Submission Folder

Hilti HIT-RE500V3 Injectable Mortar with Grade 500 Rebar

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*All the test reports in this submission folder are abstract version with essential data for submission purpose.

For full report, please contact Hilti through our customer service hotline 8228 8118.

SAMPLE SUBMISSION AND APPROVAL FORM

Contract Title:	_____	Ref. No.:	_____
	_____	Date:	_____
		Ref. No. of Previous Submission:	_____
Contract No:	_____	(1)	_____
File Reference:	_____	(2)	_____

DETAILS OF SUBMISSION

To: Contract Manager's Representative Attention: _____

From: _____

The enclosed sample and catalogue* / certificate of origin* / technical data* / test report* / job reference* as described below have been checked for compliance with the Specifications and Drawings, and are submitted for approval.

1. General Information

a. Material Description: HIT – RE500V3 Injection Adhesive

b. Location: Re-bar fastening

c. Specification Ref. Page: _____ Item: _____

d. Drawing Ref. No. _____

e. B.Q. Ref.No.: _____

f. Anticipated date of approval: _____

2. Technical Information

The submitted sample has been checked against the specification and drawings as listed below:-

Specification Requirements	**Submitted Sample** (State details against each item)
a. **Brand** Not specified	Hilti
b. **Country of Origin** Not specified	Germany
c. **Manufacturer's Name & Address** Not specified	Hilti Corporation, FL-9494 Principality of Liechtenstein.
d. **Factory's Name & Address(es)** Not specified	Hilti Gmbh Ind. Ges. F. Befestigungstechnik Hiltistrasse 6, D-86916 Kaufering, Germany.
e. **Supplier (with Applicator, if any)** Not specified	Hilti (Hong Kong) Ltd

f. **Appearance** Not specified	According to the sample submitted
g. **Color +** Not specified	Red
h. **Specification** Not specified	Attached
i. **Manufacturer's Catalogue** Not specified	Attached
j. **Test Report** (Original/Certificated True Copy) Not specified	Attached
k. **Previous Job Reference** Not specified	Attached
l. **Supplementary Information** Not specified	NIL

For and on behalf of the Contractor

_____
(Quality Control Manager)

CONTRACT MANAGER'S COMMENTS

To:
From: Contract Manager's Representative: _____

On the basis of the sample and information given, the above sample submitted is:

(1) * **Approved.**
(2) * **Not approved** because _____
_____
_____
Remarks: _____
_____
_____

Approval does not alter the requirements of the Contract

Contract Manager's Representative: _____

_____
Date:

cc. _____
_____
_____
_____

(* Delete if appropriate)
(+ For glass or vitreous mosaic tiles, the contractor is required to confirm the colour range(s) of the submitted sample, i.e. a) light and or medium; or b) dark)

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

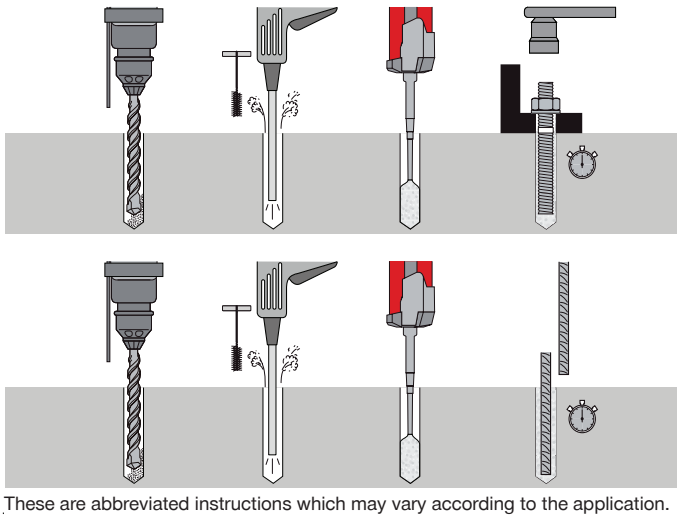
Approvals and test reports may apply to selected products only. Please refer to the documents for details.

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

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.



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

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**

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

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.

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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

- **SafeSet** 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 **SafeSet** 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.

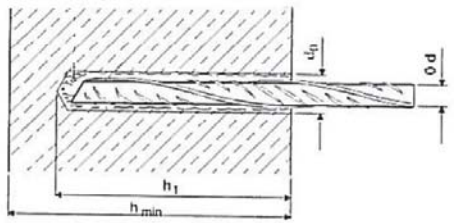
Basic loading data & testing load

	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	50.8
Min. Embedment Depth (mm) [h1]	100	120	160	200	250	320	400
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/mm^2;
2. Yield strength of rebar f_{yk} is 500N/mm^2;
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	C 30/37	1,04											
Hammer drilled holes with hollow drill bit	C40/50	1,07											
Diamond cored holes	C50/60	1,09											
Diamond cored holes with roughening tool	C 30/37 - C50/60	1,0											-

Seismic loading

Seismic DTA 3/16-874 design

Design bond strength in N/mm² for good bond conditions

All allowed hammer drilling methods							
Rebar - size	Concrete class						
	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/60
ϕ10 - ϕ34	2,3	2,7	3,0	3,4	3,7	4,0	4,0
ϕ36	2,3	2,6	2,9	3,3	3,6	3,9	4,0
ϕ40	2,2	2,6	2,9	3,3	3,6	3,8	4,0

For poor bond conditions multiply the values 0,7.

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

Hammer drilling						
Rebar-size	Concrete class	f_{bd} [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]
ϕ10	C20/25	2,3	213	142	331	1000
	C50/60	4	200	100	190	1000
ϕ12	C20/25	2,3	255	170	397	1200
	C50/60	4	200	120	228	1200
ϕ14	C20/25	2,3	298	198	463	1400
	C50/60	4	210	140	266	1400
ϕ16	C20/25	2,3	340	227	529	1600
	C50/60	4	240	160	304	1600
ϕ20	C20/25	2,3	425	284	662	2000
	C50/60	4	300	200	380	2000
ϕ25	C20/25	2,3	532	354	827	2500
	C50/60	4	375	250	476	2500
ϕ28	C20/25	2,3	595	397	926	2800
	C50/60	4	420	280	533	2800
ϕ30	C20/25	2,3	638	425	992	3000
	C50/60	4	450	300	571	3000
ϕ32	C20/25	2,3	681	454	1059	3200
	C50/60	4	480	320	609	3200
ϕ36	C20/25	2,3	766	510	1191	3200
	C50/60	4	540	360	685	3200
ϕ40	C20/25	2,2	889	593	1383	3200
	C50/60	4	600	400	761	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: $\alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = 1$. – (design for yielding)
4) Anchorage length for simply supported connections in case of: $\alpha_1 = \alpha_3 = \alpha_4 = \alpha_5 = 1$; $\alpha_2 = 0.7$ – (design for yielding)

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
Toluene	47,5	+
Iso-octane	30,4	+
Heptane	17,1	+
Methanol	3	+
Butanol	2	+
Toluene	60	+
Xylene	30	+
Methylnaphthalene	10	+
Diesel	100	+
Petrol	100	+
Methanol	100	-
Dichloromethane	100	-
Mono-chlorobenzene	100	o
Ethylacetat	50	-
Methylisobutylketone	50	-
Salicylic acid-	50	+
Acetophenon	50	+
Acetic acid	50	-
Propionic acid	50	-
Sulfuric acid	100	-
Nitric acid	100	-
Hydrochloric acid	36	-
Potassium hydroxide	100	-

Chemical tested	Content (%)	Resistance
Sodium hydroxide 20%	100	-
Triethanolamine	50	-
Butylamine	50	-
Benzyl alcohol	100	-
Ethanol	100	-
Ethyl acetate	100	-
Methyl ethyl ketone (MEK)	100	-
Trichlorethylene	100	-
Lutensit TC KLC 50	3	+
Marlophen NP 9,5	2	+
Water	95	+
Tetrahydrofurane	100	-
Demineralized water	100	+
Salt water	saturated	+
Salt spray testing	-	+
SO_2	-	+
Enviroment/wheather	-	+
Oil for formwork (forming oil)	100	+
Concentrate plasticizer	-	+
Concrete potash solution	-	+
Concrete potash solution	-	+
Saturated suspension of borehole cuttings	-	+

+ Resistant
- Not resistant
o Partially Resistant

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

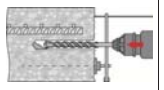
Installation equipment

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} ≤ 10·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]	HDM 330, HDM 500	HDE 500
	$\ell_{v,max}$ [mm]	
ϕ8	1000	1000
ϕ10	1000	1000
ϕ12	1000	1200
ϕ14	1000	1400
ϕ16	1000	1600
ϕ18	700	1800
ϕ20	600	2000
ϕ22	500	1800
ϕ24	300	1300
ϕ25	300	1500
ϕ26	300	1000
ϕ28	300	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

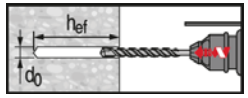
Minimum roughening time $t_{roughen}$ ($t_{roughen}$ [sec] = h_{ef} [mm] /10)

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

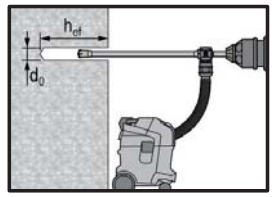
Setting instructions

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

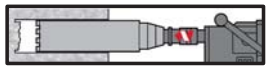
Safety regulations.
Review the Material Safety Data Sheet (MSDS) before use for proper and safe handling! Wear well-fitting protective goggles and protective gloves when working with Hilti HIT-RE 500 V3.



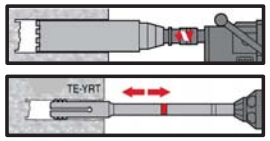
Hammer drilled hole (HD)



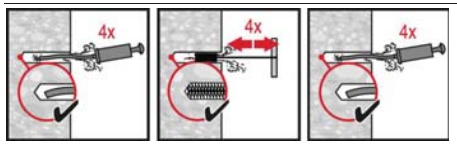
Hammer drilled hole with Hollow Drilled Bit (HDB)
No cleaning required



Diamond Drilling (DD)

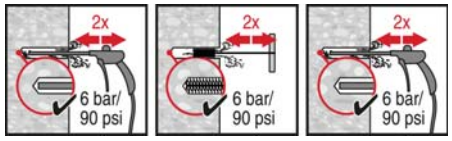


Diamond Drilling + Roughening Tool (DD+RT)



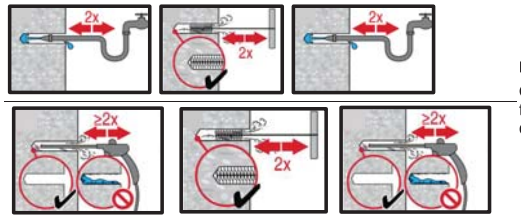
Hammer Drilling:

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



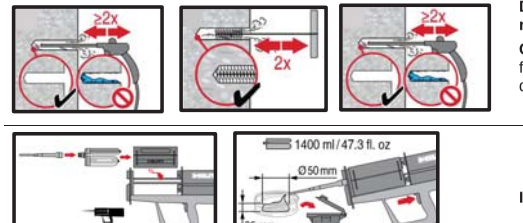
Hammer Drilling:

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



Diamond cored holes:

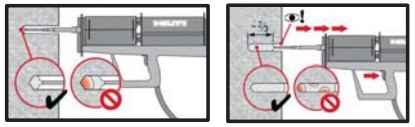
Compressed air cleaning (CAC)
for all drill hole diameters d_0 and drill hole depths h_0 .



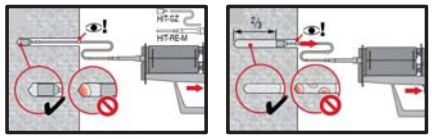
Diamond cored holes with Hilti roughening tool:

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

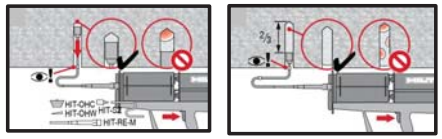
Injection system preparation.



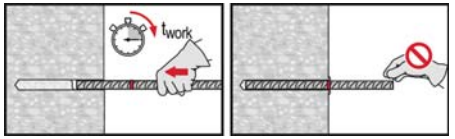
Injection method for drill hole depth
$h_{ef} \leq 250$ mm.



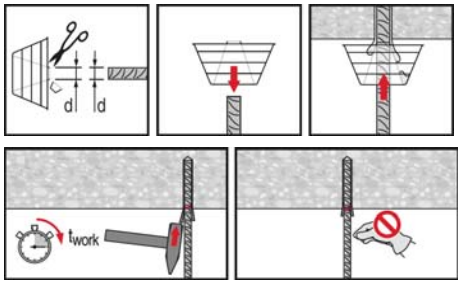
Injection method for drill hole depth
$h_{ef} > 250$mm.



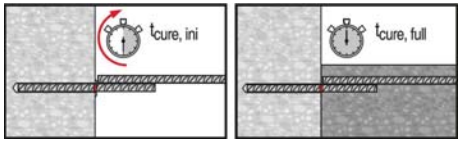
Injection method for overhead application.



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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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 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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東業德勤測試顧問有限公司
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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 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

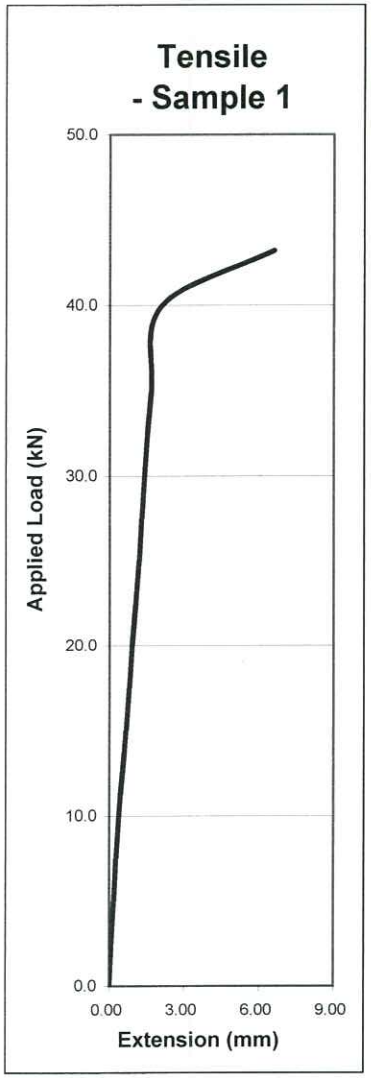
E) Min. distance between reaction frame and centre of the fixing (mm) 200

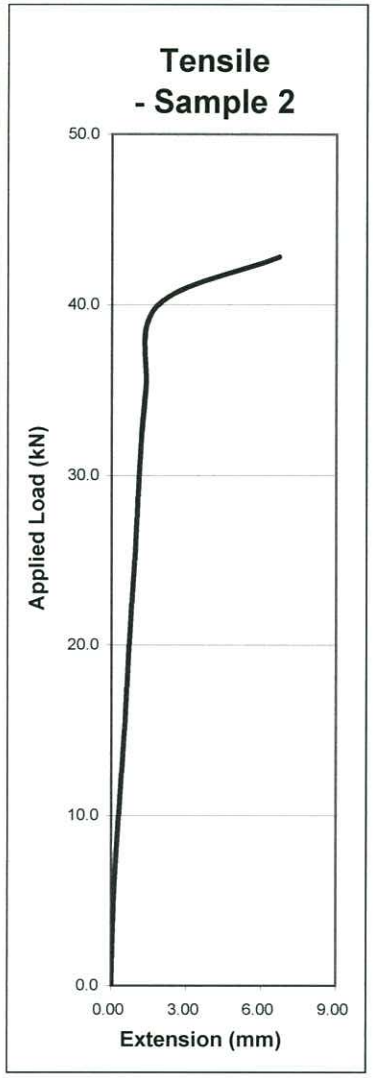
F) Min. distance between the centre of fixing and free edge (mm) 300

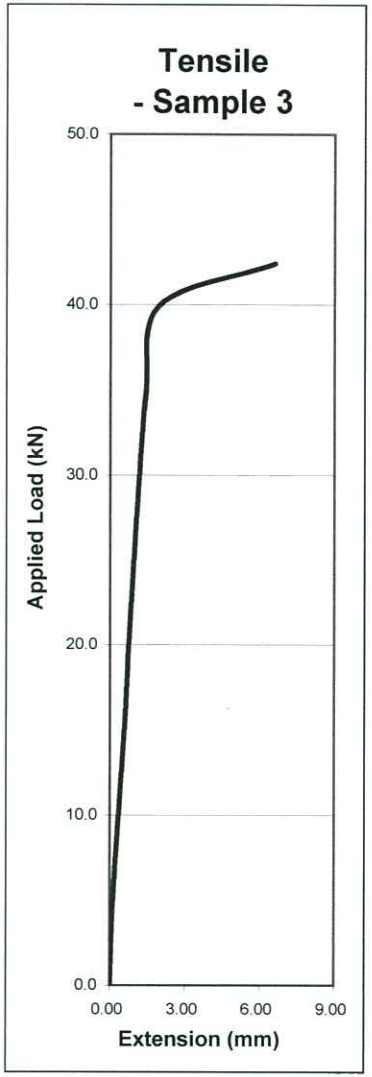
G) Rebar embedment depth (mm) 100

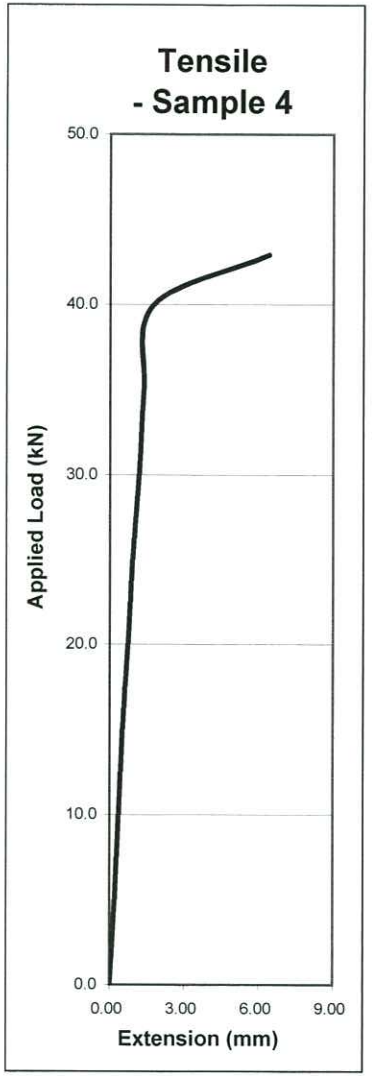
Tested By : CHUI, Chi To
Approved Signatory : MONG, Seng Ming
Checked By : (Assistant Engineer)

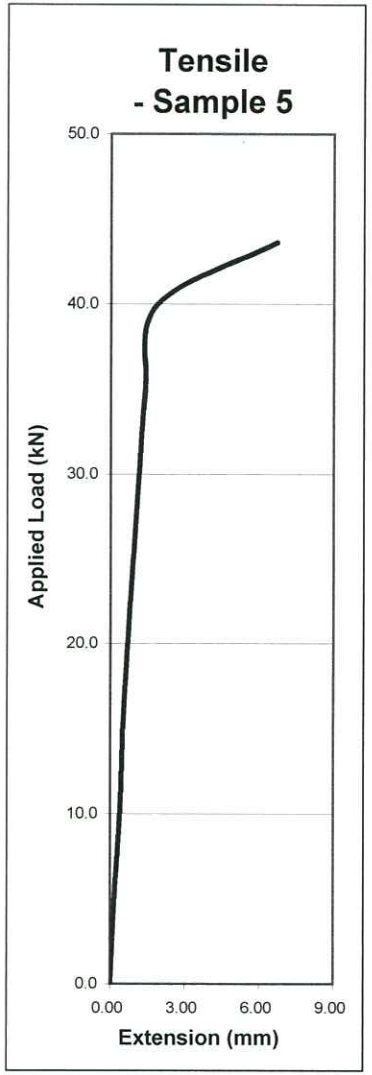
Hilti HIT-RE 500 V3 + Grade 500B Y10 Rebar











Report Issue Date: 26-Feb-2016

- END OF REPORT -

Report No. FDA60401

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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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東業德勤測試顧問有限公司
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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 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

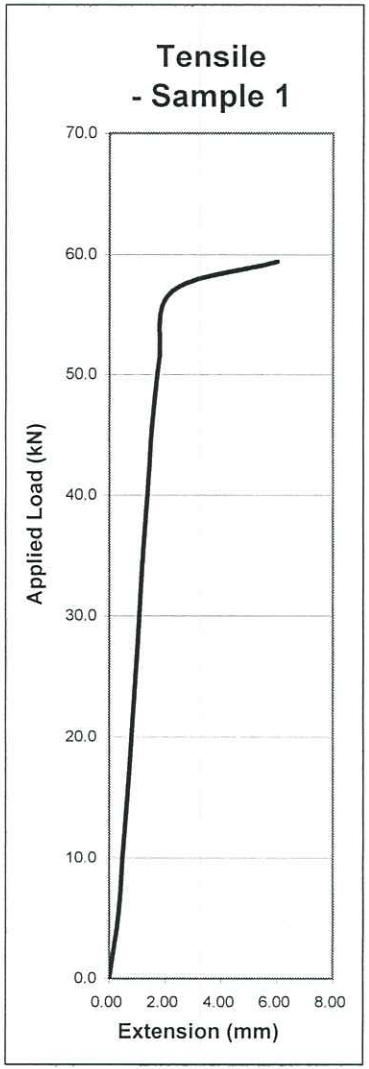
G) Rebar embedment depth (mm) 120

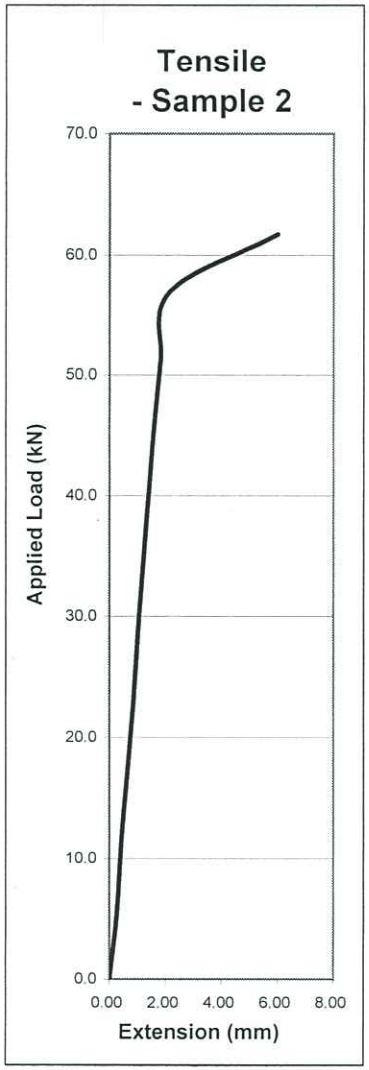
Tested By : CHAN, Yun Leung

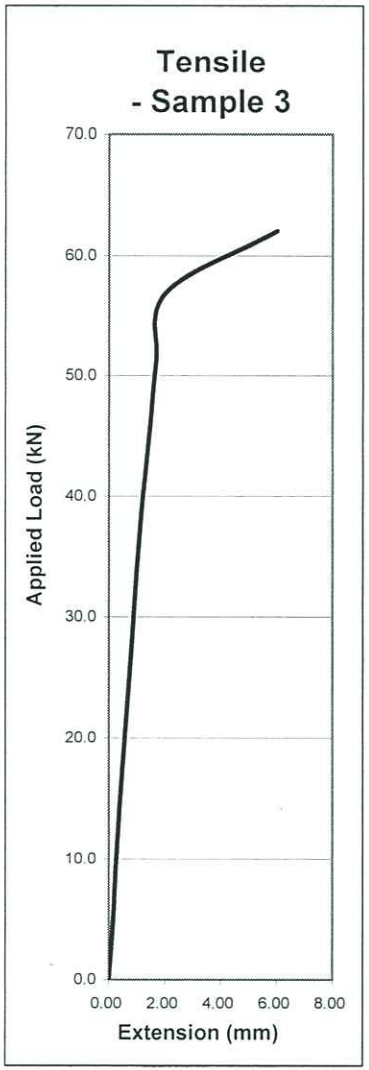
Approved Signatory : MONG, Seng Ming

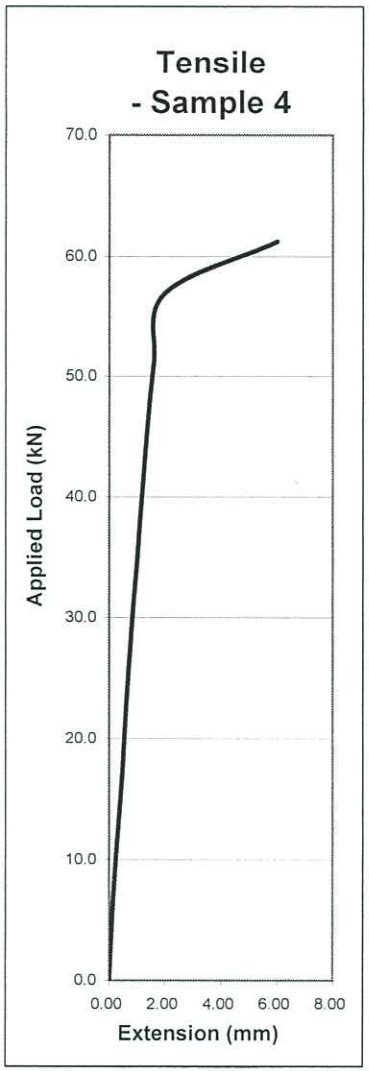
Checked By : Sapphi
(Assistant Engineer)

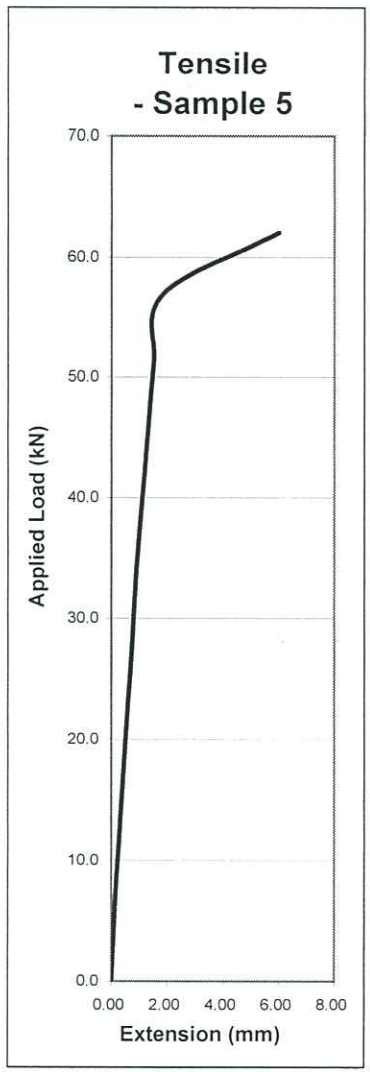
Hilti HIT-RE 500 V3 + Grade 500B Y12 Rebar











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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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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 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

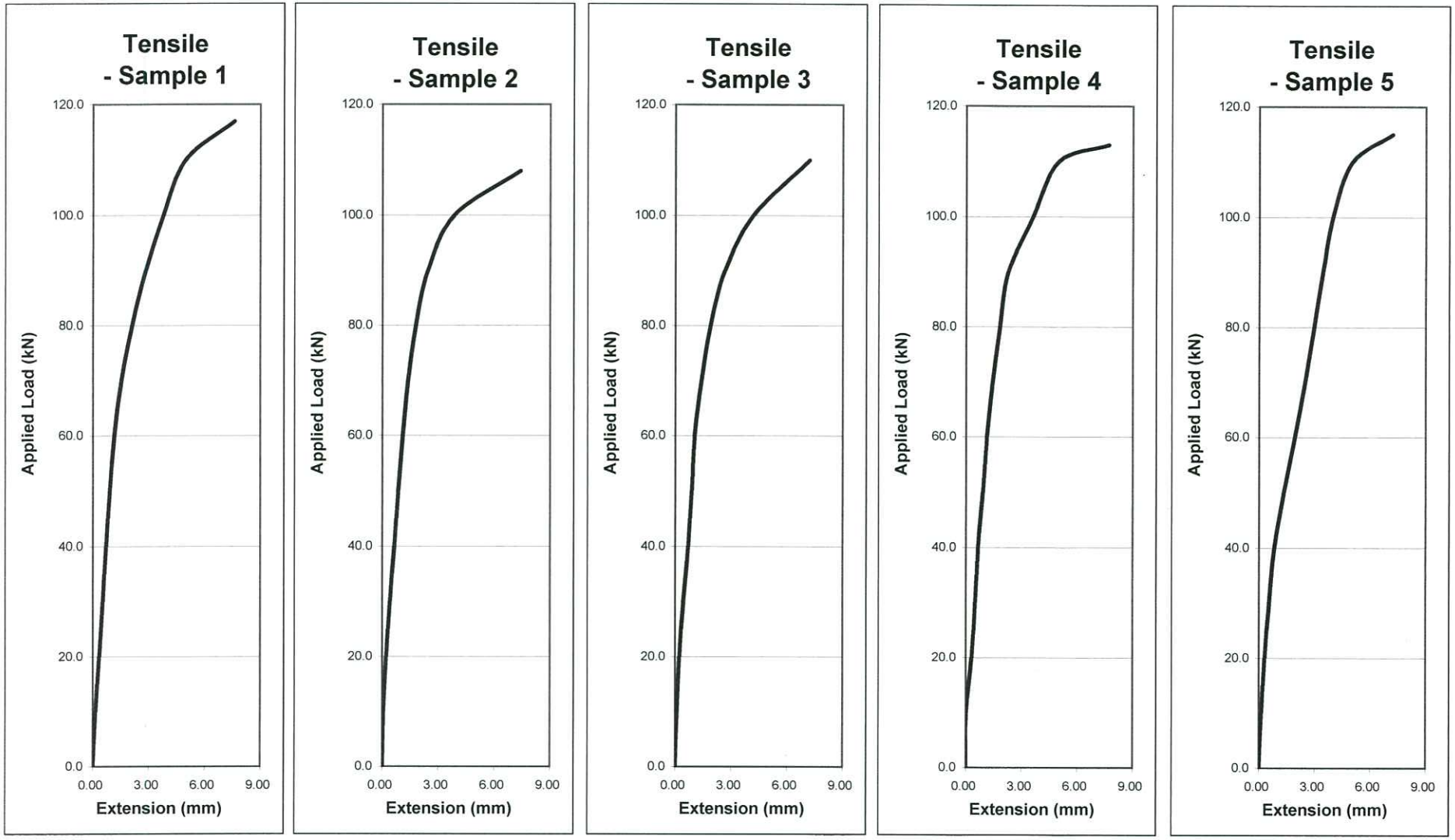
E) Min. distance between reaction frame and centre of the fixing (mm) 320

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



東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED
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Tel : 2695 8318 E-mail : etl@ets-testconsult.com
Fax : 2695 3944 Web site : www.ets-testconsult.com

HOKLAS 022
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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

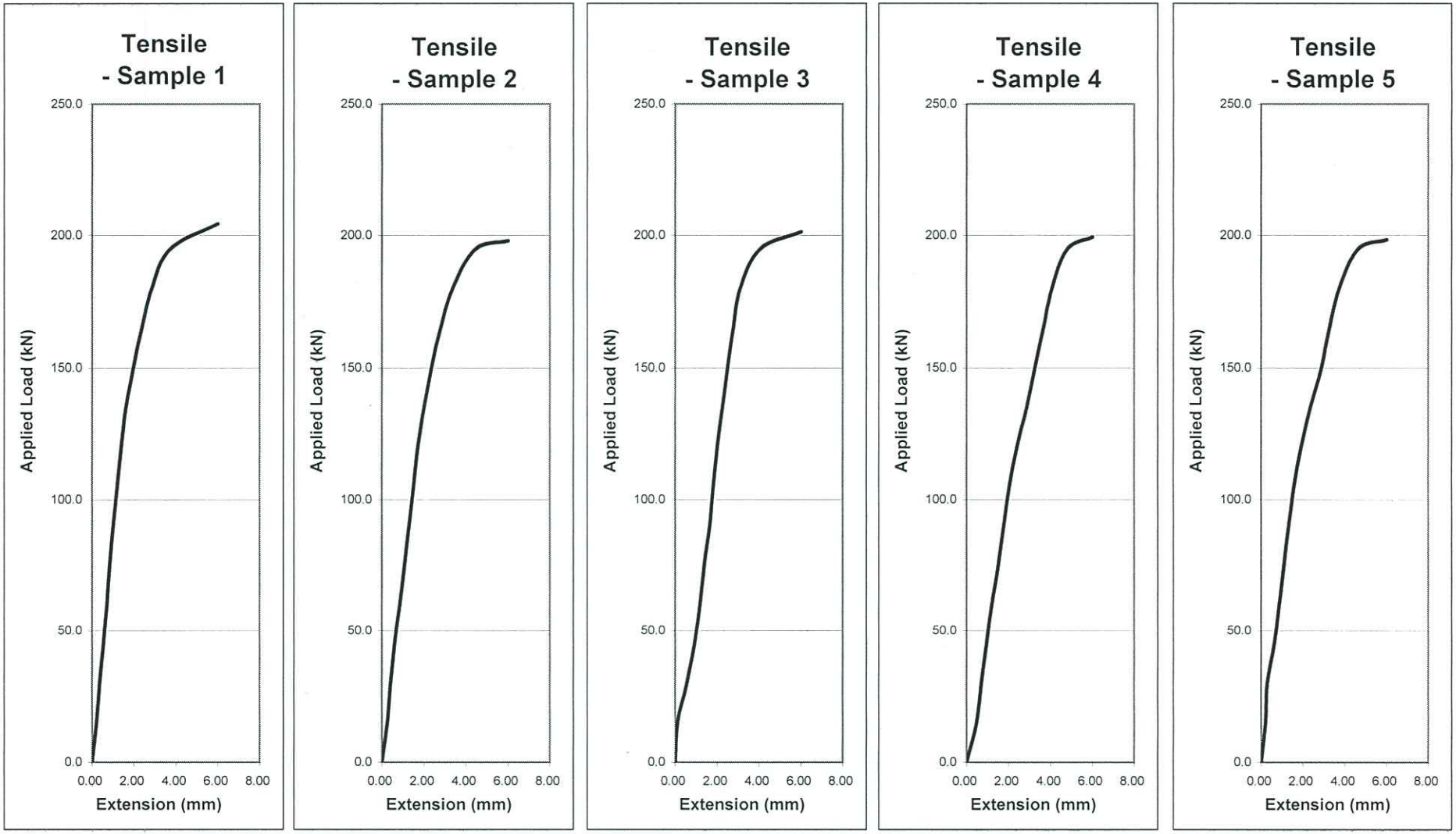
G) Rebar embedment depth (mm) 200

Tested By : CHAN, Yun Leung

Approved Signatory : MONG, Seng Ming

Checked By : (Assistant Engineer)

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



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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 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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東業德勤測試顧問有限公司
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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/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

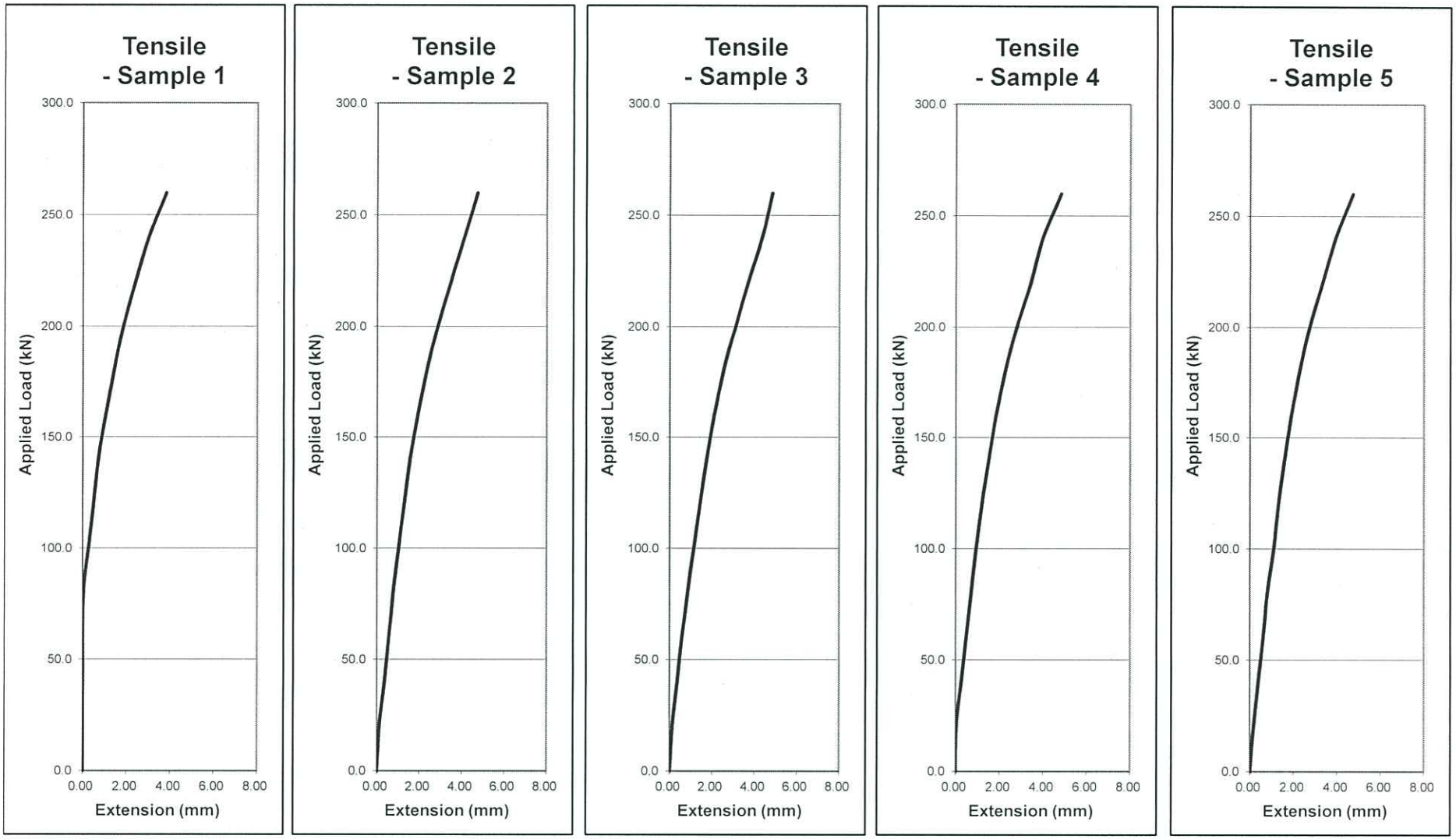
E) Min. distance between reaction frame and centre of the fixing (mm) 500

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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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

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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 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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東業德勤測試顧問有限公司
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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 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

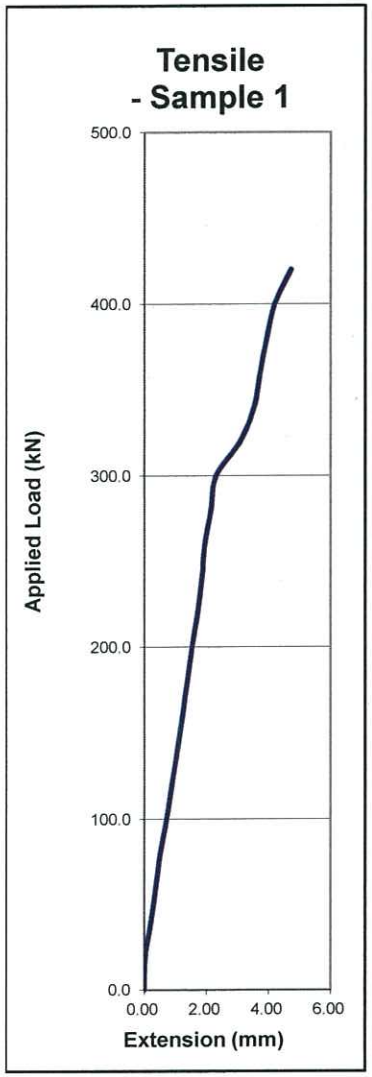
C) Installed date 14-Jun-2016

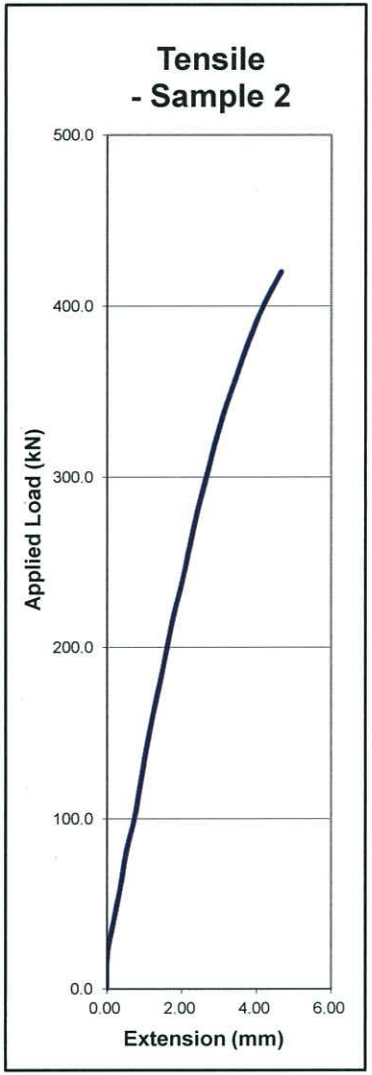
D) Failure Modes
P = No sign of failure in dowel bar and/or structural member
F1 = Failure of dowel bar or its accessories
F2 = Failure in structural member
F3 = Pull out of dowel bar
F4 = Failure of structural member in a shear cone
F5 = Failure by continuous displacement or decreasing load
F6 = Failure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

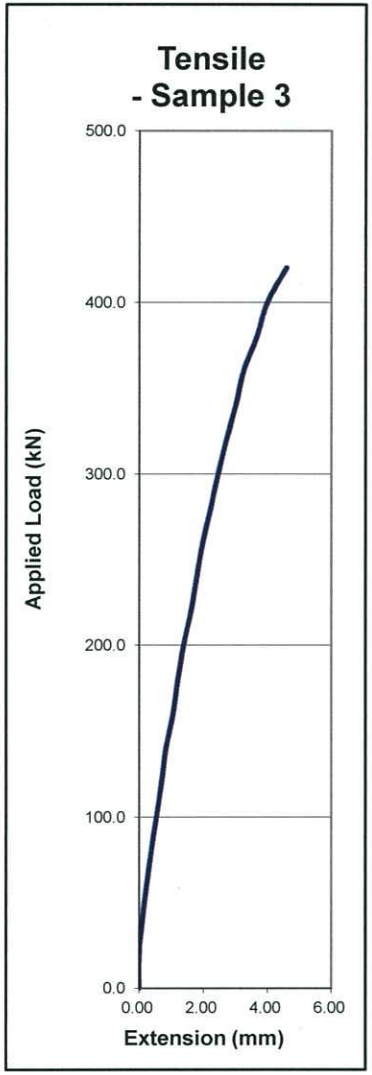
E) Min. distance between reaction frame and centre of the fixing (mm) 640
F) Min. distance between the centre of fixing and free edge (mm) 960
G) Rebar embedment depth (mm) 320

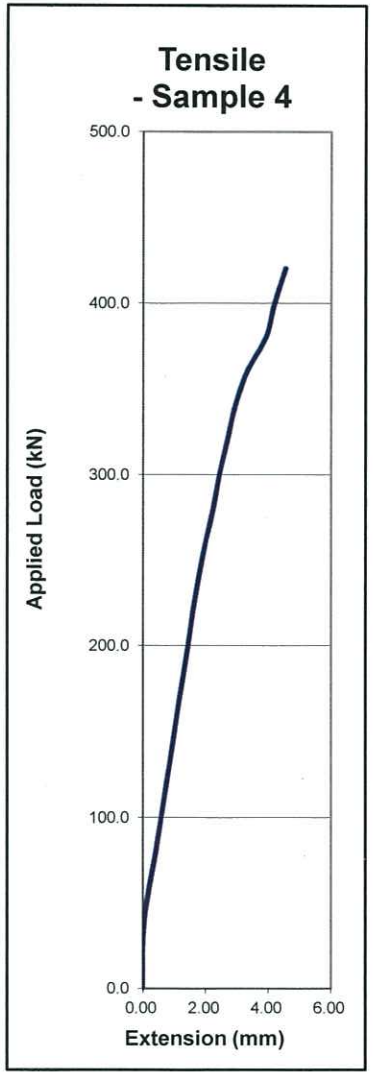
Tested By : WONG, Tsz San
Checked By : (Assistant Engineer)
Approved Signatory : MONG, Seng Ming

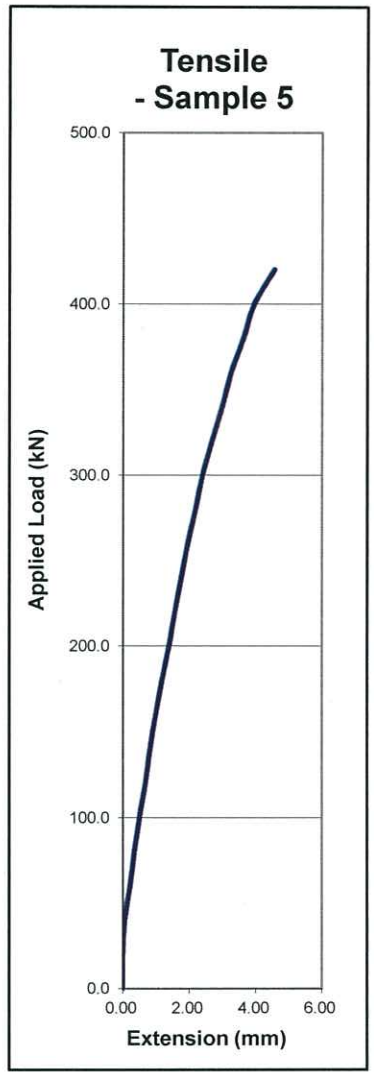
Hilti HIT-RE 500 V3 + Grade 500B Y32 Rebar











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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

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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
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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

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
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

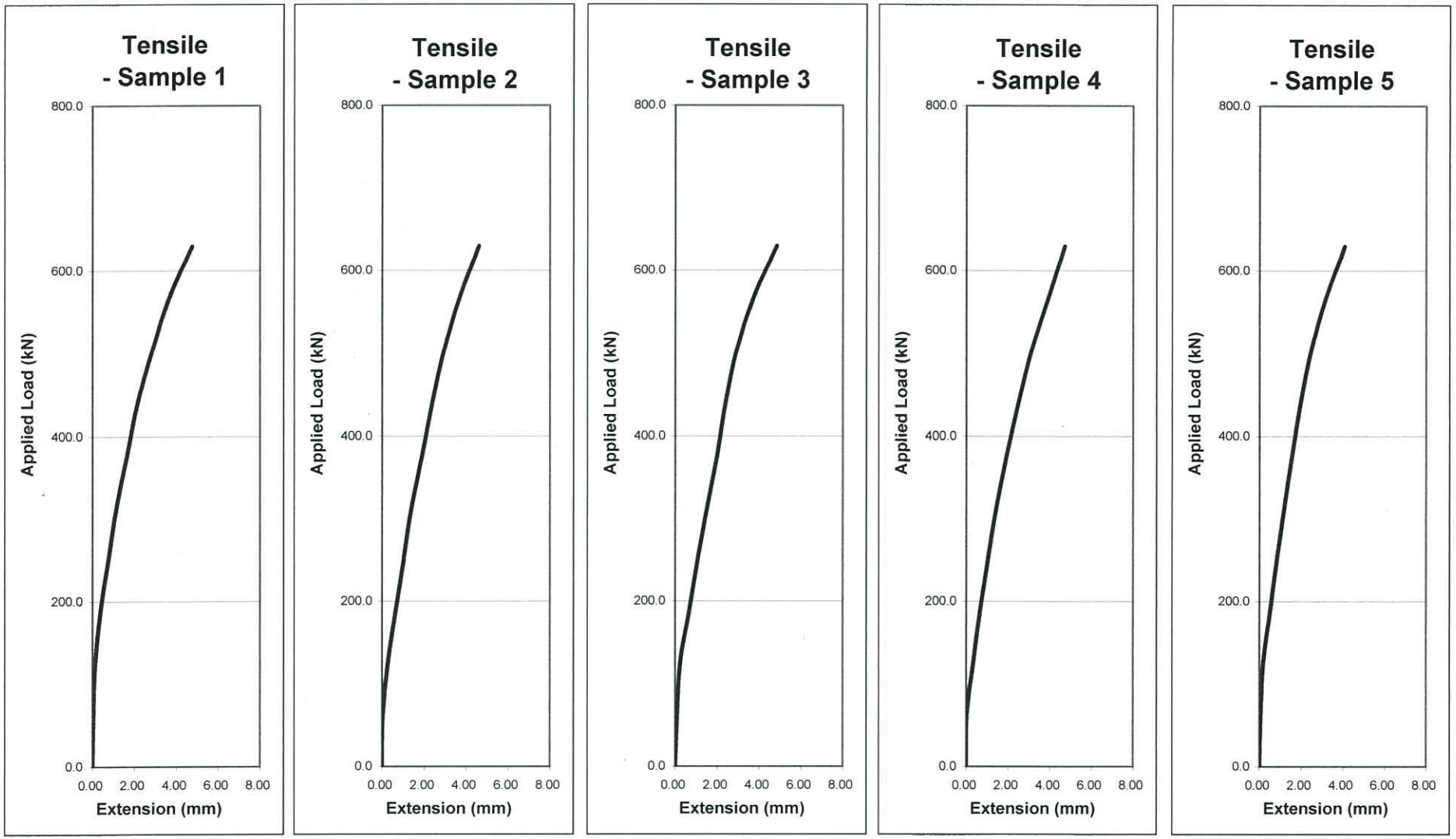
G) Rebar embedment depth (mm) 400

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



Attention: To whom it may concern

Date: 1 Feburary 2018
Ref: 017/AC/FL/18

Subject: Hilti HIT-RE 500V3 Injectable Mortar

Dear Sir / Madam,

Enclosed please find the information of Hilti HIT-RE 500V3 Injectable Mortar

Brand Name	:	Hilti
Model Name	:	Hilti HIT-RE 500V3
Manufacturer	:	Hilti Corporation
Address of Manufacturer	:	FL-9494, Principality of Liechtenstein
Supplier	:	Hilti (Hong Kong) Ltd
Address of Supplier	:	701-704 & 708B, 7/F, Tower A, Manulife Finanical Centre, 223 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong
Country of Orgin	:	Germany
Name of Factory	:	Hilti GmbH Ind. Ges. F. Befestigungstechnik
Address of Factory	:	Hiltistrasse 6, D-86916 Kaufering, Germany

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

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

HIT-RE 500 V3

Safety information for 2-Component-products

Date of issue: 05/05/2017 Revision date: 03/05/2017 Supersedes: 25/01/2017 Version: 2.0

SECTION 1: Kit identification

1.1 Product identifier

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
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)

Skin Corr. 1A	H314
Skin Sens. 1	H317
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

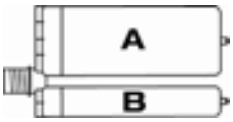
Hazard statements (GHS-UN)
H314 - Causes severe skin burns and eye damage
H317 - May cause an allergic skin reaction
H335 - May cause respiratory irritation
H360 - May damage fertility
H411 - Toxic to aquatic life with long lasting effects

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 (Rev. 4, 2011)
HIT-RE 500 V3, A		1	pcs (pieces)	Skin Corr. 1C, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 Repr. 1B, H360 Aquatic Chronic 2, H411
HIT-RE 500 V3, B		1	pcs (pieces)	Skin Corr. 1A, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 STOT SE 3, H335 Aquatic Chronic 3, H412

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	Drink plenty of water Do not induce vomiting Rinse mouth Immediately call a POISON CENTER or doctor/physician
First-aid measures after inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing
First-aid measures after skin contact	Wash with plenty of soap and water Remove/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
Other medical advice or treatment	Treat symptomatically

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)

Date of issue: 04/05/2017 Revision date: 21/12/2016 Supersedes: 31/05/2016

Version: 1.2

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

1.1. Product identifier

Product form	Mixture
Name	HIT-RE 500 V3, B
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
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 906310 - F +49 8191 90176310
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. 1A	H314
Skin Sens. 1	H317
STOT SE 3	H335
Aquatic Acute 3	H402
Aquatic Chronic 3	H412

Full text of hazard classes and 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. Substance

Not applicable

3.2. Mixture

Name	Product identifier	%	Classification according to the United Nations GHS
2-methyl-1,5-pentanediamine	(CAS No) 15520-10-2	25 - 40	Flam. Liq. 4, H227 Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Dermal), H312 Acute Tox. 4 (Inhalation), H332 Skin Corr. 1A, H314 Eye Dam. 1, H318 STOT SE 3, H335
Phenol, styrenated	(CAS No) 61788-44-1	5 - 10	Skin Irrit. 2, H315 Eye Irrit. 2A, H319 Skin Sens. 1, H317 Aquatic Acute 2, H401 Aquatic Chronic 2, H411
m-Xylylenediamine	(CAS No) 1477-55-0	5 - <8	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Dermal), H312 Acute Tox. 4 (Inhalation:dust,mist), H332 Skin Corr. 1B, H314 Skin Sens. 1B, H317 Aquatic Acute 3, H402 Aquatic Chronic 3, H412
2,4,6-tris(dimethylaminomethyl)phenol	(CAS No) 90-72-2	1 - 2,5	Acute Tox. 5 (Oral), H303 Acute Tox. 5 (Dermal), H313 Skin Corr. 1B, H314 Skin Sens. 1B, H317 Aquatic Acute 3, H402 Aquatic Chronic 3, H412
3-Aminopropyltriethoxysilan	(CAS No) 919-30-2	1 - 2,5	Acute Tox. 4 (Oral), H302 Skin Corr. 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 victim to fresh air and keep at rest in a position comfortable for breathing.

First-aid measures after skin contact: Wash with plenty of soap and water. Remove/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: Drink plenty of water. Do not induce vomiting. Rinse mouth. Immediately call a POISON CENTER or doctor/physician.

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.

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

Treat symptomatically.

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

Environmental exposure controls	Avoid release to the environment.
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)

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: Chemical goggles or face shield

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) 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	2000 mg/kg
LC50 inhalation rat (Dust/Mist - mg/l/4h)	1.34 mg/l/4h

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

Specific target organ toxicity (single exposure): May cause respiratory irritation.

Specific target organ toxicity (repeated exposure): Not classified

Aspiration hazard: Not classified

Potential adverse human health effects and symptoms: Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - water: Harmful to aquatic life with long lasting effects.

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	0.140 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)
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.

2-methyl-1,5-pentanediamine (15520-10-2)	
Persistence and degradability	Biodegradability in water: no data available.

Phenol, styrenated (61788-44-1)	
Persistence and degradability	Not readily biodegradable in water. Biodegradability in soil: no data available. No (test)data on mobility of the substance available.
Biochemical oxygen demand (BOD)	0.000231 g O_2/g substance
Chemical oxygen demand (COD)	0.004827 g O_2/g substance

2,4,6-tris(dimethylaminomethyl)phenol (90-72-2)	
Persistence and degradability	Not readily biodegradable in water. Highly mobile in soil. Low potential for adsorption in soil.

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 potential for bioaccumulation (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	High potential for bioaccumulation (Log Kow > 5).

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 potential for bioaccumulation (Log Kow < 4).

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

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.
Waste disposal recommendations	Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to Avoid release to the environment, Refer to manufacturer/supplier for information on recovery/recycling.
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.	AMINES, SOLID, CORROSIVE, N.O.S.	Amines, solid, corrosive, n.o.s.	AMINES, SOLID, CORROSIVE, N.O.S.
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		
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
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 73/78 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

Indication of changes:

	Date of issue	Modified	
	Supersedes	Added	
	Revision date	Modified	
	Environmental precautions	Modified	
8.2	Hand protection	Modified	

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
H335	May cause respiratory irritation
H411	Toxic to aquatic life with long lasting effects
H412	Harmful to aquatic life with long lasting effects

HIT-RE 500 V3, B

Safety Data Sheet

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

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)

Date of issue: 04/05/2017 Revision date: 04/05/2017 Supersedes: 21/12/2016

Version: 2.0

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

1.1. Product identifier

Product form	Mixture
Name	HIT-RE 500 V3, A
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
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 906310 - F +49 8191 90176310
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
Repr. 1B	H360
Aquatic Acute 2	H401
Aquatic Chronic 2	H411

Full text of hazard classes and 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 ; Bisphenol-A-Epichlorhydrin Epoxy resin Average MW < 700 ; 1,3 Propanediol, 2 ethyl-2-(hydroxymethyl)-, polymer with 2-(chloromethyl)oxirane
Hazard statements (GHS-UN)	H314 - Causes severe skin burns and eye damage H317 - May cause an allergic skin reaction H360 - May damage fertility 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. Substance

Not applicable

3.2. Mixture

Name	Product identifier	%	Classification according to the United Nations GHS
Bisphenol-A-Epichlorhydrin Epoxy resin Average MW < 700	(CAS No) 25068-38-6	25 - 40	Skin Irrit. 2, H315 Eye Irrit. 2A, H319 Skin Sens. 1, H317 Aquatic Acute 2, H401 Aquatic Chronic 2, H411
Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol	(CAS No) 9003-36-5	10 - 25	Skin Irrit. 2, H315 Eye Irrit. 2A, H319 Skin Sens. 1, H317 Aquatic Chronic 2, H411
butanedioldiglycidyl ether	(CAS No) 2425-79-8	5 - 10	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Dermal), H312 Acute Tox. 4 (Inhalation), H332 Skin Irrit. 2, H315 Eye Dam. 1, H318 Skin Sens. 1, H317 Aquatic Acute 3, H402 Aquatic Chronic 3, H412
1,3 Propanediol, 2 ethyl-2-(hydroxymethyl)-, polymer with 2-(chloromethyl)oxirane	(CAS No) 30499-70-8	5 - 10	Skin Corr. 1C, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 Repr. 1B, H360 Aquatic Chronic 2, H411
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane	(CAS No) 2530-83-8	2.5 - 5	Acute Tox. 5 (Dermal), H313 Eye Dam. 1, H318 Aquatic Acute 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 victim to fresh air and keep at rest in a position comfortable for breathing. Assure fresh air breathing. 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. Drink plenty of water. 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.

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

Treat symptomatically.

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

Environmental exposure controls	Avoid release to the environment.
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)

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: Chemical goggles or safety glasses

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	No data available
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

Bisphenol-A-Epichlorhydrin Epoxy resin Average MW < 700 (25068-38-6)	
LD50 oral rat	> 2000 mg/kg (Rat; OECD 420: Acute Oral toxicity – Acute Toxic Class Method; Experimental value)
LD50 dermal rat	> 2000 mg/kg (Rat; Experimental value; OECD 402: Acute Dermal Toxicity)

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)

Skin corrosion/irritation	Causes severe skin burns and eye damage.
Serious eye damage/irritation	Serious eye damage, category 1, implicit
Respiratory or skin sensitisation	May cause an allergic skin reaction.
Germ cell mutagenicity	Not classified
Carcinogenicity	Not classified
Reproductive toxicity	May damage fertility.
Specific target organ toxicity (single exposure)	Not classified
Specific target organ toxicity (repeated exposure)	Not classified
Aspiration hazard	Not classified
Potential adverse human health effects and symptoms	Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - water: Toxic to aquatic life with long lasting effects.

Bisphenol-A-Epichlorhydrin Epoxy resin Average MW < 700 (25068-38-6)	
LC50 fish 1	1.2 mg/l (96 h; Oncorhynchus mykiss; Lethal)
EC50 Daphnia 1	1.1 - 2.8 mg/l (48 h; Daphnia magna; Locomotor effect)
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.)

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)

12.2. Persistence and degradability

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

Bisphenol-A-Epichlorhydrin Epoxy resin Average MW < 700 (25068-38-6)	
Persistence and degradability	Not readily biodegradable in water. Hydrolysis in water. Low potential for adsorption in soil.

butanedioldiglycidyl ether (2425-79-8)	
Persistence and degradability	Not readily biodegradable in water.

Biochemical oxygen demand (BOD)	0.01982 g O_2/g substance

[3-(2,3-epoxypropoxy)propyl]trimethoxysilane (2530-83-8)	
Persistence and degradability	Not readily biodegradable in water. Hydrolysis in water. No (test)data on mobility of the substance available.

12.3. Bioaccumulative potential

HIT-RE 500 V3, A	
Bioaccumulative potential	Not established.
Bisphenol-A-Epichlorhydrin Epoxy resin Average MW < 700 (25068-38-6)	
BCF other aquatic organisms 1	3 - 31
Log Pow	>= 2.918 (Experimental value; EU Method A.8: Partition Coefficient; 25 °C)
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).
butanedioldiglycidyl ether (2425-79-8)	
Log Pow	-0.15
Bioaccumulative potential	Bioaccumulation: not applicable.
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane (2530-83-8)	
Log Pow	-0.92 (Estimated value)
Bioaccumulative potential	Not bioaccumulative.

12.4. Mobility in soil

Bisphenol-A-Epichlorhydrin Epoxy resin Average MW < 700 (25068-38-6)	
Surface tension	0.0 587-0.0589,20 °C

12.5. Other adverse effects

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.

Waste disposal recommendations: Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to Avoid release to the environment, Refer to manufacturer/supplier for information on recovery/ recycling.

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			
Not regulated for transport			
14.2. UN proper shipping name			
Not applicable	Not applicable	Not applicable	Not applicable
14.3. Transport hazard class(es)			
Not applicable	Not applicable	Not applicable	Not applicable
Not applicable	Not applicable	Not applicable	Not applicable
14.4. Packing group			
Not applicable	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards			
Dangerous for the environment : Yes	Dangerous for the environment : Yes	Dangerous for the environment : Yes	Dangerous for the environment : Yes

ADR	IMDG	IATA	RID
	Marine pollutant : Yes		
ADR 5.2.1.8.1 derogation applies (quantity of liquids ≤ 5 litres or net mass of solids ≤ 5 kg)			
not restricted according ADR Special Provision SP375, IATA-DGR Special Provision A197 and IMDG-Code 2.10.2.7			

14.6. Special precautions for user

- Overland transport

Special provisions (ADR) 375

- Transport by sea

No data available

- Air transport

Special provisions (IATA) A197

- Rail transport

Carriage prohibited (RID) No

14.7. Transport in bulk according to Annex II of MARPOL 73/78 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

Indication of changes:

	Hazard statements (GHS-UN)	Modified	
	Hazard pictograms (GHS-UN)	Modified	
2.1	Classification (GHS-UN)	Modified	
3	Composition/information on ingredients	Modified	

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
H360	May damage fertility or the unborn child
H411	Toxic to aquatic life with long lasting effects
H412	Harmful to aquatic life with long lasting effects

HIT-RE 500 V3, A

Safety Data Sheet

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

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

Date	Project Name	Contractor	Application
		Project Type:ASD	
2013	Kai Tak Development		Rebar fixing
2015	Kai Tak Trade & Industry Tower 工業及貿易發展局大樓	Dragages	Rebar fixing
2016	HO MAN TIN SWIMMIN POOL		Steel beam/bracket fixing
2017	ART MUSEUM		Steel beam/bracket fixing
2017	ASD Government West Wing		Rebar fixing
		Project Type:Buildings	
2014	InterContinental, Holiday Inn and Cosmopolitan (Parcel 3)	VOL	Rebar fixing
2014	Lok Wo Sha Complex Development 落禾沙綜合發展	HIP HING / EMAN	Rebar fixing
2014	New World - Pak Kong Residential	NEW WORLD	Rebar fixing
2015	Lok Wo Sha Complex Development 落禾沙綜合發展	HIP HING / EMAN	Steel beam/bracket fixing
2016	M PLUS		Rebar fixing
2016	HEUNG SZE WUI ROAD	NEW WORLD	Rebar fixing
2016	Hong Kong Disneyland	Paul Y	Steel beam/bracket fixing
2017	TaiKoo 2B demolition Work	GAMMON ENGINEERING & CONSTRUCTION	Rebar fixing
2017	Tuen Mun Chek Lap Kok Tunnel	GAMMON ENGINEERING & CONSTRUCTION	Rebar fixing
		Project Type:HKAA	
2015	Airport Development 機場主要發展	GAMMON	Rebar fixing
		Project Type:Macau - Casino & Hotel	
2012	Macau Studio City	MERCURIO SERVICOS DE ENGENHARIA	Fixing on steel structural
2012	Macau Studio City	MERCURIO SERVICOS DE ENGENHARIA	Rebar fixing
2012	Macau Studio City	PAUL Y CONST CO LTD	Rebar fixing
2013	Galaxy Maga Resort銀河渡假村	Hsin Chong	Catch fence fixing
2013	Macau Studio City	MERCURIO SERVICOS DE ENGENHARIA	Rebar fixing
2013	Macau Studio City	Paul Y Yau Lee JV	Rebar fixing
2013	Macau Studio City	VOL	Rebar fixing
2013	The Venetian Casino Resort	MERCURIO SERVICOS DE ENGENHARIA	Rebar fixing
2014	City of Dreams Hotel Tower D 新濠天地酒店大樓D	Dragages	Rebar fixing
2014	Galaxy Maga Resort銀河渡假村	Hsin Chong	Rebar fixing
2014	Galaxy Mega Resort (Phase 2) 銀河渡假村二期	Hsin Chong	Interior finishings fixing
2014	Macao Studio City 星麗門	Paul Y & Yau Lee JV	Machine/Equipment fixng

Date	Project Name	Contractor	Application
2014	Macao Studio City 星麗門	Paul Y & Yau Lee JV	Others
2014	Macao Studio City 星麗門	Paul Y & Yau Lee JV	Rebar fixing
2014	Macau Studio City	Paul Y Yau Lee JV	Rebar fixing
2014	MGM Cotai 美高梅(路氹發展)	China State	Rebar fixing
2014	MGM Cotai 美高梅(路氹發展)	CHINA STATE (HONG KONG) - CHINA	Shear connector fixing
2014	Wynn Palace 永利皇宮	Leighton	Others
2014	Wynn Palace 永利皇宮	Leighton	Rebar fixing
2015	City of Dreams Hotel Tower D 新濠天地酒店大樓D	Dragages	Others
2015	Macao Studio City 星麗門	Paul Y & Yau Lee JV	Aluminium cladding fixing
2015	Macao Studio City 星麗門	Paul Y & Yau Lee JV	Machine/Equipment fixng
2015	Macao Studio City 星麗門	Paul Y & Yau Lee JV	Others
2015	Macao Studio City 星麗門	Paul Y & Yau Lee JV	Rebar fixing
2015	MGM Cotai 美高梅(路氹發展)	China State	Rebar fixing
2015	Venetian (Parcel 3) - Parisian 威尼斯人(三期) - 巴黎人	Hsin Chong	Others
2015	Venetian (Parcel 3) - Parisian 威尼斯人(三期) - 巴黎人	Hsin Chong	Rebar fixing
2015	Wynn Palace 永利皇宮	Leighton	Signage fixing
2016	Sands Tai Pai		
2016	FISHERMAN WAHRF		Steel beam/bracket fixing
2017	LIGHTRAIL	CHINA CONSTRUCTION	Steel beam/bracket fixing
2017	LISBOAPALACE		Rebar fixing
	Project Type:Others		
2012	Hong Kong University Redevelopment	APPI MARBLE LIMITED	Stone cladding fixing
	Project Type:Railway		

Date	Project Name	Contractor	Application
2013	MTR - South Island Line 地鐵南港島線	KIER LAING O'ROURKE KADEN JV	Rebar fixing
2013	MTR - South Island Line 地鐵南港島線	MTRCL	Electrical services fixing
2013	MTR - South Island Line 地鐵南港島線	MTRCL	Rebar fixing
2014	MTR - Express Rail Link 港深廣高速鐵路	MTRC	Rebar fixing
2014	MTR - Kwun Tong Line Extension 地鐵觀塘延長線	MTRC	Rebar fixing
2014	MTR - South Island Line 地鐵南港島線	MTRC	Rebar fixing
2014	MTR - South Island Line 地鐵南港島線	MTRCL	Rebar fixing
2014	MTR - West Island Line 地鐵西港島線	MTRC	Steel beam/bracket fixing
2015	MTR - Express Rail Link 港深廣高速鐵路	MTRC	Rebar fixing
2015	MTR - Express Rail Link 港深廣高速鐵路	MTRC	Steel beam/bracket fixing
2015	MTR - Kwun Tong Line Extension 地鐵觀塘延長線	MTRC	Rebar fixing
2015	MTR - Shatin to Central Link 沙中線	MTRC	Rebar fixing
2015	MTR - Shatin to Central Link 沙中線	MTRC	Steel beam/bracket fixing
2015	MTR - South Island Line 地鐵南港島線	MTRC	Rebar fixing
2016	MTR - Express Rail Link 港深廣高速鐵路	MTRC	Rebar fixing
Project Type: Housing			
2016	Cheung Ching Estate		Laundry rack fixing
2016	KAI YIP ESTATE		Steel beam/bracket fixing
2016	SHUN ON ESTATE		Laundry rack fixing
2016	YAU OI EST, OI FAI HOUSE		Steel beam/bracket fixing
2017	POK HONG ESTATE		Rebar fixing
Project Type: Highways			
2016	LUNG MUN ROAD		Rebar fixing
2016	Wan Chai Bypass	CHINA STATE-BUILD KING	Rebar fixing