

HIT-1 / HIT-1 CE injection mortar

Anchor design (EN 1992-4) / Rods / Concrete

Injection mortar system



Hilti HIT-1 / HIT-1 CE
300 ml tube cartridge



Anchor rods:
HAS-U
HAS-U HDG
HAS-U A4
HAS-U HCR
(M8-M16)

Benefits

- Chemical injection fastening
- Two-component hybrid mortar
- Rapid curing
- Suitable for overhead fastenings
- Versatile and convenient handling
- Clean and simple in use
- Small edge distance and anchor spacing
- Always correct mixing ratio
- In-service temperatures:

Base material



Concrete
(non-cracked)

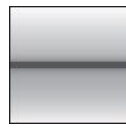


Dry concrete



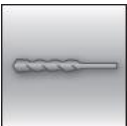
Wet concrete

Load conditions

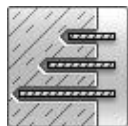


Static/
quasi-static

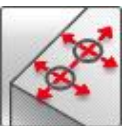
Installation conditions



Hammer
drilling



Variable
embedment
depth



Small edge
distance and
spacing

Other information



European
Technical
Assessment



CE
conformity

Approvals / certificates

Description	Authority / Laboratory	No. / date of issue
European Technical Assessment ^{a)}	TTIC, Prague	ETA-17/0005 / 2017-02-20

a) All data given in this section according to ETA-17/0005, issue 2017-02-20.

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
- Embedment depth as specified in the table
- Load values valid for holes drilled with TE rotary hammers in hammering mode
- Diamond coring is not permitted
- Concrete C 20/25, $f_{ck,cube} = 25 \text{ N/mm}^2$
- In-service temperature range I
(min. base material temperature -40°C , max. long/short term base material temperature: $+24^\circ\text{C}/+40^\circ\text{C}$)

Embedment depth ^{a)} and base material thickness

Anchor size			M8			M10			M12			M16		
Embedment depth ^{b)}	h_{ef}	[mm]	60	80	160	60	100	200	70	120	240	80	160	320
Base material thickness	h	[mm]	100	110	190	100	130	210	100	150	270	116	196	356

a) The allowed range of embedment depth is shown in the setting details

b) Recommended loads calculated for embedment depths $h_{ef} = h_{ef,min}$; $h_{ef} = 10d$; $h_{ef} = h_{ef,max} = 20d$

Recommended loads

Anchor size				M8			M10			M12			M16		
Non-cracked concrete															
Tension	HAS-U 5.8	N_{rec}	[kN]	4,2	5,6	8,7	5,2	8,7	13,8	7,3	12,6	20,1	9,6	19,1	37,4
Shear	HAS-U 5.8	V_{rec}	[kN]	5,2			8,3			12,0			22,4		

Materials
Mechanical properties

Anchor size				M8	M10	M12	M16
Nominal tensile strength	HAS-U 5.8	f_{uk}	[N/mm ²]	500	500	500	500
	HAS-U 8.8			800	800	800	800
	HAS-U-R			700	700	700	700
	HAS-U-HCR			800	800	800	800
Yield strength	HAS-U 5.8	f_{yk}	[N/mm ²]	400	400	400	400
	HAS-U 8.8			640	640	640	640
	HAS-U-R			450	450	450	450
	HAS-U-HCR			640	640	640	640
Stressed cross-section	HAS-U	A_s	[mm ²]	36,6	58,0	84,3	157
Moment of resistance	HAS-U	W	[mm ³]	31,2	62,3	109	277

Material quality for HAS-U

Part	Material
Zinc coated steel	
Threaded rod, HAS-U 5.8 (HDG)	Strength class 5.8; Elongation at fracture A5 > 8% ductile Electroplated zinc coated $\geq 5\mu\text{m}$; (HDG) hot dip galvanized $\geq 45\mu\text{m}$
Threaded rod, HAS-U 8.8 (HDG)	Strength class 8.8; Elongation at fracture A5 > 12% ductile Electroplated zinc coated $\geq 5\mu\text{m}$; (HDG) hot dip galvanized $\geq 45\mu\text{m}$
Washer	Electroplated zinc coated $\geq 5\mu\text{m}$, hot dip galvanized $\geq 45\mu\text{m}$
Nut	Strength class of nut adapted to strength class of threaded rod. Electroplated zinc coated $\geq 5\mu\text{m}$, hot dip galvanized $\geq 45\mu\text{m}$
Stainless Steel	
Threaded rod, HAS-U A4	Strength class 70 for M8-M16 Elongation at fracture A5 > 8% ductile Stainless steel 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362
Washer	Stainless steel 1.4401, 1.4404, 1.4578, 1.4571, 1.4439, 1.4362 EN 10088-1:2014
Nut	Stainless steel 1.4401, 1.4404, 1.4578, 1.4571, 1.4439, 1.4362 EN 10088-1:2014
High corrosion resistant steel	
Threaded rod, HAS-U HCR	Strength class 80 for M8-M16 Elongation at fracture A5 > 8% ductile High corrosion resistance steel 1.4529; 1.4565;
Washer	High corrosion resistant steel 1.4529, 1.4565 EN 10088-1:2014
Nut	High corrosion resistant steel 1.4529, 1.4565 EN 10088-1:2014

Setting information

Installation temperature range:

-5°C to +40°C

Service temperature range

Hilti HIT-1 / HIT-1 CE 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 +40 °C	+24 °C	+40 °C
Temperature range II	-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.

Working time and curing time ^{a)}:

Temperature of the base material	Maximum working time	Minimum curing time
T_{BM}	t_{work}	t_{cure}
$-5^{\circ}\text{C} \leq T_{BM} < 0^{\circ}\text{C}$	1,5 h	6 h
$0^{\circ}\text{C} \leq T_{BM} < 5^{\circ}\text{C}$	45 min	3 h
$5^{\circ}\text{C} \leq T_{BM} < 10^{\circ}\text{C}$	25 min	2 h
$10^{\circ}\text{C} \leq T_{BM} < 15^{\circ}\text{C}$	20 min	100 min
$15^{\circ}\text{C} \leq T_{BM} < 20^{\circ}\text{C}$	15 min	80 min
$20^{\circ}\text{C} \leq T_{BM} < 30^{\circ}\text{C}$	6 min	45 min
$30^{\circ}\text{C} \leq T_{BM} < 34^{\circ}\text{C}$	4 min	25 min
$35^{\circ}\text{C} \leq T_{BM} < 40^{\circ}\text{C}$	2 min	20 min

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

Setting details





Anchor size			M8	M10	M12	M16	
Nominal diameter of element	d	[mm]	8	10	12	16	
Nominal diameter of drill bit	d ₀	[mm]	10	12	14	18	
Maximum diameter of clearance hole in the fixture	d _f	[mm]	9	12	14	18	
Effective anchorage depth (= drill hole depth)	h _{ef,min} = h ₀	[mm]	60	60	70	80	
	h _{ef,max} = h ₀	[mm]	160	200	240	320	
Minimum base material thickness	h _{min}	[mm]	h _{ef} + 30 mm ≥ 100 mm				h _{ef} + 2d ₀
Maximum torque moment	T _{max}		10	20	40	80	
Minimum spacing	s _{min}	[mm]	40	50	60	80	
Minimum edge distance	c _{min}	[mm]	40	50	60	80	

Installation equipment

Anchor size	M8	M10	M12	M16
Rotary hammer	TE2(-A) – TE30(-A)			
Other tools	Blow out pump (h _{ef} ≤ 10·d) Compressed air gun ^{b)} Set of cleaning brushes ^{c)} , dispenser, piston plug			

- a) Compressed air gun with extension hose for all drill holes deeper than 250 mm (for M8 to M12) or deeper than 20·φ (for φ > 12 mm)
 b) Automatic brushing with round brush for all drill holes deeper than 250 mm (for M8 to M12) or deeper than 20·φ (for φ > 12 mm)

Parameters of cleaning and setting tools

HAS-U	Drilling and cleaning		Installation
	Hammer drilling	Brush HIT-RB	Piston plug HIT-SZ
	d ₀ [mm]	size [mm]	size [mm]
			
M8	10	10	10
M10	12	12	12
M12	14	14	14
M16	18	18	18

Setting instructions

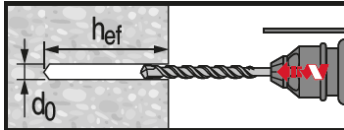
*For detailed information on installation see instruction for use given with the package of the product.



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-1 / HIT-1 CE.

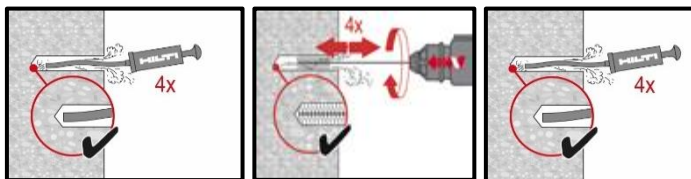
Drilling



Hammer drilled hole (HD)

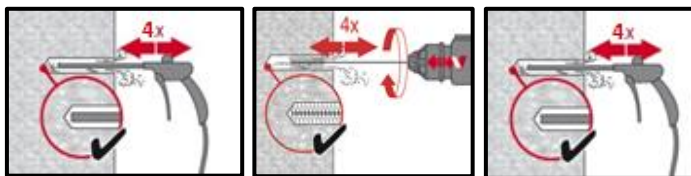
For dry and wet concrete only

Cleaning



Manual cleaning with machine brushing (MCMC)

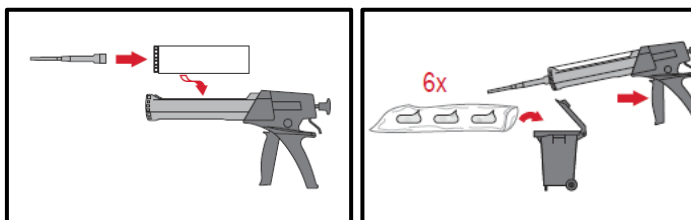
For drill diameters $d_0 \leq 20$ mm and drill hole depth $h_0 \leq 10 \cdot d_0$.



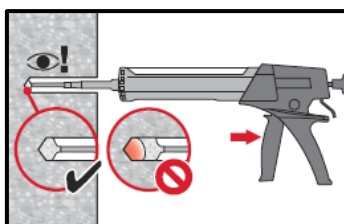
Compressed air cleaning with machine brushing (CACMB)

For drill diameters d_0 and all drill hole depth h_0 .

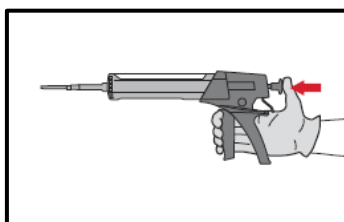
Injection system



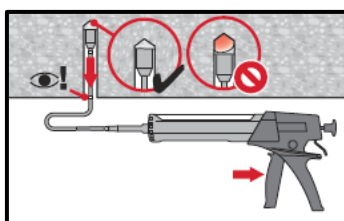
Injection system preparation



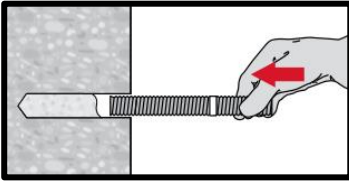
Injection method for drill hole depth (approx. 2/3 full)



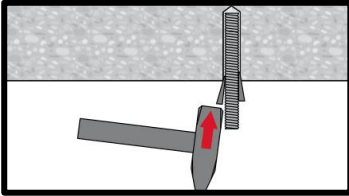
Depressurization of the dispenser.



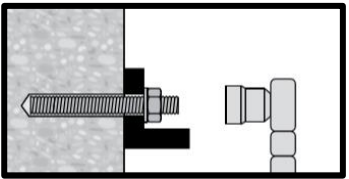
Injection method for overhead application and/or installation with embedment depth $h_{ef} > 250$ mm.

Setting the element

Setting the element, observe working time " t_{work} ",



Setting element for overhead applications, observe working time " t_{work} ",



Loading the anchor: After required curing time t_{cure} the anchor can be loaded.