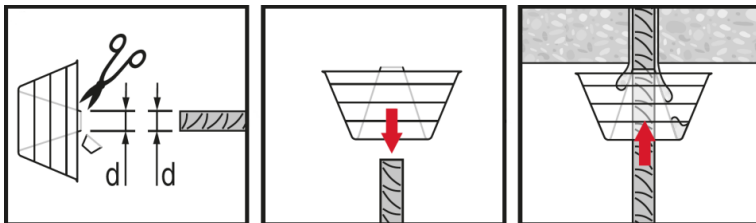
**Injection method for drill hole depth**  
 $h_{ef} > 250\text{mm}$ .



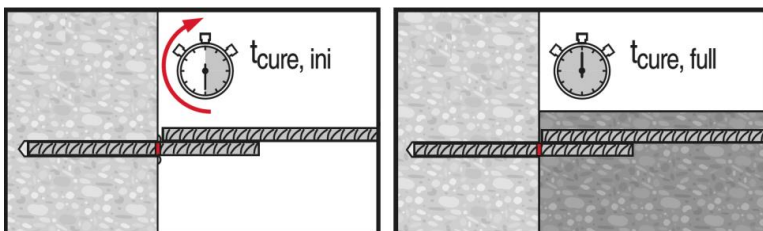
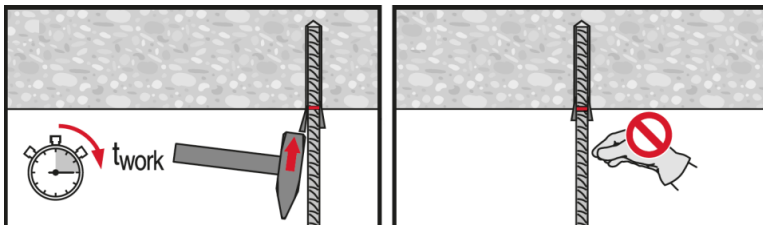
**Injection method for overhead application.**



**Setting element, observe working time**  
 $t_{work}$ .



**Setting element for overhead applications, observe working time**  
 $t_{work}$ .



**Apply full load only after curing time**  
 $t_{cure}$ .