Hilti HIT-RE500V3 Injectable Mortar

(Post-Installed Rebar) Submission Folder

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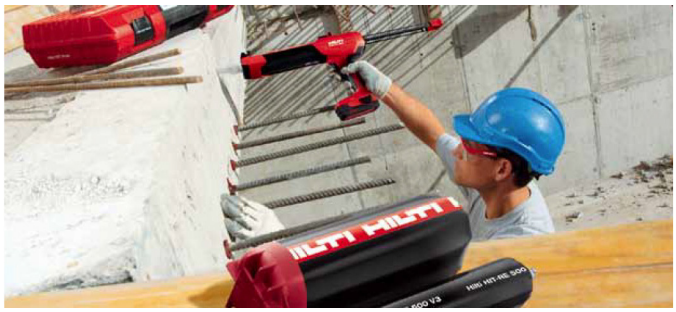
Injectable mortar HIT-RE 500 V3 NEW



BASE MATERIALS

- Concrete (cracked)
- Concrete (uncracked)
- Some types of natural stone

APPLICATIONS

- Structural connections with post-installed rebar (e.g. extension / connection to walls, slabs, stairs, columns, foundations, etc.)
- Substitution of misplaced / missing rebars or couplers
- Anchoring structural steel connections (e.g. steel columns, beams, etc.)
- Anchoring crash barriers, noise barriers, etc.
- Structural renovation of buildings, bridges and other civil structures, retrofitting and re-strengthening of concrete members possible

ADVANTAGES

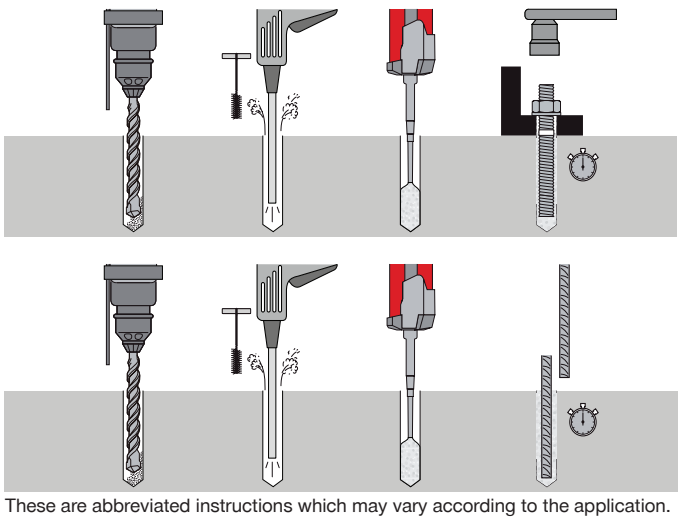
- The fastest-curing epoxy mortar on the market
- Long working time allows greater flexibility during installation
- Also suitable for water-filled holes and underwater applications

Approvals	
ETA	ETA 16/0142 HIT-RE 500 V3 injection mortar rebar_en
	ETA 16/0143 HIT-RE 500 V3 injection mortar 04/2016_en

Approvals and test reports may apply to selected products only. Please refer to the documents for details.

CE SAFESET

Technical data	
Material composition	Epoxy Adhesive
Base material condition	Dry, submerged, water-filled, wet
Tested/approved for diamond drilling	Yes
Seismic	Yes
Compatible cartridge holder	CB (Black)
Additional product information	Always wear eye protection and gloves while handling



These are abbreviated instructions which may vary according to the application.

Curing time

Temperature in the base material T [°C]	Maximum working time twork [h]	Minimum curing time tcure [h]
-5 to -1	2	168
0 to 4	2	48
5 to 9	2	24
10 to 14	1.5	16
15 to 19	1	16
20 to 24	0.5	7
25 to 29	20 min	6
30 to 34	15 min	5
35 to 39	12 min	4.5
40	10 min	4

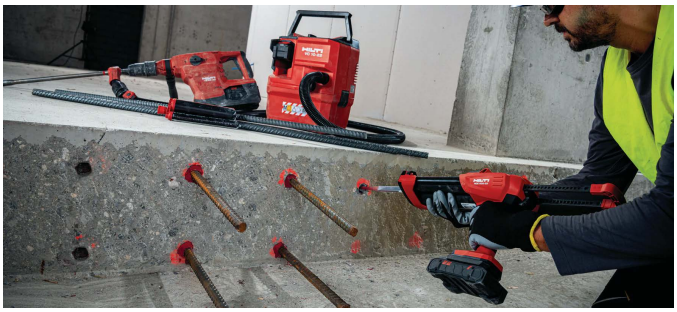
[1] The curing time data are vaild for dry base material only. In wet base material the curing times must be doubled.

Ordering designation	Content per can/cartridge	Package contents	Sales pack quantity	Item number
HIT-RE 500 V3/500/1	500 ml	1x Foil pack, 1x Mixer, 1x Mixer extension	1 pc	**2123406**[1]
Kit RE 500 V3/500/1 + HDE A22 Dispenser	500 ml	80x Foil pack, 1x Dispenser HDE 500-A22, 1x Cartridge Holder	1 pc	**3733112**

[1] For detailed stock availability and lead time information please contact your Hilti representative.

Please visit Hilti website for the latest item numbers and related products

Dispenser HDE 500-22



APPLICATIONS

- Injecting Hilti HIT epoxy or adhesive mortar for fastening anchor rods and rebar in concrete and masonry
- Dispensing Hilti firestop foams (only when packaged in compatible soft foil packs)

ADVANTAGES

- Faster anchoring
- Significantly reduce mortar wastage
- Improve fastener safety and reliability
- Repeat and resume functions
- On the Nuron battery platform

Technical data	
Power source type	Compact B22-55 or B22-85 battery pack
Dispenser type	Battery
Performance (at 20˚C)	55 sec (RE100 500 ml)
B22-55 Battery capacity	100 cartridges (500 ml)
Dimension (L x W x H)	440mm x 120mm x 230 mm
Modes available	Off / continuous / smart discard / measured volume dispensing with ml
Dispensing volume per trigger	1 ml

Order Now

Ordering designation	Content per can/cartridge	Sales pack quantity	Item number
HDE 500-22 + CB (Ultimate) 110V	1x Cordl. dispenser HDE 500-22, 1x Cartridge holder HIT-CB, 1x Battery pack B 22-55, 1x Battery charger C 4-22 110V	1 pc	**3880132**
HDE 500-22 + CR (Ultimate) 110V	1x Cordl. dispenser HDE 500-22, 1x Cartridge holder HIT-CR, 1x Battery pack B 22-55, 1x Battery charger C 4-22 110V	1 pc	**3880183**
HDE 500-22 + CB (Ultimate) 230V	1x Cordl. dispenser HDE 500-22, 1x Cartridge holder HIT-CB, 1x Battery pack B 22-55, 1x Battery charger C 4-22 230V	1 pc	**3880184**
HDE 500-22 + CR (Ultimate) 230V	1x Cordl. dispenser HDE 500-22, 1x Cartridge holder HIT-CR, 1x Battery pack B 22-55, 1x Battery charger C 4-22 230V	1 pc	**3880186**
Battery pack B 22-85 Li-ion	-	1 pc	**2251351**
Battery charger C 4-22 110V	-	1 pc	**2372874**
Battery charger C 4-22 230V	-	1 pc	**2372873**

Please visit Hilti website for the latest item numbers and related products

HILTI SAFE-SET TECHNOLOGY

A small step for engineers.
And a giant leap forward for your next design.

Now you can design anchor rod and post-installed rebar connections with more confidence. Inadequately cleaning holes during installation can reduce the performance of conventional chemical anchor systems significantly. Hilti SAFE-SET Technology eliminates this factor almost entirely – in both cracked or uncracked concrete and with anchor rods or post-installed rebar.

HIT-RE 500 V3

HIT-HY 200- R

HIT-RE 100

APPLICATIONS

- Post-installed rebar connections forconcrete slab, column or wall extensions
- Heavy-duty anchoring in cracked or uncracked concrete, e.g. for steel beams, colum

WHAT IS SAFE-SET

Hilti SAFE-SET Technology eliminates the most load-affecting and time-consuming step in the installation process: cleaning the hole before injection of the adhesive. As a consequence, engineers can now have peace of mind because the specified application will perform on the jobsite as it has been designed in the plan.

SAFE-SET Application Ranges

Thread rod size / Drill hole dia.	M8 (10mm)	M10 (12mm)	M12 (14mm)	M16 (18mm)	M20 (22mm)	M24 (28mm)	M27 (30mm)	M30 (35mm)
Anchoring								
HIT-HY 200-R, standard drill bit and HIT-Z Rod (zero cleaning)			SAFE-SET					
HIT-HY 200-R, HIT-RE100, HIT-RE 500 V3, Hollow Drill Bits and HAS-E Rod, HAS-U Rod or HIT-V Rod (auto-cleaning)		SAFE-SET						
Rebar								
HIT-HY 200-R, HIT-RE100 , HIT-RE 500 V3, Hollow Drill Bits and rebar (auto-cleaning)			SAFE-SET					

Rebar size / Drill hole dia.	Y8 (12mm)	Y10 (14mm)	Y12 (16mm)	Y16 (20mm)	Y20 (25mm)	Y25 (32mm)	Y32 (40mm)

INTRODUCING HILTI SAFESET TECHNOLOGY

Once in a blue moon, something comes along with the power to accelerate the way you work.

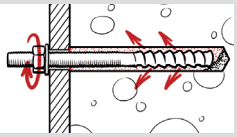
SAFESET

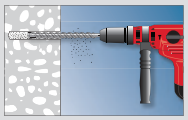
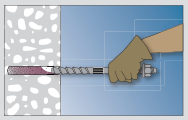
SAFEset is a registered trade mark of Hilti.

1 ZERO CLEANING SOLUTION.

HIT-Z anchor rods + HIT-HY 200-R

The new Hilti HIT-Z anchor rod works as a torque-contolled bonded anchor. Because of their unique shape, HIT-Z anchor rods, used in hammer-drilled holes in dry or water-saturated concrete above 5°C, are not affected by uncleaned holes. The benefits are clear: fewer steps and more productivity in anchoring applications.



Drill	Set
	

Hilti SAFESET Technology
Up to 60% faster!

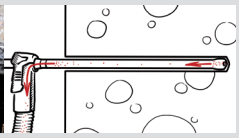
Drill → Done → Productivity gain

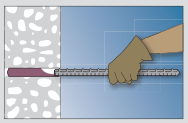
Anchor diameter range	M8 to M20
Material	Carbon or stainless steel (A4)
Embedment depth	Up to 12 times rod diameter
Concrete compressive strengths	C20/25 to C50/60
Installation temperature range	5°C to 40°C

2 AUTO-CLEANING SOLUTION.

Hollow drill bits + HIT-HY 200-R / HIT-RE 100 / HIT-RE 500 V3

Hilti TE-CD and TE-YD hollow drill bits, in conjunction with HIT-HY 200-R, HIT-RE 100 or HIT-RE 500 V3, make subsequent hole cleaning completely unnecessary. Dust is removed by the Hilti vacuum system while drilling is in progress for faster drilling and a virtually dustless working environment.



Drill	Set
	

Hilti SAFESET Technology
Up to 60% faster!

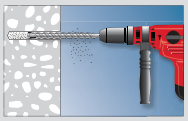
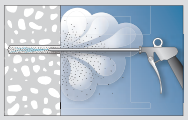
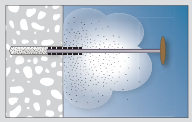
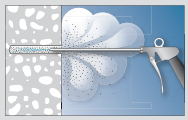
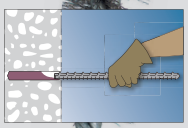
Drill → Done → Productivity gain

Rebar diameter range	Y8 to Y25
Threaded rod diameters	M10 to M30
Embedment depth	Up to 1000 mm
Concrete compressive strengths	C20/25 to C50/60
Installation temperature range	-10°C to 40°C

3 CONVENTIONAL SOLUTION.

Brush and blow

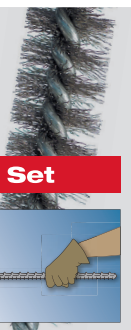
Another option is to continue using the traditional hole cleaning method with any Hilti HIT system for superior performance.

Drill	Blow twice	Brush twice	Blow twice	Set
				

*Cleaning Sequence when using manual dust pump are : blow twice , brush twice , blow twice.

Drill → 2x → 2x → 2x → Done

Rebar diameter range	Y8 to Y40
Threaded rod diameters	M8 to M39
Embedment depth	Up to 20 times element diameter
Concrete compressive strengths	C20/25 to C50/60
Installation temperature range	-10°C to 40°C



SUMMARY TABLE FOR CHEMICAL ANCHORS

	HIT-HY 200-R	HIT-RE 500 V3	HIT-RE 100	HIT-HY 270
				
HIT-Z 	■			
HAS-U 	■	■	■	■
HIS-N 	■	■	■	■
Setting tool TE-C 				
Setting tool HIS-S 				
Mixer HIT-RE-M	■	■	■	■
Profi accessories for HIT 	■	■	■	■
HIT-SC 				■
CR Cartridge holder 	■			
CB Cartridge holder 		■	■	■
HDE Dispenser 	■	■	■	■
TE-CD/YD Hollow drill bit 	■	■	■	
VC 20/40 Vacuum cleaner 	■	■	■	
Setting tool TE-C-E/ TE-Y-E 				
Blow-out pump 	■	■	■	■
Steel brush 	■	■	■	■

HIT-RE 500 V3 injection mortar

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

Injection mortar system

Foil pack: HIT-RE 500 V3

(available in 330, 500 and 1400 ml cartridges)

Rebar B500 B
(ϕ8 - ϕ40)

Benefits

- **Safe**Set technology: Simplified method of borehole preparation using either Hilti hollow drill bit for hammer drilling or Roughening tool for diamond cored applications
- Suitable for concrete C 12/15 to C 50/60
- High loading capacity
- Suitable for dry and water saturated concrete
- Non-corrosive to rebar elements
- Long working time at elevated temperatures
- Cures down to -5°C
- Odourless epoxy

Base material

Concrete (non-cracked)

Concrete (cracked)

Dry concrete

Wet concrete

Load conditions

Static/ quasi-static

Seismic, ETA-C1

Installation conditions

Hammer drilling

Diamond coring

Hilti **Safe**Set technology

Other informations

European Technical Assessment

CE conformity

PROFIS Rebar design Software

Approvals / certificates

Description	Authority / Laboratory	No. / date of issue
European technical assessment [a)]	CSTB, Marne la Vallée	ETA-16/0142 / 2016-07-11

b) All data given in this section according to ETA-16/0142 issue 2016-07-11.

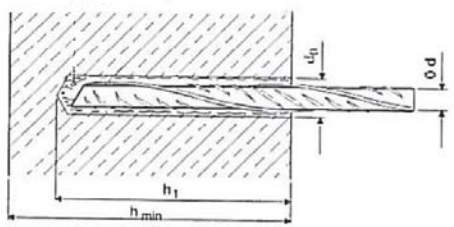
Basic loading data & testing load

	Y10	Y12	Y16	Y20	Y25	Y32	Y40
Rebar diameter (mm) [$Ø_d$]	10	12	16	20	25	32	40
Hole diameter (mm)	12	16	20	25	32	40	52
Min. Embedment Depth (mm) [h1]	Min. embedment depth should be according to EN1992-1-1 (clause 8.6)						
Ultimate mean pull-out load as per BS5080 Part 1 (kN) Test Report *See Remark 3	43.0	61.3	112.6	200.3	274.4	435.6	649.0
Yield load of Rebar (kN)	39.3	56.6	100.6	157.1	245.5	*402.1*	628.3
Max. Testing Load	**34.1**	**49.2**	**87.5**	**136.7**	**213.5**	**349.8**	**546.6**

Remarks:

1. It is based on non-cracked concrete with strength 30N/mm²;
2. Yield strength of rebar f_{yk} is 500N/mm²;
3. **There is no factor of safety introduced in the ultimate mean pull out load. Please apply appropriate factor of safety in your design**;
4. **Onsite pullout test can be carried out to verify the workmanship of the installation but should not be verification of the ultimate loading. The testing load shall be subjected to the designer's decision but should not exceed the 0.87 x yield load to avoid permanent damage to the rebar.**
5. All the spacing and edge distance requirement for reinforced concrete design should be reference to BS8110;

Consumption table for quick reference



Rebar Size, φ	Hole diameter, d_0 [mm]	Depth of drilled hole, h_1 [mm]	Volume of mortar, v [ml]
Y10	12	100	4
Y12	16	120	13
Y16	20	160	22
Y20	25	200	42
Y25	32	250	94
Y32	40	320	174
Y40	50.8 (2")	400	370

Remarks:

1. The volume of mortar corresponds to the formula "1.2* (d_0^2 - d_s^2)* π* h_1/ 4" for hammer drilling
2. 1 trigger pull of dispenser HDM is approx. 6 ml of RE 500V3.
   To dispense 1 cartridge of 500ml RE 500V3 needs approx. 80 triggers.

Static EC2 design, small concrete cover (see section 3.2.1)

Design bond strength in N/mm² according to ETA 16/0142 for good bond conditions

All allowed hammer drilling methods									
Rebar - size	**Concrete class**								
	C12/15	**C16/20**	**C20/25**	**C25/30**	**C30/37**	**C35/45**	**C40/50**	**C45/55**	**C50/60**
ϕ8 - ϕ40	1,6	2,0	2,3	2,7	3,0	3,4	3,7	4,0	4,3
Diamond coring wet									
ϕ8 - ϕ12	1,6	2,0	2,3	2,7	3,0	3,4	3,7	4,0	4,0
ϕ14 -ϕ 16	1,6	2,0	2,3	2,7	3,0	3,4	3,7	3,7	3,7
ϕ20 - ϕ36	1,6	2,0	2,3	2,7	3,0	3,4	3,4	3,4	3,4
ϕ40	1,6	2,0	2,3	2,7	3,0	3,0	3,0	3,0	3,0

For poor bond conditions multiply the values by 0,7.

Static Hit Rebar design method, large concrete cover (see section 3.2.2)

Pullout design bond strength [$f_{bd,po} = \tau_{Rk}/\gamma_{Mp}$] in N/mm² for good bond conditions

Non-cracked concrete C20/25, all allowed drilling methods													
Temperature range	**Drilling method**	**Rebar - size**											
		ϕ8	**ϕ10**	**ϕ12**	**ϕ14**	**ϕ16**	**ϕ20**	**ϕ25**	**ϕ28**	**ϕ30**	**ϕ32**	**ϕ36**	**ϕ40**
I: 40°C/24° C	Hammer drilled holes	6,3	9,5	9,5	9,5	9,5	9,5	8,7	8,7	8,7	8,7	6,7	7,9
	Hammer drilled holes with hollow drill bit	-	-	9,5	9,5	9,5	9,5	8,7	8,7	-	-	-	-
	Diamond cored holes with roughening tool	-	-	-	9,5	9,5	9,5	8,7	8,7	-	-	-	-
	Diamond cored holes	5	5	5	5	5	5	5	5,3	5,3	5,3	-	-
	Hammer drilled holes in water filled holes	3,8	5,7	5,7	5,7	5,7	5,7	5,2	5,2	5,2	5,2	-	-
II: 70°C/43° C	Hammer drilled holes	4,7	7,3	7,3	7,3	6,7	6,7	6,7	6,3	6,3	6,3	5,7	5,0
	Hammer drilled holes with hollow drill bit	-	-	7,3	7,3	6,7	6,7	6,7	6,3	-	-	-	-
	Diamond cored holes with roughening tool	-	-	-	7,3	6,7	6,7	6,7	6,3	-	-	-	-
	Diamond cored holes	3,6	3,6	3,6	3,6	3,1	3,3	3,3	3,3	3,3	3,3	-	-
	Hammer drilled holes in water filled holes	2,6	4,3	4,3	4,3	4,3	4,0	4,0	4,0	3,8	3,8	-	-
Cracked concrete C20/25, all allowed drilling methods													
I: 40°C/24° C	Hammer drilled holes	3	5,7	6,3	6,3	6,3	6,7	6,7	7,3	7,3	7,3		
	Hammer drilled holes with hollow drill bit	-	-	6,3	6,3	6,3	6,7	6,7	7,3	-	-	-	-
	Diamond cored holes with roughening tool	-	-	-	6,3	6,3	6,7	6,7	7,3	-	-	-	-
II: 70°C/43° C	Hammer drilled holes	2,7	4,7	5,3	5,3	5,3	5,3	5,3	5,3	5,3	5,3		
	Hammer drilled holes with hollow drill bit	-	-		5,3	5,3	5,3	5,3	5,3	-	-	-	-
	Diamond cored holes with roughening tool	-	-	-	5,3	5,3	5,3	5,3	5,3	-	-	-	-

For poor bond conditions multiply values by 0,7.

Increasing factors in concrete for $f_{bd,po}$

Dilling method	**Concrete class**	**Rebar-size**											
		ϕ8	**ϕ10**	**ϕ12**	**ϕ14**	**ϕ16**	**ϕ20**	**ϕ25**	**ϕ28**	**ϕ30**	**ϕ32**	**ϕ36**	**ϕ40**
Hammer drilled holes Hammer drilled holes with hollow drill bit Diamond cored holes	C 30/37	1,04											
	C40/50	1,07											
	C50/60	1,09											
Diamond cored holes with roughening tool	C 30/37 - C50/60	1,0										-	

Minimum anchorage length and minimum lap length

The minimum anchorage length $\ell_{b,min}$ and the minimum lap length $\ell_{0,min}$ according to 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

All allowed hammer drilling methods									
Rebar - size	**Concrete class**								
	C12/15	**C16/20**	**C20/25**	**C25/30**	**C30/37**	**C35/45**	**C40/50**	**C45/55**	**C50/60**
ϕ8 - ϕ40	1,0								
Diamond coring dry and wet									
ϕ8 -ϕ12	1,0								
ϕ14 -ϕ36	Linear interpolation between diameter								
ϕ40	1,0	1,0	1,0	1,0	1,2	1,3	1,4	1,4	1,4

Anchorage length for characteristic steel strength f_{yk}=500 N/mm² for good conditions

Hammer drilling									
Rebar-size	**Concrete class**	**f_{bd} [N/mm²]**	**$f_{bd,p}$ [N/mm²]**	**$l_{0,min}$ [1)] [mm]**	**$l_{b,min}$ [2)] [mm]**	**$l_{bd,y,\alpha2=1}$ [3)] [mm]**	**$l_{bd,y,\alpha2=0.7}$ [4)] [mm]**	**$l_{bd,y,HRM,\alpha2<0.7}$ [5)] [mm]**	**l_{max} [6)] [mm]**
ϕ8	C20/25	2,3	6,3	200	113	378	265	138	1000
	C50/60	4,3	6,9	200	100	202	142	126	1000
ϕ10	C20/25	2,3	9,3	213	142	473	331	142	1000
	C50/60	4,3	10,2	200	100	253	177	107	1000
ϕ12	C20/25	2,3	9,3	255	170	567	397	170	1200
	C50/60	4,3	10,2	200	120	303	212	128	1200
ϕ14	C20/25	2,3	9,3	298	198	662	463	198	1400
	C50/60	4,3	10,2	210	140	354	248	149	1400
ϕ16	C20/25	2,3	9,3	340	227	756	529	234	1600
	C50/60	4,3	10,2	240	160	404	283	171	1600
ϕ20	C20/25	2,3	9,3	435	284	945	662	356	2000
	C50/60	4,3	10,2	300	200	506	354	213	2000
ϕ25	C20/25	2,3	8,7	532	354	1181	827	539	2500
	C50/60	4,3	9,4	375	250	632	442	289	2500
ϕ28	C20/25	2,3	8,7	595	397	1323	926	663	2800
	C50/60	4,3	9,4	420	280	708	495	354	2800
ϕ30	C20/25	2,3	8,7	638	425	1418	992	751	3000
	C50/60	4,3	9,4	450	300	758	531	402	3000
ϕ32	C20/25	2,3	8,7	681	454	1512	1059	844	3200
	C50/60	4,3	9,4	480	320	809	566	451	3200
ϕ36	C20/25	2,3	5,5	766	510	1701	1191	1042	3200
	C50/60	4,3	6	540	360	910	637	652	3200
ϕ40	C20/25	2,3	5,5	851	567	1890	1323	1256	3200
	C50/60	4,3	5,8	600	400	1011	708	750	3200

1) Minimum anchorage length for overlap joint
2) Minimum anchorage length for simply supported connections
3) Anchorage length for simply supported connections in case of: α_1= α_2= α_3= α_4= α_5= 1. - (design for yielding)
4) Anchorage length for simply supported connections in case of: α_1= α_3= α_4= α_5= 1; α_2= 0.7 - (design for yielding)
5) Anchorage length with HIT Rebar design Method (HRM) for simply supported connections in case of: α_1= α_3= α_4= α_5= 1; α_2< 0.7. Only if an adequate concrete cover is applied.
6) Maximum feasible embedment depth due to mortar installation limitations.

Materials

Properties of reinforcement

Designation	Material
Reinforcing bars (rebars)	
Rebar EN 1992-1-1	Bars and de-coiled rods class B or C with f_{yk} and k according to NDP or NCL of EN 1992-1-1 $f_{uk} = f_{tk} = k \cdot f_{yk}$

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 500 V3: low displacements with long term stability, failure load after exposure above reference load.

Resistance to chemical substances

Chemicals tested	Content (%)	Resistance	Chemical tested	Content (%)	Resistance
Toluene	47,5	+	Sodium hydroxide 20%	100	-
Iso-octane	30,4	+	Triethanolamine	50	-
Heptane	17,1	+	Butylamine	50	-
Methanol	3	+	Benzyl alcohol	100	-
Butanol	2	+	Ethanol	100	-
Toluene	60	+	Ethyl acetate	100	-
Xylene	30	+	Methyl ethyl ketone (MEK)	100	-
Methylnaphthalene	10	+	Trichlorethylene	100	-
Diesel	100	+	Lutensit TC KLC 50	3	+
Petrol	100	+	Marlophen NP 9,5	2	+
Methanol	100	-	Water	95	+
Dichloromethane	100	-	Tetrahydrofurane	100	-
Mono-chlorobenzene	100	o	Demineralized water	100	+
Ethylacetat	50	-	Salt water	saturated	+
Methylisobutylketone	50	-	Salt spray testing	-	+
Salicylic acid-	50	+	SO_2	-	+
Acetophenon	50	+	Enviroment/wheather	-	+
Acetic acid	50	-	Oil for formwork (forming oil)	100	+
Propionic acid	50	-	Concentrate plasticizer	-	+
Sulfuric acid	100	-	Concrete potash solution	-	+
Nitric acid	100	-	Concrete potash solution	-	+
Hydrochloric acid	36	-	Saturated suspension of borehole cuttings	-	+
Potassium hydroxide	100	-			

+ Resistant
- Not resistant
o Partially Resistant

Electrical Conductivity
HIT-RE 500 V3 in the hardened state **is not conductive electrically**. Its electric resistivity is $66 \cdot 10^{12}\ \Omega$.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 500 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	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 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 [1)]

Temperature of the base material	Working time in which rebar can be inserted and adjusted t_{gel}	Initial curing time $t_{cure,ini}$	Curing time before rebar can be fully loaded t_{cure}
5 °C ≤ T_{BM} < -1 °C	2 h	48 h	168 h
0 °C ≤ T_{BM} < 4 °C	2 h	24 h	48 h
5 °C ≤ T_{BM} < 9 °C	2 h	16 h	24 h
10 °C ≤ T_{BM} < 14 °C	1,5 h	12 h	16 h
15 °C ≤ T_{BM} < 19 °C	1 h	8 h	16 h
20 °C ≤ T_{BM} < 24 °C	30 min	4 h	7 h
25 °C ≤ T_{BM} < 29 °C	20 min	3,5 h	6 h
30 °C ≤ T_{BM} < 34 °C	15 min	3 h	5 h
35 °C ≤ T_{BM} < 39 °C	12 min	2 h	4,5 h
T_{BM} = 40 °C	10 min	2 h	4 h

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

Setting information

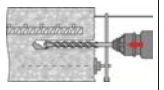
Installation equipment

Rebar – size	ϕ8	ϕ10	ϕ12	ϕ14	ϕ16	ϕ18	ϕ20	ϕ25	ϕ28	ϕ32	ϕ34	ϕ36	ϕ40
Rotary hammer	TE 2 (-A)– TE 40(-A)					TE40 – TE80							
Other tools	Blow out pump ($h_{ef} \le 10 \cdot d$)					-							
	Compressed air gun[a)] Set of cleaning brushes[b)], dispenser, piston plug Roughening tools												

a) Compressed air gun with extension hose for all drill holes deeper than 250 mm (for ϕ 8 to ϕ 12) or deeper than 20·ϕ (for ϕ > 12 mm)
b) Automatic brushing with round brush for all drill holes deeper than 250 mm (for ϕ 8 to ϕ 12) or deeper than 20·ϕ (for ϕ > 12 mm.

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)**	**ϕ < 25**	30 + 0,06 · l_v ≥ 2 · ϕ	30 + 0,02 · l_v ≥ 2 · ϕ
	ϕ ≥ 25	40 + 0,06 · l_v ≥ 2 · ϕ	40 + 0,02 · l_v ≥ 2 · ϕ
Compressed air drilling **(CA)**	**ϕ < 25**	50 + 0,08 · l_v	50 + 0,02 · l_v
	ϕ ≥ 25	60 + 0,08 · l_v ≥ 2 · ϕ	60 + 0,02 · l_v ≥ 2 · ϕ
Diamond coring in wet **(PCC)** dry **(DD)**	**ϕ < 25**	Drill stand works like a drilling aid	30 + 0,02 · l_v ≥ 2 · ϕ
	ϕ ≥ 25		40 + 0,02 · l_v ≥ 2 · ϕ
Diamond coring with Roughening too	**ϕ < 25**	30 + 0,06 · l_v ≥ 2 · ϕ	30 + 0,02 · l_v ≥ 2 · ϕ
	ϕ ≥ 25	40 + 0,06 · l_v ≥ 2 · ϕ	40 + 0,02 · l_v ≥ 2 · ϕ



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

Rebar – size [mm]	HDE 500
	$\ell_{v,max}$ [mm]
ϕ8	1000
ϕ10	1000
ϕ12	1200
ϕ14	1400
ϕ16	1600
ϕ18	1800
ϕ20	2000
ϕ22	1800
ϕ24	1300
ϕ25	1500
ϕ26	1000
ϕ28	1000
ϕ30	1000
ϕ32	700
ϕ34	600
ϕ36	600
ϕ40	400

Drilling diameters

Rebar - size	Hammer drill (HD)	Hollow Drill Bit (HDB)[b)]	Compressed air drill (CA)	Diamond coring		
				Dry (PCC)[b)]	Wet (DD)	With roughening tool (RT)[b)]
	d_0 [mm]					
						
ϕ8	12 (10 a))	-	-	-	12 (10 a))	-
ϕ10	14 (12 a))	14 (12 a))	-	-	14 (12 a))	-
ϕ12	16 (14 a))	16 (14 a))	17	-	16 (14 a))	-
ϕ14	18	18	17	-	18	18
ϕ16	20	20	20	-	20	20
ϕ18	22	22	22	-	22	22
ϕ20	25	25	26	-	25	25
ϕ22	28	28	28	-	28	28
ϕ24	32 (30 a))	32 (30 a))	32	-	32	32
ϕ25	32 (30 a))	32 (30 a))	32	-	32	32
ϕ26	35	35	35	35	35	35
ϕ28	35	35	35	35	35	35
ϕ30	37	-	37	35	37	-
ϕ32	40	-	40	47	40	-
ϕ34	45	-	42	47	45	-
ϕ36	45	-	45	47	47	-
ϕ40	55	-	57	52	52	-

c) Each of two given values can be used.
d) No cleaning required

Associated components for the use of Hilti Roughening tool TE-YRT

Diamond coring		Roughening tool TE-YRT	Wear gauge RTG…
			
d_0 [mm]		d_0 [mm]	size
Nominal	measured		
18	17,9 to 18,2	18	18
20	19,9 to 20,2	20	20
22	21,9 to 22,2	22	22
25	24,9 to 25,2	25	25
28	27,9 to 28,2	28	28
30	29,9 to 30,2	30	30
32	31,9 to 32,2	32	32
35	34,9 to 35,2	35	35

Minimum roughening time $t_{roughen}$ ($t_{roughen}$ [sec] = h_{ef} [mm] /10)

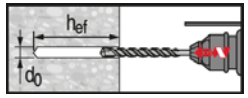
h_{ef} [mm]	$t_{roughen}$ [sec]
0 to 100	10
101 to 200	20
201 to 300	30
301 to 400	40
401 to 500	50
501 to 600	60

Setting instructions

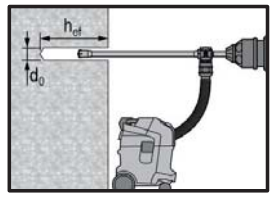
***For detailed information on installation see instruction for use given with the package of the product.**

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 500 V3.

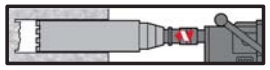


Hammer drilled hole (HD)

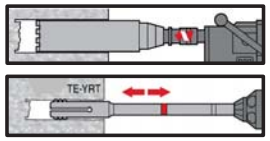


Hammer drilled hole with Hollow Drilled Bit (HDB)

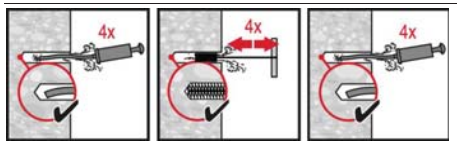
No cleaning required



Diamond Drilling (DD)

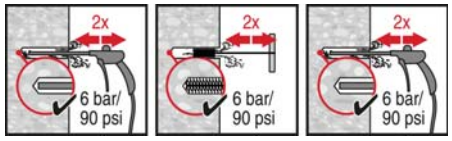


Diamond Drilling + Roughening Tool (DD+RT)



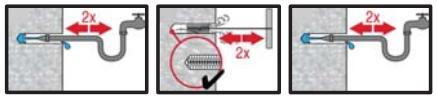
Hammer Drilling:

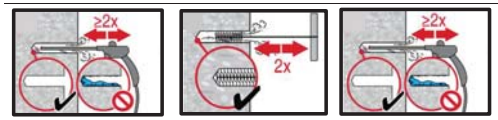
Manual cleaning (MC)
for drill diameters $d_0 \leq 20$ mm and drill hole depth $h_0 \leq 10 \cdot d$.



Hammer Drilling:

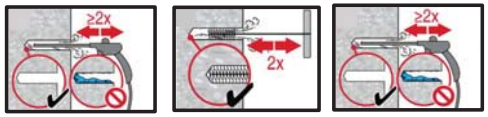
Compressed air cleaning (CAC)
for all drill hole diameters d_0 and drill hole depths $h_0 \leq 20 \cdot d$.





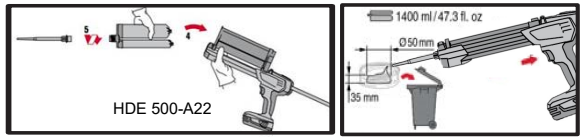
Diamond cored holes:

Compressed air cleaning (CAC)
for all drill hole diameters d_0 and drill hole depths h_0 .

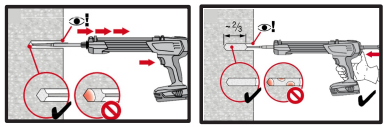


Diamond cored holes with Hilti roughening tool:

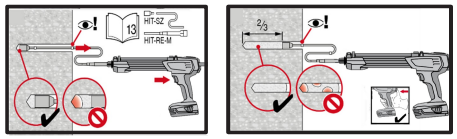
Compressed air cleaning (CAC)
for all drill hole diameters d_0 and drill hole depths h_0 .



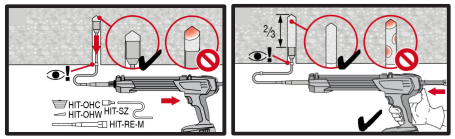
Injection system preparation.



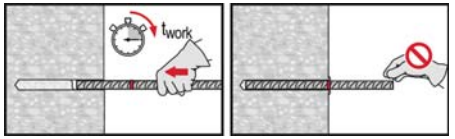
Injection method for drill hole depth $h_{ef} \leq 250$ mm.



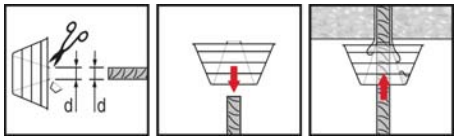
Injection method for drill hole depth $h_{ef} > 250$mm.

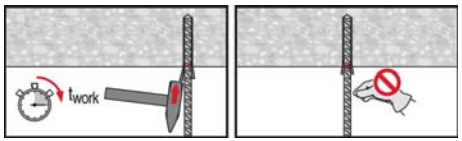


Injection method for overhead application.

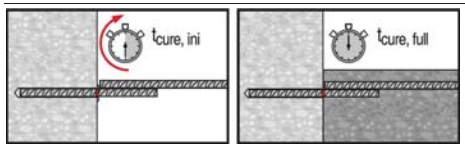


Setting element, observe working time "t_{work}".





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



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

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Tel : 2695 8318 E-mail : etl@ets-testconsult.com
Fax : 2695 3944 Web site : www.ets-testconsult.com

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TEST REPORT

Form C/FD/R/91/Issue 3 (1/1) [08/14]

Hilti (Hong Kong) Ltd

701-704, 7/F, Tower A, Manulife Financial Centre,
223 Wai Yip Street, Kwun Tong, Kowloon

Tensile Load Test on Dowel Bar

Anchor Type:

Hilti HIT-RE 500 V3 + Grade 500B Y10 Rebar

(Sample 1 to 5)

Test Ref.: BS 5080 : Part 1 : 1993 : Cl. 7.1.1

Date Tested : 24-Feb-2016

ETL Ref. No. : 318/2016

Reported by : _____
~~CHAN, Ping Sum~~/
CHEUNG, Ming Nog

Approved Signatory : _____
MONG, Seng Ming

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Tel : 2695 8318 E-mail : etl@ets-testconsult.com
Fax : 2695 3944 Web site : www.ets-testconsult.com

HOKLAS 022 TEST CAL

TEST REPORT

Tensile Load Test on Dowel Bar

Customer : Hilti (Hong Kong) Ltd
Address : 701-704, 7/F, Tower A, Manulife Financial Centre, 223 Wai Yip Street, Kwun Tong, Kowloon
Project : -
Test Location : ETL Laboratory
Anchor Type : Hilti HIT-RE 500 V3 + Grade 500B Y10 Rebar
Amb.Temperature : 16°C

Report No. : FDA60401
Test Date : 24-Feb-2016
Report Date : 26-Feb-2016
Page No. : 3 of 4
Test Method : BS 5080:Part 1:1993 Cl 7.1.1
Test Procedure : TPF/003

Load (kN)	*Dial Gauge Reading (mm)*				
	Sample 1	*Sample 2*	*Sample 3*	*Sample 4*	*Sample 5*
0.0	0.00	0.00	0.00	0.00	0.00
5.0	0.17	0.09	0.11	0.20	0.15
10.0	0.37	0.29	0.33	0.35	0.37
15.0	0.66	0.52	0.57	0.51	0.49
20.0	0.91	0.69	0.74	0.72	0.69
25.0	1.18	0.91	0.94	0.90	0.91
30.0	1.39	1.09	1.16	1.16	1.13
35.0	1.66	1.35	1.43	1.36	1.38
40.0	2.09	1.85	1.99	1.76	1.89
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
Failure Load (kN)	43.2	42.8	42.4	42.9	43.6
Failure Mode	F1 / F5	F1 / F5	F1 / F5	F1 / F5	F1 / F5
Displacement	6.60	6.70	6.60	6.40	6.70
Average Failure Load (kN)	43.0				
Standard Deviation (kN)	0.4				

A) Test Appratus
Load Cell :Comp. Load Cell CWFK-50t, 500kN (ET/930/14/01) S/N : K03362
Load Cell Indicator : XK315A1-8 (ET/930/29/02) S/N : -
Cylinder : Hydraulic Cylinder RSCH302 (ET/903/29) S/N : E02121602-11
Digital Dial Gauge : Digital Indicator (ET/915/52) S/N :102389

B) Concrete Grade 30/20D

C) Anchor installed date 22-Feb-2016

D) Failure Modes
P = No sign of failure in anchor and/or structural member
F1 = Failure of anchor or its accessories
F2 = Failure in structural member
F3 = Pull out of anchor
F4 = Failure of structural member in a shear cone
F5 = Failure by continuous displacement or decreasing load
F6 = Failure in structural member with crack radiates outward from anchor
F7 = Other failure mode(s) : Bar Breaking

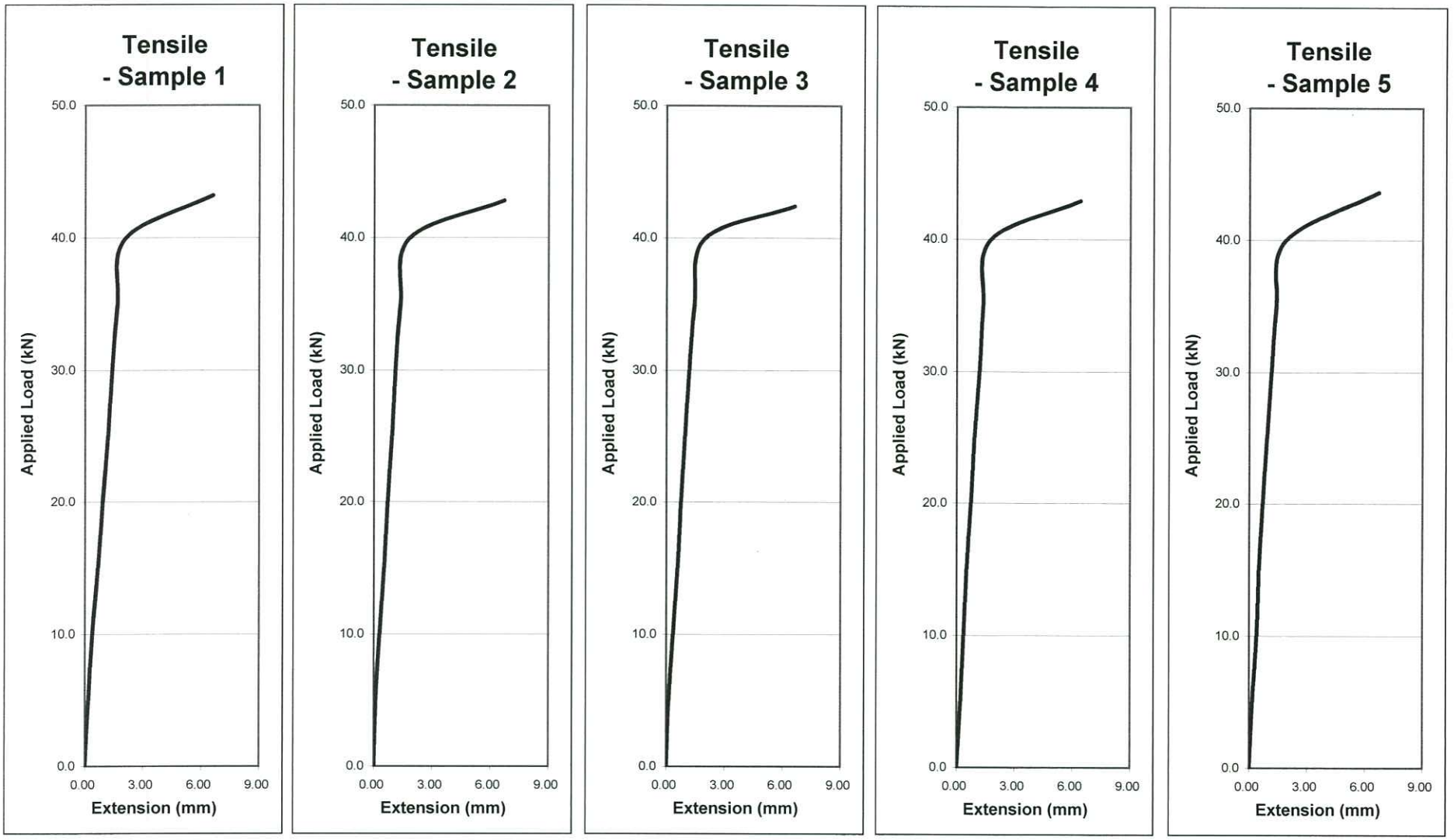
E) Min. distance between reaction frame and centre of the fixing (mm) 200

F) Min. distance between the centre of fixing and free edge (mm) 300

G) Rebar embedment depth (mm) 100

Tested By : CHUI, Chi To
Approved Signatory : MONG, Seng Ming
Checked By : (Assistant Engineer)

Hilti HIT-RE 500 V3 + Grade 500B Y10 Rebar



Report Issue Date: 26-Feb-2016

- END OF REPORT -

Report No. FDA60401

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HOKLAS 022
TEST CAL

TEST REPORT

Form C/FD/R/91/Issue 3 (1/1) [08/14]

Hilti (Hong Kong) Ltd

701-704, 7/F, Tower A, Manulife Financial Centre,
223 Wai Yip Street, Kwun Tong, Kowloon

Tensile Load Test on Dowel Bar

Anchor Type:

Hilti HIT-RE 500 V3 + Grade 500B Y12 Rebar

(Sample 1 to 5)

Test Ref.: BS 5080 : Part 1 : 1993 : Cl. 7.1.1

Date Tested : 07-Mar-2016

ETL Ref. No. : 406/2016

Reported by : _____
~~CHAN, Ping Sum/~~
CHEUNG, Ming Nog

Approved Signatory : _____
MONG, Seng Ming

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Tel : 2695 8318 E-mail : etl@ets-testconsult.com
Fax : 2695 3944 Web site : www.ets-testconsult.com

HOKLAS 022 TEST CAL

TEST REPORT

Tensile Load Test on Dowel Bar

Customer : Hilti (Hong Kong) Ltd
Address : 701-704, 7/F, Tower A, Manulife Financial Centre, 223 Wai Yip Street, Kwun Tong, Kowloon
Project : -
Test Location : ETL Laboratory
Anchor Type : Hilti HIT-RE 500 V3 + Grade 500B Y12 Rebar
Amb.Temperature : 18°C

Report No. : FDA60492
Test Date : 07-Mar-2016
Report Date : 08-Mar-2016
Page No. : 3 of 4
Test Method : BS 5080:Part 1:1993 Cl 7.1.1
Test Procedure : TPF/003

Load (kN)	*Dial Gauge Reading (mm)*				
	Sample 1	*Sample 2*	*Sample 3*	*Sample 4*	*Sample 5*
0.0	0.00	0.00	0.00	0.00	0.00
5.7	0.34	0.28	0.17	0.12	0.11
11.4	0.52	0.42	0.30	0.28	0.26
17.1	0.71	0.64	0.47	0.47	0.43
22.8	0.87	0.85	0.65	0.61	0.58
28.5	1.03	1.01	0.84	0.78	0.76
34.2	1.17	1.19	1.00	0.97	0.90
39.9	1.35	1.39	1.20	1.16	1.10
45.6	1.52	1.58	1.45	1.35	1.31
51.3	1.78	1.82	1.68	1.60	1.52
57.0	2.24	2.14	2.04	1.99	1.85
62.7	-	-	-	-	-
68.4	-	-	-	-	-
74.1	-	-	-	-	-
Failure Load (kN)	59.4	61.7	62.0	61.2	62.0
Failure Mode	F1 / F5	F1 / F5	F1 / F5	F1 / F5	F1 / F5
Displacement	6.00	6.00	6.00	6.00	6.00
Average Failure Load (kN)	61.3				
Standard Deviation (kN)	1.1				

A) Test Appratus
Load Cell :Comp. Load Cell CWFK-10t, 100kN (ET/930/15/01) S/N : K03360
Load Cell Indicator : XH315A1-8 (ET/930/36/02) S/N : -
Cylinder : Hydraulic Cylinder RSCH302 (ET/903/29) S/N : E02121602-11
Digital Dial Gauge : Digital Indicator (ET/915/54) S/N :103131

B) Concrete Grade 30/20D

C) Anchor installed date 02-Mar-2016

D) Failure Modes
P = No sign of failure in anchor and/or structural member
F1 = Failure of anchor or its accessories
F2 = Failure in structural member
F3 = Pull out of anchor
F4 = Failure of structural member in a shear cone
F5 = Failure by continuous displacement or decreasing load
F6 = Failure in structural member with crack radiates outward from anchor
F7 = Other failure mode(s) : Bar Breaking

E) Min. distance between reaction frame and centre of the fixing (mm) 240

F) Min. distance between the centre of fixing and free edge (mm) 360

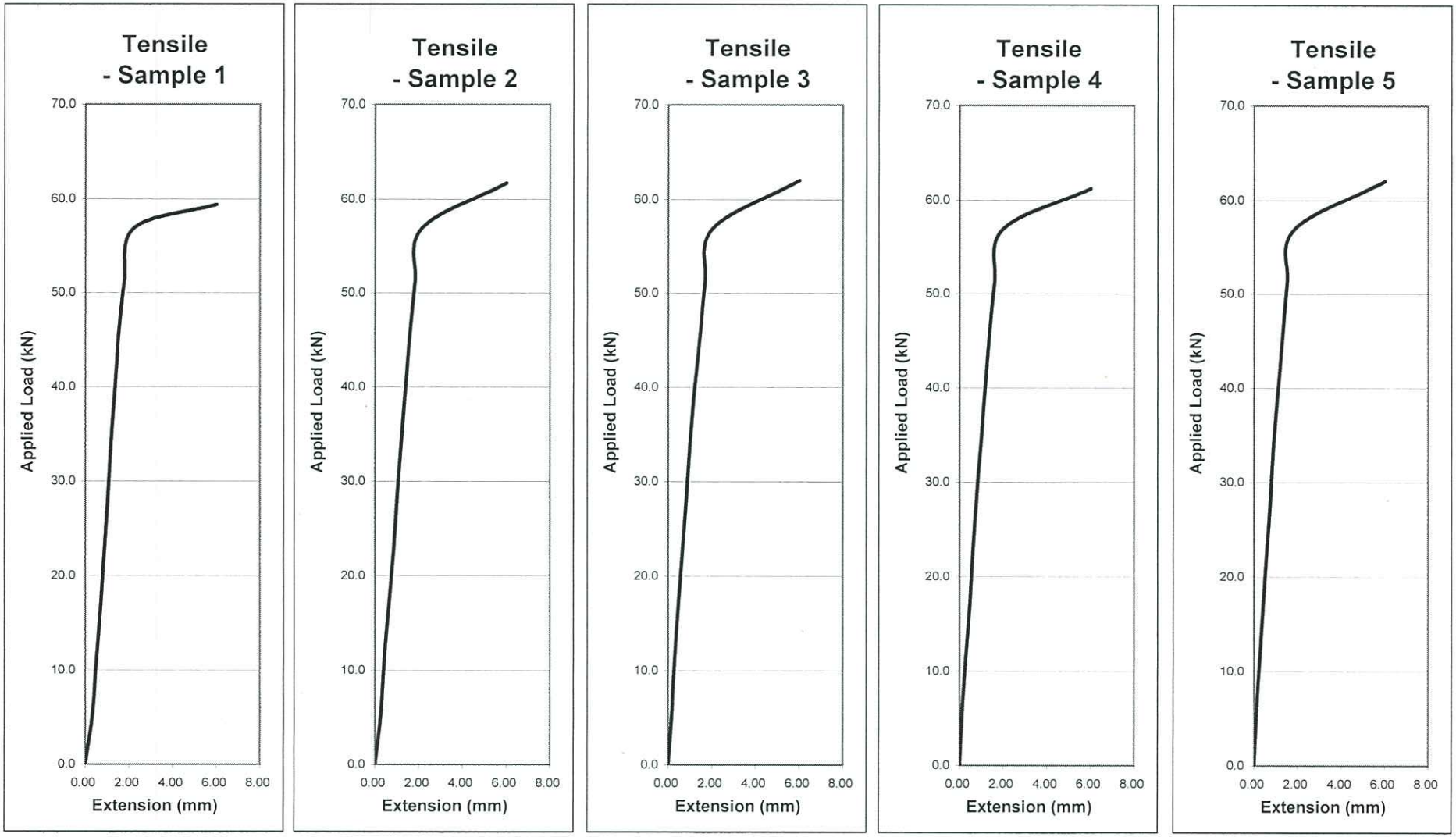
G) Rebar embedment depth (mm) 120

Tested By : CHAN, Yun Leung

Approved Signatory : MONG, Seng Ming

Checked By : Sapphi (Assistant Engineer)

Hilti HIT-RE 500 V3 + Grade 500B Y12 Rebar



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TEST REPORT

Form C/FD/R/91/Issue 3 (1/1) [08/14]

Hilti (Hong Kong) Ltd

701-704, 7/F, Tower A, Manulife Financial Centre,
223 Wai Yip Street, Kwun Tong, Kowloon

Tensile Load Test on Dowel Bar

Anchor Type:

Hilti HIT-RE 500 V3 + Grade 500B Y16 Rebar

(Sample 1 to 5)

Test Ref.: BS 5080 : Part 1 : 1993 : Cl. 7.1.1

Date Tested : 24-Feb-2016

ETL Ref. No. : 318/2016

Reported by : _____
~~CHAN, Ping Sum/~~
CHEUNG, Ming Nog

Approved Signatory : _____
MONG, Seng Ming

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東業德勤測試顧問有限公司
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TEST REPORT

Tensile Load Test on Dowel Bar

Customer : Hilti (Hong Kong) Ltd
Address : 701-704, 7/F, Tower A, Manulife Financial Centre, 223 Wai Yip Street, Kwun Tong, Kowloon
Project : -
Test Location : ETL Laboratory
Anchor Type : Hilti HIT-RE 500 V3 + Grade 500B Y16 Rebar
Amb.Temperature : 16°C

Report No. : FDA60400
Test Date : 24-Feb-2016
Report Date : 26-Feb-2016
Page No. : 3 of 4
Test Method : BS 5080:Part 1:1993 Cl 7.1.1
Test Procedure : TPF/003

Load (kN)	*Dial Gauge Reading (mm)*				
	Sample 1	*Sample 2*	*Sample 3*	*Sample 4*	*Sample 5*
0.0	0.00	0.00	0.00	0.00	0.00
10.0	0.14	0.06	0.10	0.02	0.12
20.0	0.34	0.20	0.22	0.29	0.30
30.0	0.52	0.40	0.43	0.48	0.54
40.0	0.70	0.63	0.68	0.64	0.82
50.0	0.90	0.85	0.87	0.90	1.33
60.0	1.14	1.09	1.04	1.12	1.92
70.0	1.52	1.37	1.40	1.42	2.47
80.0	2.10	1.78	1.88	1.81	2.96
90.0	2.82	2.43	2.64	2.26	3.43
100.0	3.77	3.84	4.17	3.59	3.97
110.0	4.97	-	-	4.99	5.02
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
Failure Load (kN)	117.0	108.0	110.0	113.0	115.0
Failure Mode	F1 / F5	F1 / F5	F1 / F5	F1 / F5	F1 / F5
Displacement	7.60	7.40	7.20	7.70	7.20
Average Failure Load (kN)	112.6				
Standard Deviation (kN)	3.6				

A) Test Appratus
Load Cell :Comp. Load Cell CWFK-50t, 500kN (ET/930/14/01) S/N : K03362
Load Cell Indicator : XK315A1-8 (ET/930/29/02) S/N : -
Cylinder : Hydraulic Cylinder RSCH302 (ET/903/29) S/N : E02121602-11
Digital Dial Gauge : Digital Indicator (ET/915/52) S/N :102389

B) Concrete Grade 30/20D

C) Anchor installed date 22-Feb-2016

D) Failure Modes
P = No sign of failure in anchor and/or structural member
F1 = Failure of anchor or its accessories
F2 = Failure in structural member
F3 = Pull out of anchor
F4 = Failure of structural member in a shear cone
F5 = Failure by continuous displacement or decreasing load
F6 = Failure in structural member with crack radiates outward from anchor
F7 = Other failure mode(s) : Bar Breaking

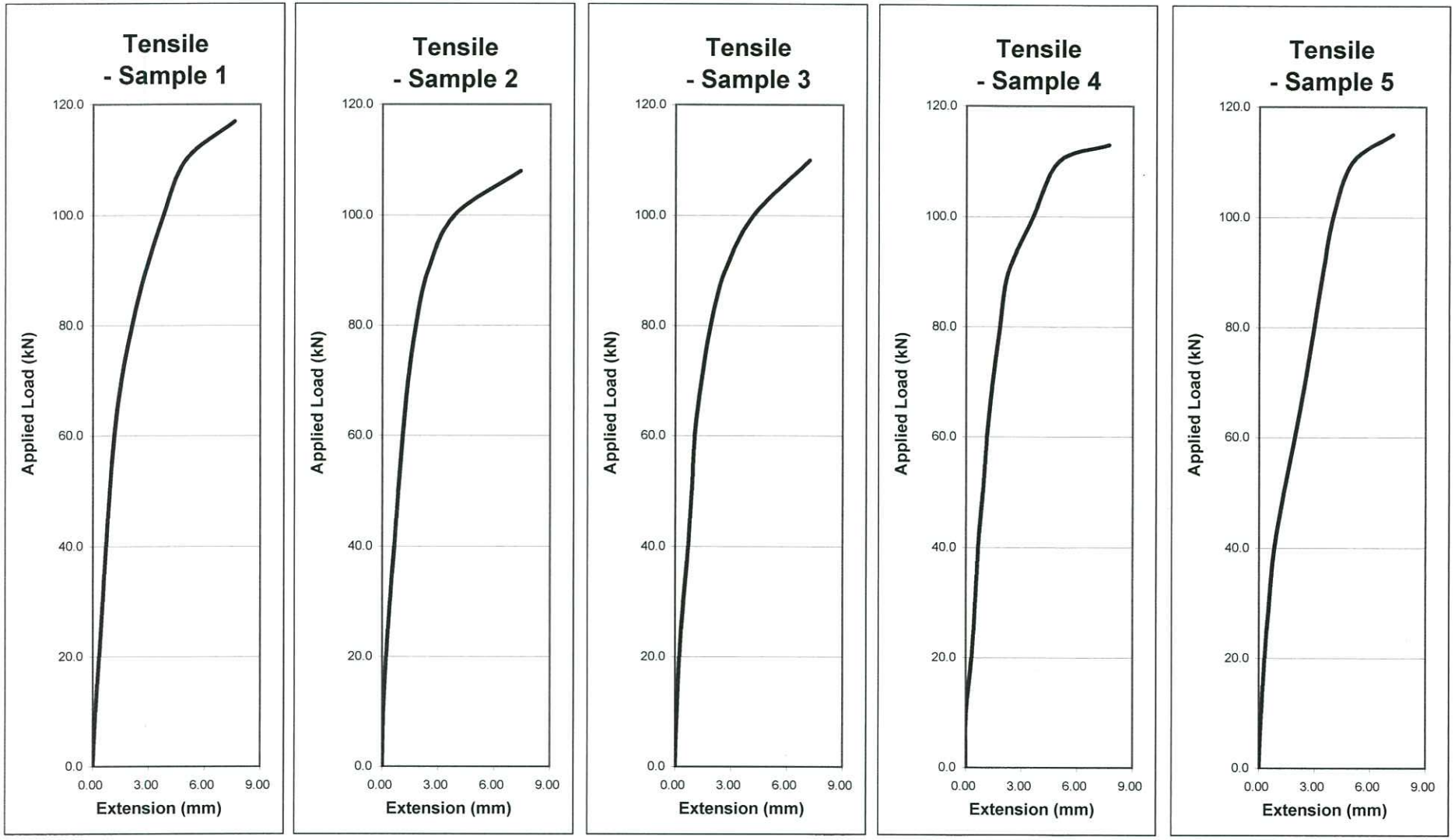
E) Min. distance between reaction frame and centre of the fixing (mm) 320

F) Min. distance between the centre of fixing and free edge (mm) 480

G) Rebar embedment depth (mm) 160

Tested By : CHUI, Chi To
Approved Signatory : MONG, Seng Ming
Checked By : (Assistant Engineer)

Hilti HIT-RE 500 V3 + Grade 500B Y16 Rebar



Report Issue Date: 26-Feb-2016

Report No. FDA60400

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TEST REPORT

Form C/FD/R/91/Issue 3 (1/1) [08/14]

Hilti (Hong Kong) Ltd

701-704, 7/F, Tower A, Manulife Financial Centre,
223 Wai Yip Street, Kwun Tong, Kowloon

Tensile Load Test on Dowel Bar

Anchor Type:

Hilti HIT-RE 500 V3 + Grade 500B Y20 Rebar

(Sample 1 to 5)

Test Ref.: BS 5080 : Part 1 : 1993 : Cl. 7.1.1

Date Tested : 07-Mar-2016

ETL Ref. No. : 406/2016

Reported by : _____
~~CHAN, Ping Sum/~~
CHEUNG, Ming Nog

Approved Signatory : _____
MONG, Seng Ming

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TEST REPORT

Form C/FD/R/77/Issue 1 (1/1) [06/06]

Tensile Load Test on Dowel Bar

Customer : Hilti (Hong Kong) Ltd
Address : 701-704, 7/F, Tower A, Manulife Financial Centre, 223 Wai Yip Street, Kwun Tong, Kowloon
Project : -
Test Location : ETL Laboratory
Anchor Type : Hilti HIT-RE 500 V3 + Grade 500B Y20 Rebar
Amb.Temperature : 18°C

Report No. : FDA60491
Test Date : 07-Mar-2016
Report Date : 08-Mar-2016
Page No. : 3 of 4
Test Method : BS 5080:Part 1:1993 Cl 7.1.1
Test Procedure : TPF/003

Load (kN)	*Dial Gauge Reading (mm)*				
	Sample 1	*Sample 2*	*Sample 3*	*Sample 4*	*Sample 5*
0.0	0.00	0.00	0.00	0.00	0.00
15.0	0.20	0.25	0.11	0.47	0.20
30.0	0.36	0.40	0.55	0.69	0.29
45.0	0.54	0.60	0.92	0.95	0.62
60.0	0.70	0.85	1.18	1.19	0.86
75.0	0.84	1.08	1.39	1.51	1.09
90.0	1.01	1.29	1.65	1.77	1.32
105.0	1.19	1.50	1.82	2.03	1.57
120.0	1.39	1.71	2.01	2.40	1.91
135.0	1.61	2.01	2.26	2.87	2.35
150.0	1.96	2.35	2.49	3.25	2.88
165.0	2.37	2.80	2.77	3.66	3.26
180.0	2.83	3.35	3.09	4.06	3.73
195.0	3.71	4.44	4.03	4.80	4.63
210.0	-	-	-	-	-
Failure Load (kN)	204.4	198.0	201.3	199.3	198.4
Failure Mode	F1 / F5	F1 / F5	F1 / F5	F1 / F5	F1 / F5
Displacement	6.00	6.00	6.00	6.00	6.00
Average Failure Load (kN)	200.3				
Standard Deviation (kN)	2.6				

A) Test Appratus
Load Cell :Comp. Load Cell CWFK-50t, 500kN (ET/930/14/01) S/N : K03362
Load Cell Indicator : XK315A1-8 (ET/930/29/02) S/N : -
Cylinder : Hydraulic Cylinder RSCH302 (ET/903/29) S/N : E02121602-11
Digital Dial Gauge : Digital Indicator (ET/915/54) S/N :103131

B) Concrete Grade 30/20D

C) Anchor installed date 02-Mar-2016

D) Failure Modes
P = No sign of failure in anchor and/or structural member
F1 = Failure of anchor or its accessories
F2 = Failure in structural member
F3 = Pull out of anchor
F4 = Failure of structural member in a shear cone
F5 = Failure by continuous displacement or decreasing load
F6 = Failure in structural member with crack radiates outward from anchor
F7 = Other failure mode(s) : Bar Breaking

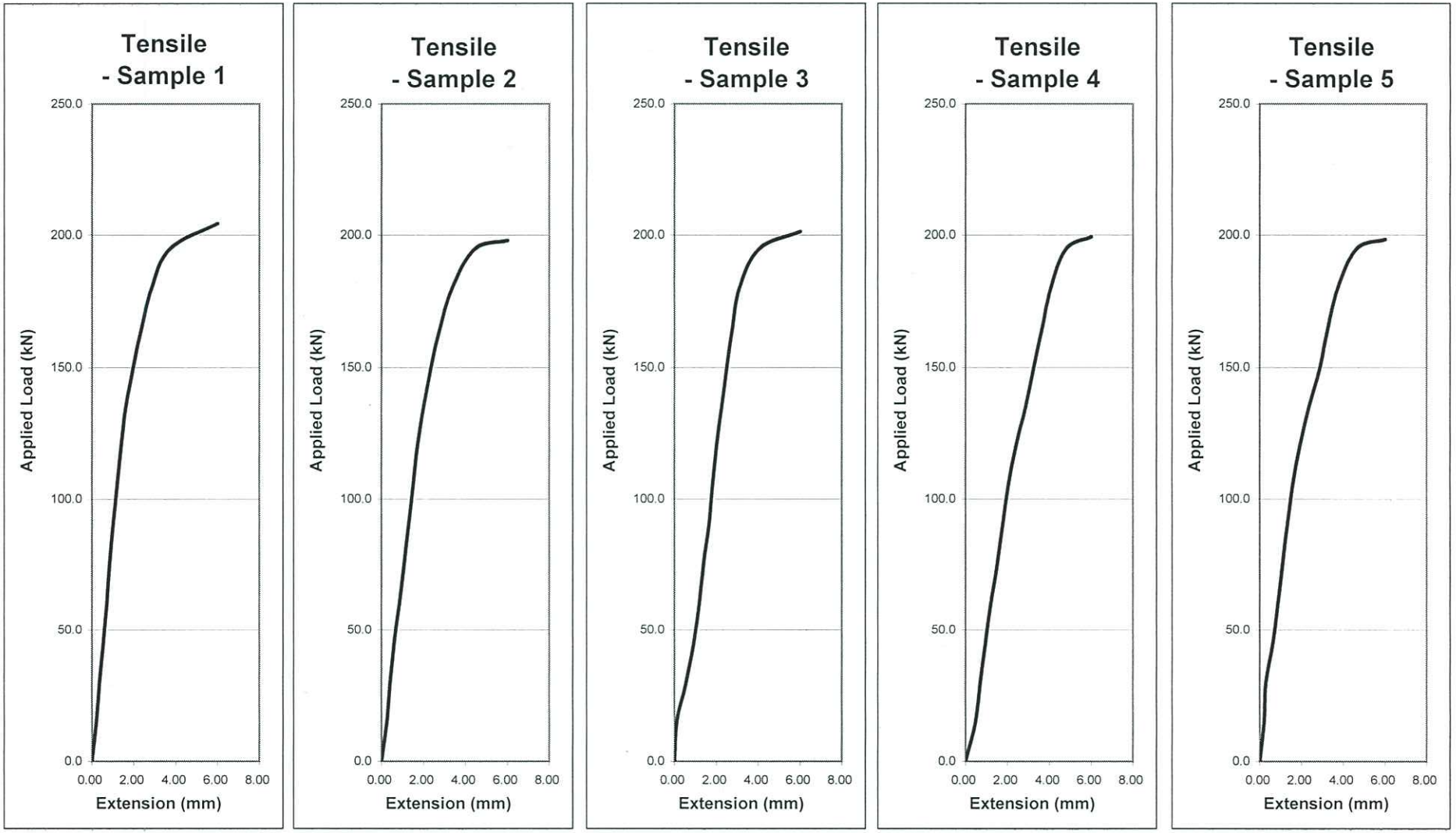
E) Min. distance between reaction frame and centre of the fixing (mm) 400

F) Min. distance between the centre of fixing and free edge (mm) 600

G) Rebar embedment depth (mm) 200

Tested By : CHAN, Yun Leung
Approved Signatory : MONG, Seng Ming
Checked By : (Assistant Engineer)

Hilti HIT-RE 500 V3 + Grade 500B Y20 Rebar



Report Issue Date: 08-Mar-2016

Report No. FDA60491

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TEST REPORT

Form C/FD/R/91/Issue 3 (1/1) [08/14]

Hilti (Hong Kong) Ltd

701-704, 7/F, Tower A, Manulife Financial Centre,
223 Wai Yip Street, Kwun Tong, Kowloon

Tensile Load Test on Dowel Bar

Anchor Type:

Hilti HIT-RE 500 V3 + Grade 500B Y25 Rebar

(Sample 1 to 5)

Test Ref.: BS 5080 : Part 1 : 1993 : Cl. 7.1.1

Date Tested : 16-Jun-2016

ETL Ref. No. : 1117/2016

Reported by : _____
~~CHAN, Ping Sum/~~
CHEUNG, Ming Nog

Approved Signatory : _____
MONG, Seng Ming

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TEST REPORT

Form C/FD/R/77/Issue 1 (1/1) [06/06]

Tensile Load Test on Dowel Bar

Customer : Hilti (Hong Kong) Ltd
Address : 701-704, 7/F, Tower A, Manulife Financial Centre, 223 Wai Yip Street, Kwun Tong, Kowloon
Project : -
Test Location : ETL Laboratory
Type : Hilti HIT-RE 500 V3 + Grade 500B Y25 Rebar
Amb.Temperature : -

Report No. : FDA61426
Test Date : 16-Jun-2016
Report Date : 18-Jun-2016
Page No. : 3 of 4
Test Method : BS 5080:Part 1:1993 Cl 7.1.1
Test Procedure : TPF/003

Load (kN)	*Dial Gauge Reading (mm)*				
	Sample 1	*Sample 2*	*Sample 3*	*Sample 4*	*Sample 5*
0.0	0.00	0.00	0.00	0.00	0.00
20.0	0.01	0.12	0.13	0.03	0.17
40.0	0.01	0.35	0.35	0.25	0.38
60.0	0.01	0.56	0.58	0.48	0.61
80.0	0.03	0.76	0.84	0.70	0.79
100.0	0.26	1.01	1.13	0.93	1.09
120.0	0.49	1.27	1.42	1.19	1.30
140.0	0.71	1.55	1.73	1.51	1.58
160.0	1.04	1.91	2.09	1.84	1.89
180.0	1.42	2.33	2.52	2.26	2.27
200.0	1.85	2.85	3.09	2.79	2.73
220.0	2.40	3.46	3.68	3.43	3.32
240.0	3.02	4.11	4.35	3.99	3.93
260.0	3.81	4.72	4.82	4.82	4.71
280.0	-	-	-	-	-
300.0	-	-	-	-	-
Failure Load (kN)	278.0	277.0	279.0	266.0	272.0
Failure Mode	F1/F5	F1/F5	F1/F5	F1/F5	F1/F5
Average Failure Load (kN)	274.4				
Standard Deviation (kN)	5.4				

A) Test Appratus
Load Cell :Comp. Load Cell BLR-1 100T, 100Ton (ET/930/04/01) S/N : 01705
Load Cell Indicator : XK315A1-8 (ET/930/33/02) S/N : -
Cylinder : RCH 606 (ET/903/12) S/N : -
Digital Dial Gauge : Digital Indicator (ET/915/54) S/N :103131

B) Concrete Grade 30/20D

C) Installed date 14-Jun-2016

D) Failure Modes
P = No sign of failure in dowel bar and/or structural member
F1 = Failure of dowel bar or its accessories
F2 = Failure in structural member
F3 = Pull out of dowel bar
F4 = Failure of structural member in a shear cone
F5 = Failure by continuous displacement or decreasing load
F6 = Failure in structural member with crack radiates outward from dowel bar
F7 = Other failure mode(s) : Bar Breaking

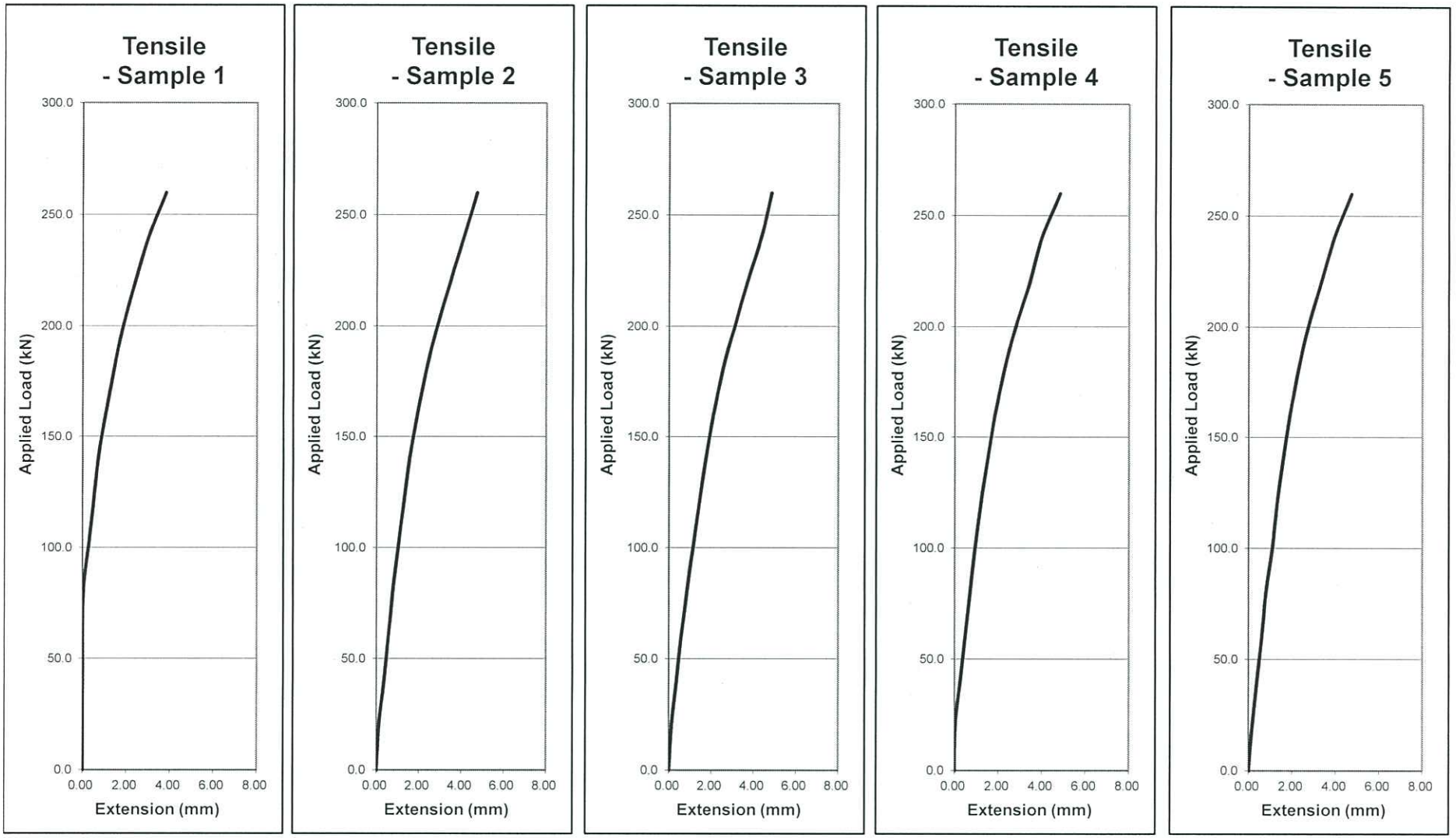
E) Min. distance between reaction frame and centre of the fixing (mm) 500

F) Min. distance between the centre of fixing and free edge (mm) 625

G) Rebar embedment depth (mm) 250

Tested By : SHUM, Chi Wai
Approved Signatory : MONG, Seng Ming
Checked By : (Assistant Engineer)

Hilti HIT-RE 500 V3 + Grade 500B Y25 Rebar



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HOKLAS 022 TEST CAL

TEST REPORT

Hilti (Hong Kong) Ltd

701-704, 7/F, Tower A, Manulife Financial Centre,
223 Wai Yip Street, Kwun Tong, Kowloon

Tensile Load Test on Dowel Bar

Anchor Type:

Hilti HIT-RE 500 V3 + Grade 500B Y32 Rebar

(Sample 1 to 5)

Test Ref.: BS 5080 : Part 1 : 1993 : Cl. 7.1.1

Date Tested : 16-Jun-2016

ETL Ref. No. : 1117/2016

Reported by : _____
~~CHAN, Ping Sum~~/
CHEUNG, Ming Nog

Approved Signatory : _____
MONG, Seng Ming

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HKAS HOKLAS 022 TEST CAL

TEST REPORT

Form C/FD/R/77/Issue 1 (1/1) [06/06]

Tensile Load Test on Dowel Bar

Customer : Hilti (Hong Kong) Ltd
Address : 701-704, 7/F, Tower A, Manulife Financial Centre, 223 Wai Yip Street, Kwun Tong, Kowloon
Project : -
Test Location : ETL Laboratory
Type : Hilti HIT-RE 500 V3 + Grade 500B Y32 Rebar
Amb.Temperature : 33°C

Report No. : FDA61422
Test Date : 16-Jun-2016
Report Date : 17-Jun-2016
Page No. : 3 of 4
Test Method : BS 5080:Part 1:1993 Cl 7.1.1
Test Procedure : TPF/003

Load (kN)	*Dial Gauge Reading (mm)*				
	Sample 1	*Sample 2*	*Sample 3*	*Sample 4*	*Sample 5*
0.0	0.00	0.00	0.00	0.00	0.00
20.0	0.04	0.02	0.00	0.00	0.00
40.0	0.22	0.19	0.10	0.05	0.06
60.0	0.37	0.37	0.23	0.22	0.22
80.0	0.52	0.52	0.38	0.42	0.35
100.0	0.72	0.74	0.54	0.59	0.50
120.0	0.89	0.90	0.70	0.76	0.68
140.0	1.07	1.05	0.84	0.93	0.82
160.0	1.23	1.23	1.06	1.09	0.99
180.0	1.39	1.43	1.21	1.27	1.18
200.0	1.54	1.61	1.39	1.44	1.39
220.0	1.72	1.80	1.62	1.60	1.57
240.0	1.86	2.03	1.80	1.78	1.76
260.0	1.95	2.22	1.98	1.99	1.95
280.0	2.15	2.42	2.23	2.24	2.19
300.0	2.32	2.66	2.46	2.44	2.40
320.0	3.09	2.89	2.72	2.69	2.68
340.0	3.54	3.16	3.01	2.94	2.99
360.0	3.74	3.48	3.26	3.32	3.26
380.0	3.95	3.80	3.67	3.92	3.63
400.0	4.21	4.18	4.00	4.20	3.96
420.0	4.74	4.66	4.60	4.55	4.57
440.0	-	-	-	-	-
Failure Load (kN)	437.0	433.0	437.0	437.0	434.0
Failure Mode	F1/F5	F1/F5	F1/F5	F4	F4
Average Failure Load (kN)	435.6				
Standard Deviation (kN)	1.9				

A) Test Appratus
Load Cell :Comp. Load Cell, BLR-1, 100ton (ET/930/04/01) S/N : 01705
Load Cell Indicator : XK315A1-8 (ET/930/33/02) S/N : -
Cylinder : RCH-606 (ET/903/12) S/N : -
Digital Dial Gauge : Digital Indicator (ET/915/54) S/N :103131

B) Concrete Grade 30/20D

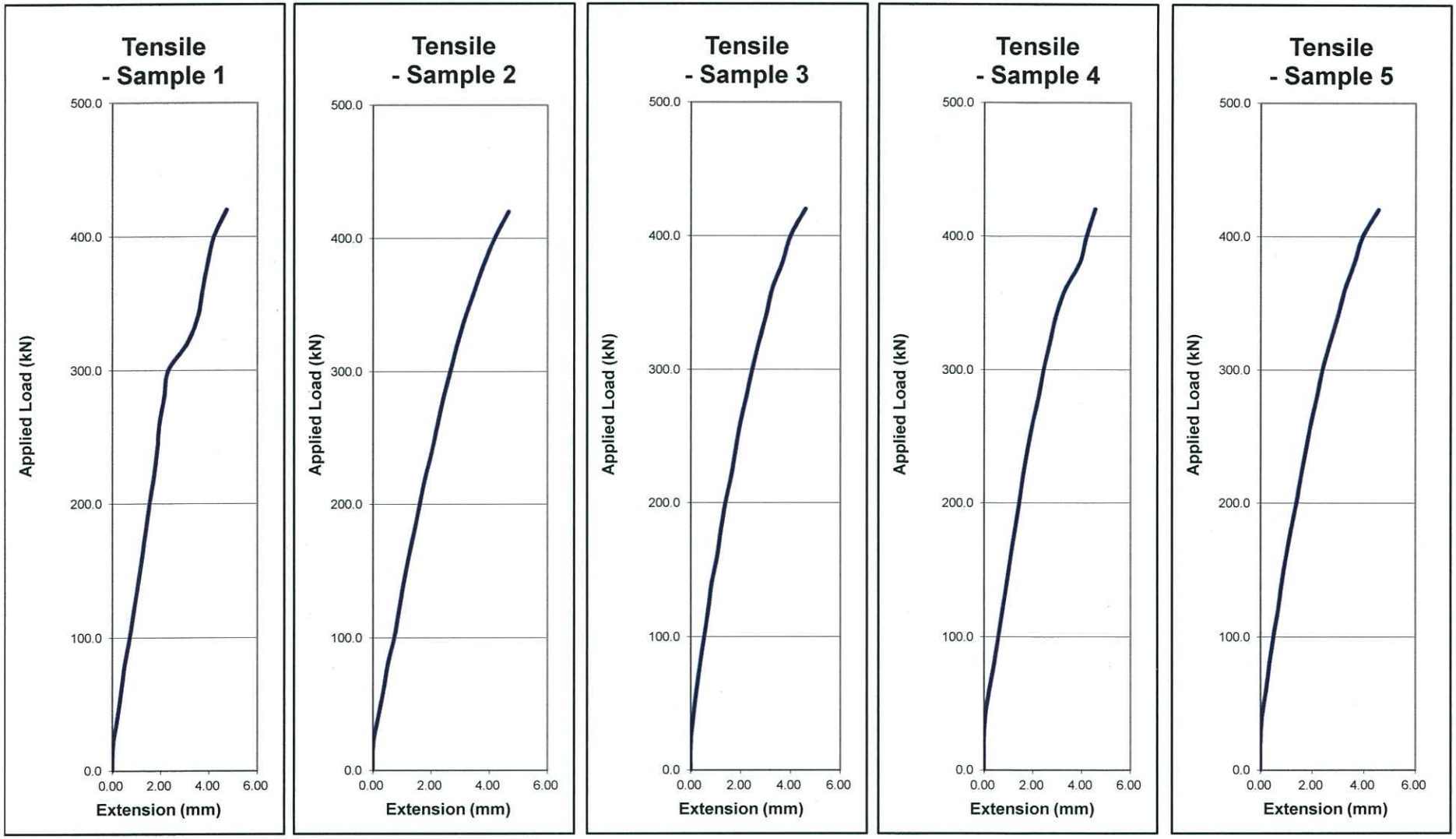
C) Installed date 14-Jun-2016

D) Failure Modes
P = No sign of failure in dowel bar and/or structural member
F1 = Failure of dowel bar or its accessories
F2 = Failure in structural member
F3 = Pull out of dowel bar
F4 = Failure of structural member in a shear cone
F5 = Failure by continuous displacement or decreasing load
F6 = Failure in structural member with crack radiates outward from dowel bar
F7 = Other failure mode(s) : Bar Breaking

E) Min. distance between reaction frame and centre of the fixing (mm) 640
F) Min. distance between the centre of fixing and free edge (mm) 960
G) Rebar embedment depth (mm) 320

Tested By : WONG, Tsz San
Approved Signatory : MONG, Seng Ming
Checked By : (Assistant Engineer)

Hilti HIT-RE 500 V3 + Grade 500B Y32 Rebar



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TEST REPORT

Form C/FD/R/91/Issue 3 (1/1) [08/14]

Hilti (Hong Kong) Ltd

701-704, 7/F, Tower A, Manulife Financial Centre,
223 Wai Yip Street, Kwun Tong, Kowloon

Tensile Load Test on Dowel Bar

Anchor Type:

Hilti HIT-RE 500 V3 + Grade 500B Y40 Rebar

(Sample 1 to 5)

Test Ref.: BS 5080 : Part 1 : 1993 : Cl. 7.1.1

Date Tested : 05-May-2016

ETL Ref. No. : 830/2016

Reported by : _____
CHAN, Ping Sum/
~~CHEUNG, Ming Nog~~

Approved Signatory : _____
MONG, Seng Ming

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東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED
8/F., Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan Street, Fotan, Hong Kong
Tel : 2695 8318 E-mail : etl@ets-testconsult.com
Fax : 2695 3944 Web site : www.ets-testconsult.com

HOKLAS 022 TEST CAL

TEST REPORT

Form C/FD/R/77/Issue 1 (1/1) [06/06]

Tensile Load Test on Dowel Bar

Customer : Hilti (Hong Kong) Ltd
Address : 701-704, 7/F, Tower A, Manulife Financial Centre, 223 Wai Yip Street, Kwun Tong, Kowloon
Project : -
Test Location : ETL Laboratory
Anchor Type : Hilti HIT-RE 500 V3 + Grade 500B Y40 Rebar
Amb.Temperature : 30°C

Report No. : FDA61009
Test Date : 05-May-2016
Report Date : 06-May-2016
Page No. : 3 of 4
Test Method : BS 5080:Part 1:1993 Cl 7.1.1
Test Procedure : TPF/003

Load (kN)	*Dial Gauge Reading (mm)*				
	Sample 1	*Sample 2*	*Sample 3*	*Sample 4*	*Sample 5*
0.0	0.00	0.00	0.00	0.00	0.00
63.0	0.05	0.03	0.10	0.02	0.06
126.0	0.13	0.27	0.24	0.34	0.18
189.0	0.38	0.64	0.67	0.66	0.51
252.0	0.76	1.03	1.08	1.04	0.84
315.0	1.15	1.41	1.53	1.45	1.20
378.0	1.65	1.91	2.00	1.94	1.57
441.0	2.15	2.39	2.40	2.50	1.97
504.0	2.85	2.95	2.93	3.12	2.48
567.0	3.65	3.68	3.72	3.92	3.17
630.0	4.75	4.61	4.83	4.71	4.08
680.0	-	-	-	-	-
730.0	-	-	-	-	-
780.0	-	-	-	-	-
Failure Load (kN)	651.0	649.0	643.0	648.0	654.0
Failure Mode	F5 / F1	F5 / F1	F5 / F1	F5 / F1	F5 / F1
Average Failure Load (kN)	649.0				
Standard Deviation (kN)	4.1				

A) Test Appratus
Load Cell :Comp. Load Cell, BLR-1, 100ton (ET/930/04/01) S/N : 01705
Load Cell Indicator : XK315A1-8 (ET/930/33/02) S/N : -
Cylinder : RCH-1003 (ET/903/09) S/N : D4397C
Digital Dial Gauge : Digital Indicator (ET/915/68) S/N :-

B) Concrete Grade 30/20D

C) Anchor installed date 03-May-2016

D) Failure Modes
P = No sign of failure in anchor and/or structural member
F1 = Failure of anchor or its accessories
F2 = Failure in structural member
F3 = Pull out of anchor
F4 = Failure of structural member in a shear cone
F5 = Failure by continuous displacement or decreasing load
F6 = Failure in structural member with crack radiates outward from anchor
F7 = Other failure mode(s) : Bar Breaking

E) Min. distance between reaction frame and centre of the fixing (mm) 800

F) Min. distance between the centre of fixing and free edge (mm) 1200

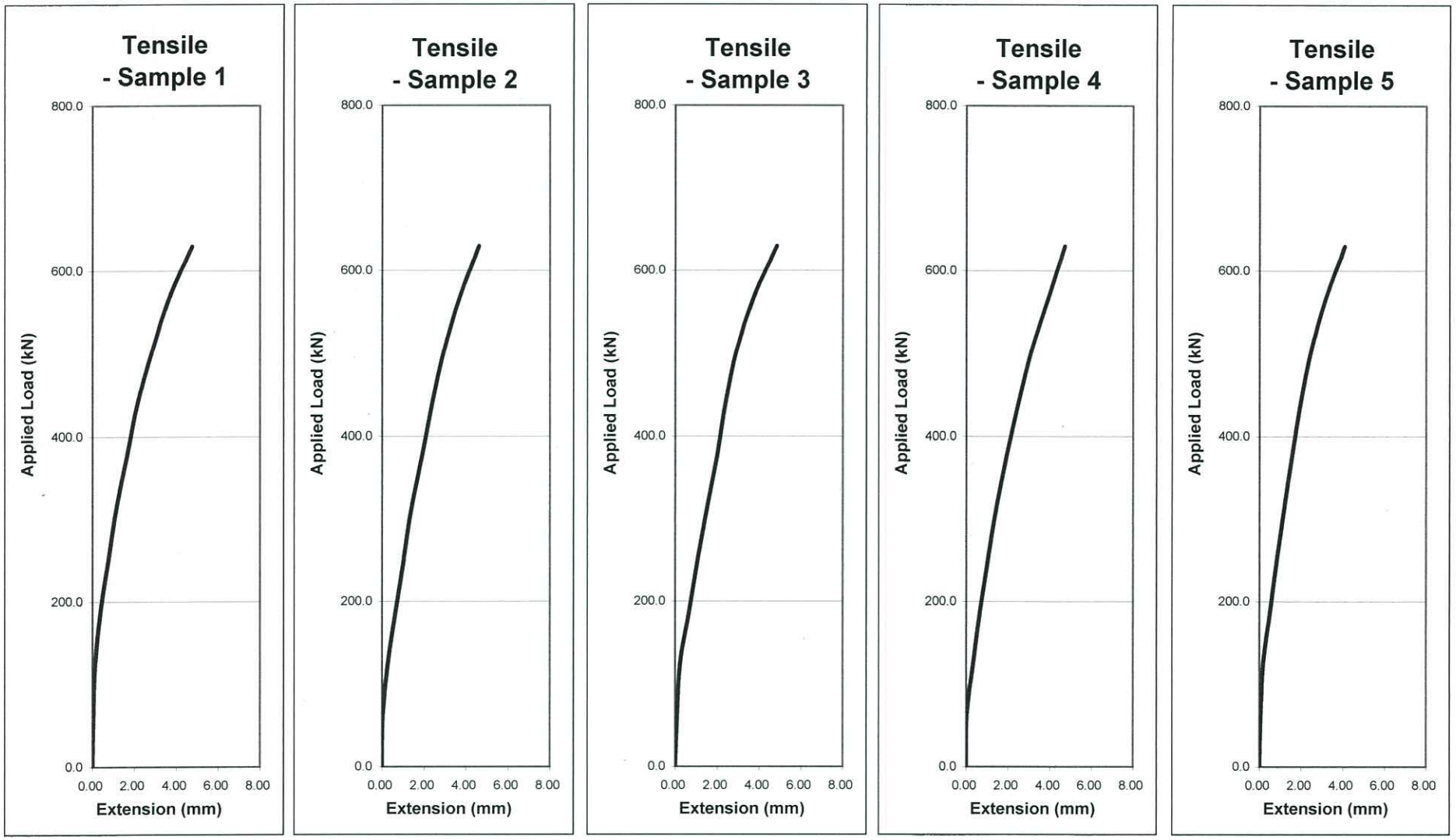
G) Rebar embedment depth (mm) 400

Tested By : WONG, Tsz San/So, Hin Ting

Approved Signatory : MONG, Seng Ming

Checked By : (Assistant Engineer)

Hilti HIT-RE 500 V3 + Grade 500B Y40 Rebar



1 April 2018
Ref: 018/AC/FL/18

TO WHOM IT MAY CONCERN

Subject : **RE: Hilti HIT-RE 500 V3 – New product replacement of HIT-RE 500-SD**

Dear Sir/Madam,

We are pleased to introduce you the new generation of epoxy mortar **Hilti HIT-RE500 V3 injection mortar system** as a product replacement of the existing HIT-RE 500-SD. **HIT-RE500 V3** will be officially phased in from **September 2018** and HIT-RE 500-SD will start to phase out at the same time while until stock lasts.

The injection system Hilti HIT-RE 500 V3 is now suitable for an even wider range of applications and conditions for added reassurance on your daily designs for both, anchor systems and post-installed rebar applications. Now you can enjoy the following benefits compared to before:

- **Higher design bond stress** in uncracked and cracked concrete in anchoring application
- **Faster curing time** of 6 hours
- **Approved in combination with Hilti Hollow Drill Bit (HDB)** to ensure a dust free environment during installation and eliminating the most load effective step for chemical anchors, borehole cleaning (SafeSet installation).
- **Approved for diamond coring:** Performance in diamond cored drilled holes on the level of hammer drilled holes when the new roughening tool TE-YRT is used (SafeSet installation).
- **Approved for category 1 (C1) application under seismic actions** to design according to EOTA TR 045 "Design of Metal Anchors For Use In Concrete Under Seismic Actions, 02/2013"
- For design under static and quasi-static action according to EOTA TR 029 and CEN/TS 1992-4 "Design of fastenings for use in concrete"
- For detailed technical details, please refer to latest Hilti Anchor Fastening Manual.

Hilti will contuously do the utmost to provide you excellent products and services. Should you need further information, please feel free to contact our engineers on 2773 4731.

Yours faithfully,

Fean Lee
Product Manager
Hilti (Hong Kong) Ltd.

Hilti (Hong Kong) Ltd.
701-704 | Tower A | Manulife Financial Centre
223 Wai Yip Street | Kwun Tong
Kowloon | Hong Kong
P +852-8228 8118 I **F** +852-2954 1751
www.hilti.com.hk

Attn. : To whom it may concern

Date : 1 April 2025
Ref. : 061/AC/SC/25

Subject : Country of Origin- Hilti HIT-RE500V3 Injectable Mortar

Dear Sir / Madam,

Enclosed please find the information of Hilti HIT-RE500V3 Injectable Mortar. .

Brand Name : Hilti

Model Name : Hilti HIT-RE500V3 Injectable Mortar

Manufacturer : Hilti Corporation

Address of Manufacturer : FL-9494, Principality of Liechtenstein.

Manufacturer Contact Person : Spencer Cheung

Supplier : Hilti (Hong Kong) Ltd

Address of Supplier : 701-704, 7/F, Tower A, Manulife Financial Centre,
223 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong

Supplier Contact Person : Spencer Cheung (+852 9732 1231)

Country of Origin : Germany

Should you have further questions, please do not hesitate to contact our Technical Representatives, Customer Service Hotline at 8228-8118, or email us at hksales@hilti.com.

Yours faithfully,

Spencer Cheung
Head of Product Leadership Strategy

Hilti (Hong Kong) Ltd.
701-704 | Tower A | Manulife Financial Centre
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HIT-RE 500 V3

Safety information for 2-Component-products

Issue date: 13/05/2020 Revision date: 13/05/2020 Supersedes: 26/02/2019 Version: 2.3

SECTION 1: Kit identification

1.1 Product identifier

Product name HIT-RE 500 V3

Product code BU Anchor

1.2 Details of the supplier of the Safety information for 2-Component-products

Hilti (Hong Kong) Ltd.
701-704, 7/F, Tower A, Manulife Financial Centre
223 Wai Yip Street, Kwun Tong
Kowloon - Hong Kong
T +852 27734 700
hksales@hilti.com

SECTION 2: General information

Storage Storage temperature : 5 - 25 °C

A SDS for each of these components is included. Please do not separate any component SDS from this cover page

This Kit should be handled in accordance with good laboratory practices and appropriate personal protective equipment should be used

SECTION 3:

Classification of the Product

Classification according to the United Nations GHS (Rev. 4, 2011)

Acute Tox. 5 (Oral)	H303
Skin Corr. 1B	H314
Skin Sens. 1	H317
Muta. 2	H341
Repr. 1B	H360
STOT SE 3	H335
Aquatic Chronic 2	H411

Label elements

Labelling according to the United Nations GHS (Rev. 4, 2011)

Hazard pictograms (GHS UN)

GHS05 GHS07 GHS08 GHS09

Signal word (GHS UN) Danger

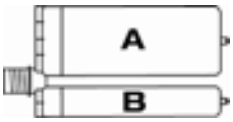
Hazardous ingredients Epoxy resin, Amines

Hazard statements (GHS UN)
H314 - Causes severe skin burns and eye damage.
H317 - May cause an allergic skin reaction.
H335 - May cause respiratory irritation.
H341 - Suspected of causing genetic defects.
H360 - May damage fertility or the unborn child.

	H411 - Toxic to aquatic life with long lasting effects.
Precautionary statements (GHS UN)	P280 - Wear eye protection, protective clothing, protective gloves. P262 - Do not get in eyes, on skin, or on clothing. P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P333+P313 - If skin irritation or rash occurs: Get medical advice/attention. P337+P313 - If eye irritation persists: Get medical advice/attention. P302+P352 - IF ON SKIN: Wash with plenty of water.

Additional information

2-component-foilpack, contains:
Component A: Epoxy resin, Reactive diluent, inorganic filler
Component B: Amine hardener, inorganic filler



Name	General description	Quantity	Unit	Classification according to the United Nations GHS
HIT-RE 500 V3, B		1	pcs	Acute Tox. 5 (Oral), H303 Skin Corr. 1B, H314 Skin Sens. 1, H317 STOT SE 3, H335 Aquatic Acute 3, H402 Aquatic Chronic 3, H412
HIT-RE 500 V3, A		1	pcs	Skin Corr. 1C, H314 Skin Sens. 1, H317 Muta. 2, H341 Repr. 1B, H360 Aquatic Acute 2, H401 Aquatic Chronic 2, H411

SECTION 4: General advice

General advice	For professional users only

SECTION 5: Safe handling advice

General measures	Spilled material may present a slipping hazard
Environmental precautions	Prevent entry to sewers and public waters Notify authorities if liquid enters sewers or public waters Avoid release to the environment Full or only partially emptied cartridges must be disposed of as special waste in accordance with official regulations. After curing, the product can be disposed of with household waste.
Storage conditions	Protect from sunlight. Store in a well-ventilated place.
Technical measures	Comply with applicable regulations
Precautions for safe handling	Wear personal protective equipment Avoid contact with skin and eyes Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work Avoid contact during pregnancy/while nursing
Methods for cleaning up	This material and its container must be disposed of in a safe way, and as per local legislation Mechanically recover the product On land, sweep or shovel into suitable containers Store away from other materials.
For containment	Collect spillage.
Incompatible materials	Sources of ignition Direct sunlight
Incompatible products	Strong bases

Strong acids

SECTION 6: First aid measures

First-aid measures after eye contact	Get immediate medical advice/attention. Immediately rinse with water for a prolonged period while holding the eyelids wide open Remove contact lenses, if present and easy to do. Continue rinsing. Consult an eye specialist
First-aid measures after ingestion	Do not induce vomiting Rinse mouth Immediately call a POISON CENTER/doctor.
First-aid measures after inhalation	Remove person to fresh air and keep comfortable for breathing.
First-aid measures after skin contact	Wash with plenty of water/… Take off immediately all contaminated clothing. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get immediate medical advice/attention.
First-aid measures general	Never give anything by mouth to an unconscious person If you feel unwell, seek medical advice (show the label where possible)
Symptoms/effects	Causes severe skin burns and eye damage.
Symptoms/effects after eye contact	Causes serious eye damage.
Symptoms/effects after inhalation	May cause an allergic skin reaction.

SECTION 7: Fire fighting measures

Firefighting instructions	Use water spray or fog for cooling exposed containers Exercise caution when fighting any chemical fire Prevent fire fighting water from entering the environment
Protection during firefighting	Self-contained breathing apparatus Do not enter fire area without proper protective equipment, including respiratory protection
Hazardous decomposition products in case of fire	Thermal decomposition generates : Carbon dioxide Carbon monoxide

SECTION 8: Other information

No data available

HIT-RE 500 V3, B

Safety Data Sheet

according to the United Nations GHS (Rev. 4, 2011)

Issue date: 13/05/2020 Revision date: 13/05/2020 Supersedes: 25/02/2019

Version: 1.6

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	Mixture
Product name	HIT-RE 500 V3, B
UN-No. (ADR)	3259
Product code	BU Anchor

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture	Composite mortar component for fasteners in the construction industry

1.3. Details of the supplier of the safety data sheet

Supplier
Hilti (Hong Kong) Ltd.
701-704, 7/F, Tower A, Manulife Financial Centre
223 Wai Yip Street, Kwun Tong
Kowloon - Hong Kong
T +852 27734 700
hksales@hilti.com

Department issuing data specification sheet
Hilti Entwicklungsgesellschaft mbH
Hiltistraße 6
86916 Kaufering - Deutschland
T +49 8191 906876
anchor.hse@hilti.com

1.4. Emergency telephone number

Emergency number	Schweizerisches Toxikologisches Informationszentrum – 24h Service +41 44 251 51 51 (international) +852 27734 700

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to the United Nations GHS (Rev. 4, 2011)

Acute Tox. 5 (Oral)	H303
Skin Corr. 1B	H314
Skin Sens. 1	H317
STOT SE 3	H335
Aquatic Acute 3	H402
Aquatic Chronic 3	H412

Full text of H statements : see section 16

2.2. Label elements

Labelling according to the United Nations GHS (Rev. 4, 2011)

Hazard pictograms (GHS UN)

GHS05 GHS07

Signal word (GHS UN)	Danger
Hazardous ingredients	2-methyl-1,5-pentanediamine; Phenol, styrenated; m-Xylylenediamine; 3-Aminopropyltriethoxysilan; 2,4,6-tris(dimethylaminomethyl)phenol
Hazard statements (GHS UN)	H314 - Causes severe skin burns and eye damage. H317 - May cause an allergic skin reaction. H335 - May cause respiratory irritation. H412 - Harmful to aquatic life with long lasting effects.
Precautionary statements (GHS UN)	P262 - Do not get in eyes, on skin, or on clothing. P280 - Wear eye protection, protective clothing, protective gloves.

P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333+P313 - If skin irritation or rash occurs: Get medical advice, medical attention.
P337+P313 - If eye irritation persists: Get medical advice, medical attention.
P302+P352 - IF ON SKIN: Wash with plenty of water.

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to the United Nations GHS
2-methyl-1,5-pentanediamine	(CAS-No.) 15520-10-2	25 - 35	Flammable liquids, Category 4, H227 Acute toxicity (oral), Category 4, H302 Acute toxicity (dermal), Category 4, H312 Acute toxicity (inhalation:dust,mist) Category 4, H332 Skin corrosion/irritation, Category 1A, H314 Serious eye damage/eye irritation, Category 1, H318 Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation, H335
Phenol, styrenated	(CAS-No.) 61788-44-1	5 - 10	Skin corrosion/irritation, Category 2, H315 Skin sensitisation, Category 1, H317 Hazardous to the aquatic environment — Acute Hazard, Category 2, H401 Hazardous to the aquatic environment — Chronic Hazard, Category 2, H411
m-Xylylenediamine	(CAS-No.) 1477-55-0	5 - <8	Acute toxicity (oral), Category 4, H302 Acute toxicity (inhalation:dust,mist) Category 4, H332 Skin corrosion/irritation, Category 1B, H314 Serious eye damage/eye irritation, Category 1, H318 Skin sensitisation, category 1B, H317 Hazardous to the aquatic environment — Acute Hazard, Category 3, H402 Hazardous to the aquatic environment — Chronic Hazard, Category 3, H412
2,4,6-tris(dimethylaminomethyl)phenol	(CAS-No.) 90-72-2	1 - 2,5	Acute toxicity (oral), Category 4, H302 Skin corrosion/irritation, Category 2, H315 Serious eye damage/eye irritation, Category 2A, H319
3-Aminopropyltriethoxysilan	(CAS-No.) 919-30-2	1 - 2,5	Acute toxicity (oral), Category 4, H302 Skin corrosion/irritation, Category 1B, H314

Full text of H-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
First-aid measures after inhalation	Remove person to fresh air and keep comfortable for breathing.
First-aid measures after skin contact	Wash with plenty of water/…. Take off immediately all contaminated clothing. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get immediate medical advice/attention.
First-aid measures after eye contact	Get immediate medical advice/attention. Immediately rinse with water for a prolonged period while holding the eyelids wide open. Remove contact lenses, if present and easy to do. Continue rinsing. Consult an eye specialist.
First-aid measures after ingestion	Do not induce vomiting. Rinse mouth. Immediately call a POISON CENTER/doctor.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects	Causes severe skin burns and eye damage.
Symptoms/effects after inhalation	May cause an allergic skin reaction.
Symptoms/effects after eye contact	Causes serious eye damage.
Potential adverse human health effects and symptoms	No additional information available.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	Foam. Dry powder. Carbon dioxide. Water spray. Sand.
Unsuitable extinguishing media	Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

No additional information available

5.3. Advice for firefighters

Firefighting instructions	Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire fighting water from entering the environment.
Protection during firefighting	Self-contained breathing apparatus. Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	Spilled material may present a slipping hazard.

6.1.1.For non-emergency personnel

Emergency procedures	Evacuate unnecessary personnel.

6.1.2.For emergency responders

Protective equipment	Use personal protective equipment as required. Equip cleanup crew with proper protection.
Emergency procedures	Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters. Avoid release to the environment. Full or only partially emptied cartridges must be disposed of as special waste in accordance with official regulations. After curing, the product can be disposed of with household waste.

6.3. Methods and material for containment and cleaning up

For containment	Collect spillage.
Methods for cleaning up	This material and its container must be disposed of in a safe way, and as per local legislation. Mechanically recover the product. On land, sweep or shovel into suitable containers. Store away from other materials.
Other information	Dispose of materials or solid residues at an authorized site.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	Wear personal protective equipment. Avoid contact with skin and eyes. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Avoid contact during pregnancy/while nursing.
Hygiene measures	Do not eat, drink or smoke when using this product. Always wash hands after handling the product. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	Comply with applicable regulations.
Storage conditions	Protect from sunlight. Store in a well-ventilated place.
Incompatible products	Strong bases. Strong acids.
Incompatible materials	Sources of ignition. Direct sunlight.
Storage temperature	5 - 25 °C
Heat and ignition sources	Keep away from heat and direct sunlight.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Additional information	The product has a pasty consistency. Exposure limit values for respirable dusts are not relevant for this product.

8.2. Appropriate engineering controls

Appropriate engineering controls	Ensure good ventilation of the work station.
Environmental exposure controls	No specific measures are required provided the product is handled in accordance with the general rules of occupational hygiene and safety.
Consumer exposure controls	Avoid contact during pregnancy/while nursing.
Other information	Do not eat, drink or smoke during use.

8.3. Individual protection measures, such as personal protective equipment (PPE)

Materials for protective clothing	Long sleeved protective clothing
Hand protection	Wear protective gloves. The permeation time is not the maximum wearing time! Generally speaking, it must be reduced. Contact with either mixtures of substances or different substances may shorten the protective function's effective duration.

Type	Material	Permeation	Thickness (mm)	Penetration	Standard
Disposable gloves	Nitrile rubber (NBR)	6 (> 480 minutes)	> 0,4		EN 374

Eye protection: Wear security glasses which protect from splashes

Type	Use	Characteristics	Standard
Safety glasses	Droplet	clear	EN 166, EN 170

Skin and body protection: Wear suitable protective clothing

8.4. Exposure limit values for the other components

No additional information available

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Solid
Appearance	Thixotropic paste.
Colour	red.
Odour	Amine-like.
Odour threshold	No data available
pH	11.5
Relative evaporation rate (butylacetate=1)	No data available
Melting point	No data available
Freezing point	No data available
Boiling point	No data available
Flash point	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Flammability (solid, gas)	Non flammable.
Vapour pressure	No data available
Relative vapour density at 20 °C	No data available
Relative density	No data available
Density	1.31 g/cm³
Solubility	insoluble in water.

Log Pow	No data available
Viscosity, kinematic	No data available
Viscosity, dynamic	50 - 70 Pa·s HN-0333
Explosive properties	No data available
Oxidising properties	No data available
Explosive limits	No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Corrosive vapours.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No additional information available.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials

Strong acids. Strong bases.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced. Thermal decomposition generates : fume. Carbon monoxide. Carbon dioxide. Corrosive vapours.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	May be harmful if swallowed.
Acute toxicity (dermal)	Not classified
Acute toxicity (inhalation)	Not classified

2-methyl-1,5-pentanediamine (15520-10-2)	
LD50 oral rat	1690 mg/kg (Rat)
LD50 dermal rat	1870 mg/kg
LC50 inhalation rat (mg/l)	4.9 mg/l

Phenol, styrenated (61788-44-1)	
LD50 oral rat	> 2500 mg/kg
LD50 dermal rat	> 2000 mg/kg
LC50 inhalation rat (mg/l)	158.31 mg/l/4h

m-Xylylenediamine (1477-55-0)	
LD50 oral rat	1090 mg/kg
LD50 oral	660 mg/kg
LD50 dermal rat	> 3100 mg/kg
LD50 dermal	> 3100 mg/kg
LC50 inhalation rat (Dust/Mist - mg/l/4h)	1.34 mg/l/4h

3-Aminopropyltriethoxysilan (919-30-2)	
LD50 oral rat	1.57 ml/kg

2,4,6-tris(dimethylaminomethyl)phenol (90-72-2)	
LD50 oral rat	2169 mg/kg (Rat; Equivalent or similar to OECD 401; Literature study; 2169 mg/kg bodyweight; Rat; Experimental value)
LD50 dermal rat	> 2000 mg/kg (Rat; Literature study; Other; >1 ml/kg; Rat; Experimental value)

Skin corrosion/irritation	Causes severe skin burns and eye damage. pH: 11.5
Serious eye damage/irritation	Serious eye damage, category 1, implicit pH: 11.5
Respiratory or skin sensitisation	May cause an allergic skin reaction.
Germ cell mutagenicity	Not classified
Carcinogenicity	Not classified
Reproductive toxicity	Not classified
STOT-single exposure	May cause respiratory irritation.
STOT-repeated exposure	Not classified
Aspiration hazard	Not classified
Potential adverse human health effects and symptoms	No additional information available.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - water	Harmful to aquatic life with long lasting effects.
Hazardous to the aquatic environment, short-term (acute)	Harmful to aquatic life.
Classification procedure (Hazardous to the aquatic environment, short-term (acute))	Calculation method
Hazardous to the aquatic environment, long-term (chronic)	Harmful to aquatic life with long lasting effects.
Classification procedure (Hazardous to the aquatic environment, long-term (chronic))	Calculation method

2-methyl-1,5-pentanediamine (15520-10-2)	
LC50 fish 1	130 mg/l (LC50; 48 h)
LOEC (acute)	1800 mg/l
NOEC (acute)	1000 mg/l

Phenol, styrenated (61788-44-1)	
LC50 fish 1	5.6 mg/l
LC50 other aquatic organisms 1	9.7 mg/l
EC50 Daphnia 1	1.44 mg/l
NOEC (acute)	3.2 mg/l
Threshold limit algae 1	0.326 mg/l (72 h; Algae)
Threshold limit algae 2	0.14 mg/l (72 h; Algae)

m-Xylylenediamine (1477-55-0)	
LC50 fish 1	75 mg/l
LC50 other aquatic organisms 1	20.3 ppb
EC50 Daphnia 1	15 mg/l
LOEC (chronic)	15 mg/l
NOEC (acute)	10.5 mg/kg
NOEC (chronic)	4.7 mg/l
NOEC chronic crustacea	4.7 mg/l

2,4,6-tris(dimethylaminomethyl)phenol (90-72-2)	
LC50 fish 1	> 100 mg/l (96 h; Pisces; Nominal concentration)
EC50 Daphnia 1	10 - 100 mg/l (Invertebrata; Estimated value)
EC50 other aquatic organisms 1	84 mg/l (72 h; Desmodesmus subspicatus; growth rate; ECHA)

LC50 fish 2	70.9 mg/l (96 h; Pisces)
ErC50 (algae)	84 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Desmodesmus subspicatus, Static system, Fresh water, Experimental value, GLP)
NOEC (chronic)	2 mg/l (28 d; activated sludge, domestic; respiration rate; ECHA)
Threshold limit algae 1	10 - 100,Algae
Threshold limit algae 2	84 mg/l (72 h; Scenedesmus subspicatus; Growth rate)

12.2. Persistence and degradability

HIT-RE 500 V3, B	
Persistence and degradability	May cause long-term adverse effects in the environment.
Phenol, styrenated (61788-44-1)	
Biochemical oxygen demand (BOD)	0.000231 g O_2 /g substance
Chemical oxygen demand (COD)	0.004827 g O_2 /g substance

12.3. Bioaccumulative potential

HIT-RE 500 V3, B	
Bioaccumulative potential	Not established.
2-methyl-1,5-pentanediamine (15520-10-2)	
Log Pow	0.27 (Estimated value)
Bioaccumulative potential	Low bioaccumulation potential (Log Kow < 4).
Phenol, styrenated (61788-44-1)	
BCF fish 2	3246 mg/l
Log Pow	6.24 - 7.77 (Experimental value; OECD 123: Partition Coefficient (1-Octanol/Water): Slow-Stirring Method)
Bioaccumulative potential	Bioaccumulative potential.
2,4,6-tris(dimethylaminomethyl)phenol (90-72-2)	
Log Pow	0.77 (Literature; 0.219; Experimental value; Equivalent or similar to OECD 107; 21.5 °C)
Bioaccumulative potential	Low bioaccumulation potential (Log Kow < 4).

12.4. Mobility in soil

2-methyl-1,5-pentanediamine (15520-10-2)	
Log Pow	See section 12.1 on ecotoxicology
Phenol, styrenated (61788-44-1)	
Log Pow	See section 12.1 on ecotoxicology
Ecology - soil	No (test)data on mobility of the substance available.
2,4,6-tris(dimethylaminomethyl)phenol (90-72-2)	
Log Pow	See section 12.1 on ecotoxicology
Log Koc	See section 12.1 on ecotoxicology
Ecology - soil	Highly mobile in soil.

12.5. Other adverse effects

Ozone	Not classified
Other adverse effects	No additional information available
Other information	Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional legislation (waste)	Disposal must be done according to official regulations.
Product/Packaging disposal recommendations	After curing, the product can be disposed of with household waste. . Full or only partially emptied cartridges must be disposed of as special waste in accordance with official regulations. Packaging contaminated by the product : Dispose in a safe manner in accordance with local/national regulations.
Ecology - waste materials	Avoid release to the environment.

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	RID
14.1. UN number			
3259	3259	3259	3259
14.2. UN proper shipping name			
AMINES, SOLID, CORROSIVE, N.O.S. (2-methyl-1,5-pentanediamine, m-Xylylenediamine)	AMINES, SOLID, CORROSIVE, N.O.S. (2-methyl-1,5-pentanediamine, m-Xylylenediamine)	Amines, solid, corrosive, n.o.s. (2-methyl-1,5-pentanediamine, m-Xylylenediamine)	AMINES, SOLID, CORROSIVE, N.O.S. (2-methyl-1,5-pentanediamine, m-Xylylenediamine)
Transport document description			
UN 3259 AMINES, SOLID, CORROSIVE, N.O.S. (2-methyl-1,5-pentanediamine, m-Xylylenediamine), 8, II, (E)	UN 3259 AMINES, SOLID, CORROSIVE, N.O.S. (2-methyl-1,5-pentanediamine, m-Xylylenediamine), 8, II	UN 3259 Amines, solid, corrosive, n.o.s. (2-methyl-1,5-pentanediamine, m-Xylylenediamine), 8, II	UN 3259 AMINES, SOLID, CORROSIVE, N.O.S. (2-methyl-1,5-pentanediamine, m-Xylylenediamine), 8, II
14.3. Transport hazard class(es)			
8	8	8	8
			
14.4. Packing group			
II	II	II	II
14.5. Environmental hazards			
Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No	Dangerous for the environment : No
No supplementary information available			

14.6. Special precautions for user

- Overland transport

Classification code (ADR)	C8
Special provisions (ADR)	274
Limited quantities (ADR)	1kg
Packing instructions (ADR)	P002, IBC08
Mixed packing provisions (ADR)	MP10
Transport category (ADR)	2
Orange plates	
Tunnel restriction code (ADR)	E

- Transport by sea

Special provisions (IMDG)	274
Limited quantities (IMDG)	1 kg
Packing instructions (IMDG)	P002

EmS-No. (Fire)	F-A
EmS-No. (Spillage)	S-B
Stowage category (IMDG)	A
Stowage and segregation (IMDG)	Separated from' acids.
MFAG-No	154

- Air transport

PCA packing instructions (IATA)	859
PCA max net quantity (IATA)	15kg
CAO packing instructions (IATA)	863
Special provisions (IATA)	A3

- Rail transport

Special provisions (RID)	274
Limited quantities (RID)	1kg
Packing instructions (RID)	P002, IBC08
Carriage prohibited (RID)	No

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

No additional information available

SECTION 16: Other information

SDS Major/Minor	None
Issue date	13/05/2020
Revision date	13/05/2020
Supersedes	25/02/2019

Indication of changes:

Section	Changed item	Change	Comments
2.1	Classification (GHS UN)	Modified	

Abbreviations and acronyms

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE - Acute Toxicity Estimate
BCF - Bioconcentration factor
CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
DMEL - Derived Minimal Effect level
DNEL - Derived-No Effect Level
IATA - International Air Transport Association
EC50 - Median effective concentration
IMDG - International Maritime Dangerous Goods
LC50 - Median lethal concentration
LD50 - Median lethal dose
LOAEL - Lowest Observed Adverse Effect Level
NOAEC - No-Observed Adverse Effect Concentration
NOAEL - No-Observed Adverse Effect Level
NOEC - No-Observed Effect Concentration
PBT - Persistent Bioaccumulative Toxic
PNEC - Predicted No-Effect Concentration
REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
RID - Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS - Safety Data Sheet
vPvB - Very Persistent and Very Bioaccumulative

Other information

None.

Full text of H-statements:

H227	Combustible liquid
H302	Harmful if swallowed.
H303	May be harmful if swallowed
H312	Harmful in contact with skin.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H401	Toxic to aquatic life
H402	Harmful to aquatic life
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

SDS_UN_Hilti

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

HIT-RE 500 V3, A

Safety Data Sheet

according to the United Nations GHS (Rev. 4, 2011)

Issue date: 13/05/2020 Revision date: 13/05/2020 Supersedes: 25/02/2019

Version: 2.3

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	Mixture
Product name	HIT-RE 500 V3, A
UN-No. (ADR)	1759
Product code	BU Anchor

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture	Composite mortar component for fasteners in the construction industry

1.3. Details of the supplier of the safety data sheet

Supplier
Hilti (Hong Kong) Ltd.
701-704, 7/F, Tower A, Manulife Financial Centre
223 Wai Yip Street, Kwun Tong
Kowloon - Hong Kong
T +852 27734 700
hksales@hilti.com

Department issuing data specification sheet
Hilti Entwicklungsgesellschaft mbH
Hiltistraße 6
86916 Kaufering - Deutschland
T +49 8191 906876
anchor.hse@hilti.com

1.4. Emergency telephone number

Emergency number	Schweizerisches Toxikologisches Informationszentrum – 24h Service +41 44 251 51 51 (international) +852 27734 700

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to the United Nations GHS (Rev. 4, 2011)

Skin Corr. 1C	H314
Skin Sens. 1	H317
Muta. 2	H341
Repr. 1B	H360
Aquatic Acute 2	H401
Aquatic Chronic 2	H411

Full text of H statements : see section 16

2.2. Label elements

Labelling according to the United Nations GHS (Rev. 4, 2011)

Hazard pictograms (GHS UN)

GHS05 GHS07 GHS08 GHS09

Signal word (GHS UN)	Danger
Hazardous ingredients	Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol ; butanedioldiglycidyl ether ; 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane; trimethylolpropane triglycidylether
Hazard statements (GHS UN)	H314 - Causes severe skin burns and eye damage. H317 - May cause an allergic skin reaction. H341 - Suspected of causing genetic defects. H360 - May damage fertility or the unborn child. H411 - Toxic to aquatic life with long lasting effects.

Precautionary statements (GHS UN)	P262 - Do not get in eyes, on skin, or on clothing. P280 - Wear eye protection, protective clothing, protective gloves. P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P333+P313 - If skin irritation or rash occurs: Get medical advice, medical attention. P337+P313 - If eye irritation persists: Get medical advice, medical attention. P302+P352 - IF ON SKIN: Wash with plenty of water.

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to the United Nations GHS
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	(CAS-No.) 1675-54-3	25 - 40	Flammable liquids Not classified Skin corrosion/irritation, Category 2, H315 Serious eye damage/eye irritation, Category 2A, H319 Skin sensitisation, Category 1, H317 Hazardous to the aquatic environment — Acute Hazard, Category 2, H401 Hazardous to the aquatic environment — Chronic Hazard, Category 2, H411
Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol	(CAS-No.) 9003-36-5	10-20	Skin corrosion/irritation, Category 2, H315 Serious eye damage/eye irritation, Category 2A, H319 Skin sensitisation, Category 1, H317 Hazardous to the aquatic environment — Chronic Hazard, Category 2, H411
butanedioldiglycidyl ether	(CAS-No.) 2425-79-8	5 - 10	Acute toxicity (oral), Category 4, H302 Acute toxicity (dermal), Category 4, H312 Acute toxicity (inhal.), Category 4, H332 Skin corrosion/irritation, Category 2, H315 Serious eye damage/eye irritation, Category 1, H318 Skin sensitisation, Category 1, H317 Hazardous to the aquatic environment — Acute Hazard, Category 3, H402 Hazardous to the aquatic environment — Chronic Hazard, Category 3, H412
trimethylolpropane triglycidylether	(CAS-No.) 30499-70-8	5 - 10	Skin corrosion/irritation, Category 1C, H314 Serious eye damage/eye irritation, Category 1, H318 Skin sensitisation, category 1B, H317 Germ cell mutagenicity, Category 2, H341 Reproductive toxicity, Category 1B, H360 Hazardous to the aquatic environment — Chronic Hazard, Category 2, H411
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane	(CAS-No.) 2530-83-8	2.5 - 5	Acute toxicity (dermal), Category 5, H313 Serious eye damage/eye irritation, Category 1, H318 Hazardous to the aquatic environment — Acute Hazard, Category 3, H402

Full text of H-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
First-aid measures after inhalation	Remove person to fresh air and keep comfortable for breathing. Allow affected person to breathe fresh air. Allow the victim to rest.
First-aid measures after skin contact	Gently wash with plenty of soap and water. Wash contaminated clothing before reuse. If skin irritation occurs: Get immediate medical advice/attention.
First-aid measures after eye contact	Rinse immediately with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if pain, blinking or redness persists.
First-aid measures after ingestion	Rinse mouth. Get medical advice/attention. Do not induce vomiting. Obtain emergency medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects after inhalation	May cause an allergic skin reaction.
Symptoms/effects after skin contact	Causes skin irritation.
Symptoms/effects after eye contact	Causes serious eye irritation.
Potential adverse human health effects and symptoms	No additional information available.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	Water spray. Carbon dioxide. Dry powder. Foam. Sand.
Unsuitable extinguishing media	Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

No additional information available

5.3. Advice for firefighters

Firefighting instructions	Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire fighting water from entering the environment.
Protection during firefighting	Self-contained breathing apparatus. Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	Spilled material may present a slipping hazard.

6.1.1.For non-emergency personnel

Emergency procedures	Evacuate unnecessary personnel.

6.1.2.For emergency responders

Protective equipment	Use personal protective equipment as required. Equip cleanup crew with proper protection.
Emergency procedures	Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters. Avoid release to the environment. Full or only partially emptied cartridges must be disposed of as special waste in accordance with official regulations. After curing, the product can be disposed of with household waste.

6.3. Methods and material for containment and cleaning up

For containment	Collect spillage.
Methods for cleaning up	This material and its container must be disposed of in a safe way, and as per local legislation. Mechanically recover the product. On land, sweep or shovel into suitable containers. Store away from other materials.
Other information	Dispose of materials or solid residues at an authorized site.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	Wear personal protective equipment. Avoid contact with skin and eyes. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.
Hygiene measures	Do not eat, drink or smoke when using this product. Always wash hands after handling the product. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions	Protect from sunlight.
Incompatible products	Strong bases. Strong acids.
Incompatible materials	Sources of ignition. Direct sunlight.
Storage temperature	5 - 25 °C
Heat and ignition sources	Keep away from heat and direct sunlight.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Additional information	The product has a pasty consistency. Exposure limit values for respirable dusts are not relevant for this product.

8.2. Appropriate engineering controls

Appropriate engineering controls	No specific measures identified.
Environmental exposure controls	No specific measures are required provided the product is handled in accordance with the general rules of occupational hygiene and safety.
Consumer exposure controls	Avoid contact during pregnancy/while nursing.
Other information	Do not eat, drink or smoke during use.

8.3. Individual protection measures, such as personal protective equipment (PPE)

Materials for protective clothing	Long sleeved protective clothing
Hand protection	Wear protective gloves. The permeation time is not the maximum wearing time! Generally speaking, it must be reduced. Contact with either mixtures of substances or different substances may shorten the protective function's effective duration.

Type	Material	Permeation	Thickness (mm)	Penetration	Standard
Disposable gloves	Nitrile rubber (NBR)	6 (> 480 minutes)	> 0,4		EN 374

Eye protection: Wear security glasses which protect from splashes

Type	Use	Characteristics	Standard
Safety glasses	Droplet	clear	EN 166, EN 170

Skin and body protection: Wear suitable protective clothing

8.4. Exposure limit values for the other components

No additional information available

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Solid
Appearance	Thixotropic paste.
Colour	Light grey.
Odour	characteristic.
Odour threshold	No data available
pH	6.6
Relative evaporation rate (butylacetate=1)	No data available
Melting point	No data available
Freezing point	No data available
Boiling point	No data available
Flash point	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Flammability (solid, gas)	Non flammable.
Vapour pressure	No data available
Relative vapour density at 20 °C	No data available
Relative density	No data available
Density	1.45 g/cm³
Solubility	insoluble in water.

Log Pow	No data available
Viscosity, kinematic	No data available
Viscosity, dynamic	45 - 59 Pa·s 23 °C
Explosive properties	No data available
Oxidising properties	No data available
Explosive limits	No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No additional information available.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials

Strong acids. Strong bases.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced. Thermal decomposition generates : fume. Carbon monoxide. Carbon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	Not classified
Acute toxicity (dermal)	Not classified
Acute toxicity (inhalation)	Not classified

Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol (9003-36-5)	
LD50 oral rat	> 5000 mg/kg bodyweight (Rat; ECHA)
LD50 dermal rat	> 2000 mg/kg bodyweight (Rat; ECHA)

butanedioldiglycidyl ether (2425-79-8)	
LD50 oral rat	2980 mg/kg (Rat)
LD50 oral	1163 mg/kg (Rat; Exp. Key study ECHA)
LD50 dermal rabbit	1130 mg/kg (Rabbit)

[3-(2,3-epoxypropoxy)propyl]trimethoxysilane (2530-83-8)	
LD50 oral rat	8025 mg/kg bodyweight (Rat; Equivalent or similar to OECD 401; Experimental value)
LD50 dermal rabbit	4250 mg/kg bodyweight (Rabbit; Experimental value; Equivalent or similar to OECD 402)

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane (1675-54-3)	
LD50 dermal rat	> 2000 mg/kg (Rat; Experimental value; OECD 402: Acute Dermal Toxicity)

Skin corrosion/irritation	Causes severe skin burns and eye damage. pH: 6.6

Serious eye damage/irritation	Serious eye damage, category 1, implicit pH: 6.6
Respiratory or skin sensitisation	May cause an allergic skin reaction.
Germ cell mutagenicity	Suspected of causing genetic defects.
Carcinogenicity	Not classified
Reproductive toxicity	May damage fertility or the unborn child.
STOT-single exposure	Not classified
STOT-repeated exposure	Not classified
Aspiration hazard	Not classified
Potential adverse human health effects and symptoms	No additional information available.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - water	Toxic to aquatic life with long lasting effects.
Hazardous to the aquatic environment, short-term (acute)	Toxic to aquatic life.
Classification procedure (Hazardous to the aquatic environment, short-term (acute))	Calculation method
Hazardous to the aquatic environment, long-term (chronic)	Toxic to aquatic life with long lasting effects.
Classification procedure (Hazardous to the aquatic environment, long-term (chronic))	Calculation method

butanedioldiglycidyl ether (2425-79-8)	
LC50 fish 1	24 mg/l (96 h; Pisces) ECHA
LC50 other aquatic organisms 1	> 160 mg/l
NOEC (acute)	40 mg/l
Threshold limit algae 1	88930 mg/l (96 h; Algae)

[3-(2,3-epoxypropoxy)propyl]trimethoxysilane (2530-83-8)	
LC50 fish 1	55 mg/l (96 h; Cyprinus carpio; Young)
EC50 Daphnia 1	473 - 710 mg/l (48 h; Daphnia magna)
LC50 fish 2	237 mg/l 96 h; Salmo gairdneri (Oncorhynchus mykiss)
Threshold limit algae 1	119 mg/l (7 days; Anabaena flosaquae)
Threshold limit algae 2	250 mg/l (72 h; Selenastrum capricornutum)

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane (1675-54-3)	
LC50 fish 1	2.3 mg/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Oncorhynchus mykiss, Semi-static system, Fresh water, Experimental value, Nominal concentration)
EC50 Daphnia 1	2 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value)
LC50 fish 2	2.3 mg/l (96 h; Oncorhynchus mykiss; Nominal concentration)
Threshold limit algae 1	> 11 mg/l (72 h; Scenedesmus sp.)
Threshold limit algae 2	4.2 mg/l (72 h; Scenedesmus sp.)

12.2. Persistence and degradability

HIT-RE 500 V3, A	
Persistence and degradability	May cause long-term adverse effects in the environment.

Quartz (SiO2)	
Persistence and degradability	Biodegradability: not applicable.
Chemical oxygen demand (COD)	Not applicable (inorganic)
ThOD	Not applicable (inorganic)

butanedioldiglycidyl ether (2425-79-8)	
Biochemical oxygen demand (BOD)	0.01982 g O_2 /g substance

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane (1675-54-3)	
Persistence and degradability	Not readily biodegradable in water.

12.3. Bioaccumulative potential

HIT-RE 500 V3, A	
Bioaccumulative potential	Not established.

Quartz (SiO2)	
Bioaccumulative potential	No bioaccumulation data available.

butanedioldiglycidyl ether (2425-79-8)	
Log Pow	-0.15

[3-(2,3-epoxypropoxy)propyl]trimethoxysilane (2530-83-8)	
Log Pow	-0.92 (Estimated value)

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane (1675-54-3)	
BCF other aquatic organisms 1	31 (Estimated value, Fresh weight)
Log Pow	3 (Estimated value, 25 °C)
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).

12.4. Mobility in soil

Quartz (SiO2)	
Ecology - soil	Low potential for mobility in soil.

butanedioldiglycidyl ether (2425-79-8)	
Log Pow	See section 12.1 on ecotoxicology

[3-(2,3-epoxypropoxy)propyl]trimethoxysilane (2530-83-8)	
Log Pow	See section 12.1 on ecotoxicology

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane (1675-54-3)	
Surface tension	59 mN/m (20 °C, 0.09 g/l)
Log Pow	See section 12.1 on ecotoxicology
Log Koc	See section 12.1 on ecotoxicology
Ecology - soil	Low potential for adsorption in soil.

12.5. Other adverse effects

Ozone	Not classified
Other adverse effects	No additional information available
Other information	Avoid release to the environment.

SECTION 13: Disposal considerations

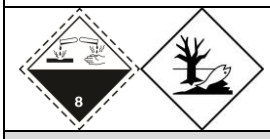
13.1. Waste treatment methods

Regional legislation (waste)	Disposal must be done according to official regulations.
Product/Packaging disposal recommendations	After curing, the product can be disposed of with household waste. . Full or only partially emptied cartridges must be disposed of as special waste in accordance with official regulations. Packaging contaminated by the product : Dispose in a safe manner in accordance with local/national regulations.
Ecology - waste materials	Avoid release to the environment.

SECTION 14: Transport information

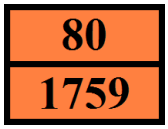
In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	RID
14.1. UN number			
1759	1759	1759	1759
14.2. UN proper shipping name			
CORROSIVE SOLID, N.O.S. (trimethylolpropane	CORROSIVE SOLID, N.O.S. (trimethylolpropane	Corrosive solid, n.o.s. (trimethylolpropane	CORROSIVE SOLID, N.O.S. (trimethylolpropane

ADR	IMDG	IATA	RID
triglycidylether)	triglycidylether)	triglycidylether)	triglycidylether)
Transport document description			
UN 1759 CORROSIVE SOLID, N.O.S. (trimethylolpropane triglycidylether), 8, III, (E), ENVIRONMENTALLY HAZARDOUS	UN 1759 CORROSIVE SOLID, N.O.S. (trimethylolpropane triglycidylether), 8, III, MARINE POLLUTANT/ENVIRONMENTALLY HAZARDOUS	UN 1759 Corrosive solid, n.o.s. (trimethylolpropane triglycidylether), 8, III, ENVIRONMENTALLY HAZARDOUS	UN 1759 CORROSIVE SOLID, N.O.S. (trimethylolpropane triglycidylether), 8, III, ENVIRONMENTALLY HAZARDOUS
14.3. Transport hazard class(es)			
8	8	8	8
			
14.4. Packing group			
III	III	III	III
14.5. Environmental hazards			
Dangerous for the environment : Yes	Dangerous for the environment : Yes Marine pollutant : Yes	Dangerous for the environment : Yes	Dangerous for the environment : Yes
No supplementary information available			

14.6. Special precautions for user

- Overland transport

Classification code (ADR)	C10
Special provisions (ADR)	274
Limited quantities (ADR)	5kg
Packing instructions (ADR)	P002, IBC08, LP02, R001
Mixed packing provisions (ADR)	MP10
Transport category (ADR)	3
Orange plates	
Tunnel restriction code (ADR)	E

- Transport by sea

Special provisions (IMDG)	223, 274
Packing instructions (IMDG)	P002, LP02
EmS-No. (Fire)	F-A
EmS-No. (Spillage)	S-B
Stowage category (IMDG)	A

- Air transport

PCA packing instructions (IATA)	860
PCA max net quantity (IATA)	25kg
CAO packing instructions (IATA)	864
Special provisions (IATA)	A3, A803

- Rail transport

Special provisions (RID)	274
Packing instructions (RID)	P002, IBC08, LP02, R001
Carriage prohibited (RID)	No

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

No additional information available

SECTION 16: Other information

SDS Major/Minor	None
Issue date	13/05/2020
Revision date	13/05/2020
Supersedes	25/02/2019

Indication of changes:

Section	Changed item	Change	Comments
9	pH	Added	
14	Transport information	Modified	
16	Additional information	Added	

Abbreviations and acronyms

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road

ATE - Acute Toxicity Estimate

BCF - Bioconcentration factor

CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008

DMEL - Derived Minimal Effect level

DNEL - Derived-No Effect Level

IATA - International Air Transport Association

EC50 - Median effective concentration

IMDG - International Maritime Dangerous Goods

LC50 - Median lethal concentration

LD50 - Median lethal dose

LOAEL - Lowest Observed Adverse Effect Level

NOAEC - No-Observed Adverse Effect Concentration

NOAEL - No-Observed Adverse Effect Level

NOEC - No-Observed Effect Concentration

PBT - Persistent Bioaccumulative Toxic

PNEC - Predicted No-Effect Concentration

REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006

RID - Regulations concerning the International Carriage of Dangerous Goods by Rail

SDS - Safety Data Sheet

vPvB - Very Persistent and Very Bioaccumulative

Other information: None.

Full text of H-statements:

H302	Harmful if swallowed.
H312	Harmful in contact with skin.
H313	May be harmful in contact with skin
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H341	Suspected of causing genetic defects.
H360	May damage fertility or the unborn child.
H372	Causes damage to organs through prolonged or repeated exposure.
H401	Toxic to aquatic life
H402	Harmful to aquatic life
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

SDS_UN_Hilti

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

Hilti HIT-RE500V3 Injectable Mortar Job Reference

Year	Project Name	Customer Name	Project type
2023	R6 CTL KLN ROUTE-CENTRAL TUNNEL HY/2018/08	BOUYGUES TRAVAUX PUBLICS	Infrastructure
2023	ANDERSON ROAD QUARRY, SITE R2-2	AGGRESSIVE CONSTRUCTION COMPANY	Residential
2023	New - Infrastructure - Island Eastern Corridor	CHINA CONSTRUCTION STEEL STRUCTURE	Infrastructure
2023	R6 TRUNK ROAD T2 ED/2018/04	BOUYGUES TRAVAUX PUBLICS	Infrastructure
2023	TKO LOHAS PARK PH13	CHINA OVERSEAS BUILDING	Residential
2023	TUEN MUN AREA 55 (463) RES	AGGRESSIVE CONSTRUCTION ENGINEERING	Residential
2023	TKO DESALINATION PLANT PH1 13/WSD/17	AA-JEC IJV	Utilities
2023	R6 CTL KLN ROUTE-KAI TAK EAST HY/2018/02	ALCHMEX-PAUL Y JOINT VENTURE	Infrastructure
2023	HANG TAI RD, MA ON SHAN AREA 86B PH 1&2 - HOUSING	CHINA STATE CONSTRUCTION	Residential
2023	KAI TAK AREA 1E, SITE 1 - HKHS APARTMENT & ELDERLY HOME	TYSAN FOUNDATION LIMITED	Residential
2024	SITE 1A & 1B, AREA 19, KWU TUNG NORTH - PUBLIC HOUSING	YAU LEE CONSTRUCTION CO LTD	Residential
2024	R6 CTL KLN ROUTE-CENTRAL TUNNEL HY/2018/08	BOUYGUES TRAVAUX PUBLICS	Infrastructure
2024	BAILEY ST / WING KWONG ST DEVELOPMENT PROJECT (KC-009	CHINA OVERSEAS BUILDING	Residential
2024	R6 TRUNK ROAD T2 ED/2018/04	BOUYGUES TRAVAUX PUBLICS	Infrastructure
2024	R6 CTL KLN ROUTE-KAI TAK EAST HY/2018/02	ALCHMEX-PAUL Y JOINT VENTURE	Infrastructure
2024	New - Infrastructure - Island Eastern Corridor	CHINA CONSTRUCTION STEEL STRUCTURE	Infrastructure
2024	ANDERSON ROAD QUARRY, SITE R2-8 HOUSING	UNISTRESS BUILDING CONSTRUCTION	Residential
2024	TUNG CHUNG WEST STATION & TUNNELS (CONTRACT NO. 1201	BOUYGUES - DRAGAGES (1201)	Transport
2024	LEI YUE MUN PUBLIC HOUSING PH4	CHINA STATE CONSTRUCTION	Residential
2024	R6 CTL KLN ROUTE-YMT WEST HY/2014/20	H.K. SHING TAT CIVIL ENG. CO.	Infrastructure
2025	TUNG TAU TSUEN RD - MEI TUNG ESTATE	CHINA STATE CONSTRUCTION	Residential
2025	ORGANIC RESOURCES RECOVERY CENTRE PH2 (WASTE TREA	CHINA STATE CONSTRUCTION	Utilities
2025	SITE 1A & 1B, AREA 19, KWU TUNG NORTH - PUBLIC HOUSING	YAU LEE CONSTRUCTION CO LTD	Residential