



HIT-RE 500 V4 injection mortar

Mechanical, electrical, thermal, chemical and durability properties

Injection mortar system

Product category	Ultimate
Chemical basis	Amine - epoxy
Curing category	Slow cure
Mixing ratio	3:1
Shelf life	12 months
Dosage form	2 component foil pack
Sales package size	330 / 500 / 1400 ml
Conditions for transport and storage:	+5 °C...25 °C / 41 °F...77 °F
Foil pack temperature during usage	+5 °C...40 °C / 41 °F to 104 °F.
Reusability of partly used cartridges	≤ 4 weeks



INJECTION MORTAR HIT-RE 500 V4



MIXER HIT-RE-M



FOIL PACK HOLDER HIT-CR 330



FOIL PACK HOLDER HIT-CR 500



MANUAL DISPENSER HDM 330 and HDM 500



BATTERY DISPENSER HDE 500-A22



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1. Certificates

Description	Product	Authority / Laboratory	No. / date of issue
Ground water protection, liquid tight concrete (WHG)	HIT-RE 500 V4	ISG, Darmstadt	121415-6, 02.09.2021, Rev. 00 (de / en)
Ground water protection, coated concrete (VE-coating) (WHG)	HIT-RE 500 V4	ISG, Darmstadt	121415-8, 21.04.2022 Rev. 01 (de / en)
Ground water protection, coated concrete (EP-coating) (WHG)	HIT-RE 500 V4	ISG, Darmstadt	121415-9, 21.04.2022 Rev. 01 (de / en)
Ground water protection, tight blanket Ducon (WHG)	HIT-RE 500 V4	ISG, Darmstadt	121415-1, 22.05.2022 Rev. 01 (de / en)
Paint wetting disturbances acc. to VDMA 2436 (LABS certificate)	HIT-RE 500 V4	Fraunhofer Institut, Stuttgart	LA 009-21 17.03.2021 (de / en)
Water tightness under pressure of anchorings in coated concrete (bitumen) acc. to RVS 15.04.12 Bridges (50 kPa)	HIT-RE 500 V4 with HIT-C-R + HIW-SD HPA-C A4 + HIW-SD	BAUTECHNISCHE VERSUCHSANSTALT an der HTL RANKWEIL, Rankweil	160-21 / 29.06.2021 (en) 189-21 / 07.09.2021 (en) 207-21 / 11.11.2021 (en) 234-21 / 11.11.2021 (en) 253-21 / 14.12.2021 (en)
Water tightness under pressure of anchorings in concrete acc. to EN 12390-8, part 8	HIT-RE 500 V4 with HAS-U A4 M12x160 HAS-U A4 M20x180	BAUTECHNISCHE VERSUCHSANSTALT an der HTL RANKWEIL, Rankweil	151-21 / 26.07.2021 (en) 152-21 / 26.07.2021 (en)
Drinking water, NSF	HIT-RE 500 V4	NSF	07.09.2021
LEED v4.1, confirmation	HIT-RE 500 V4	Eurofins	08.12.2020
VOC, EMICODE	HIT-RE 500 V4	Eurofins	08.12.2020
VOC, IAC Gold	HIT-RE 500 V4	Eurofins	08.12.2020
VOC, CDPH	HIT-RE 500 V4	Eurofins	08.12.2020

2. General physical properties

		T _{test} [°C]	
Specific weight (ISO 2811-1:2016-03)			
resin component	ρ [g/ml]	20	1,45
hardener component	ρ [g/ml]	20	1,31
cured adhesive	ρ [g/ml]	20	1,46
Viscosity (EN 12092, Procedure 6.2)			
mixed mortar	η [Pa·s]	23	52

Viscosity (DIN SPEC 91143-2:2012-09, method 3.3)				
mixed mortar	η	[Pa·s]	25	22
Viscosity (EN ISO 2555:2017-05)				
mixed mortar	η	[Pa·s]	23	57
Viscosity (ASTM D 2556, T-B; 8,5 1/min)				
mixed mortar	η	[Pa·s]	0	145
	η	[Pa·s]	10	81
	η	[Pa·s]	20	60
Dispensing time 500 ml foil pack (Hilti internal test method; HDE 500-A22)				
mixed mortar	$F_{disp.}$	[min]	0	-
mixed mortar + 1 m HIT-VL 11/1	$F_{disp.}$	[min]	0	-
mixed mortar	$F_{disp.}$	[min]	5	-
mixed mortar + 1 m HIT-VL 11/1	$F_{disp.}$	[min]	5	1,9
mixed mortar	$F_{disp.}$	[min]	20	1,0
mixed mortar + 1 m HIT-VL 11/1	$F_{disp.}$	[min]	20	1,2
mixed mortar	$F_{disp.}$	[min]	40	-
mixed mortar + 1 m HIT-VL 11/1	$F_{disp.}$	[min]	40	0,8
Color				
cured adhesive with air contact	-	-	RT	red
cured adhesive w/o air contact	-	-	RT	red



Figure 1: HIT-RE 500 V4 cured without contact to air;
background: concrete



Figure 2: HIT-RE 500 V4 cured with contact to air;
background: concrete

3. Mechanical properties

Shore D hardness (EN ISO 868)				
cured adhesive	-	-	RT	85
Compressive strength (EN ISO 604)				
cured adhesive	σ_M	[N/mm ²]	-40	-
	E_C	[N/mm ²]		-
	σ_M	[N/mm ²]	-20	162
	E_C	[N/mm ²]		4668
	σ_M	[N/mm ²]	0	135
	E_C	[N/mm ²]		5704
	σ_M	[N/mm ²]	20	105
	E_C	[N/mm ²]		5077
	σ_M	[N/mm ²]	40	90
	E_C	[N/mm ²]		4475
	σ_M	[N/mm ²]	60	59
	E_C	[N/mm ²]		2608
	σ_M	[N/mm ²]	80	57
	E_C	[N/mm ²]		521
	σ_M	[N/mm ²]	100	49
	E_C	[N/mm ²]		289
	σ_M	[N/mm ²]	120	16
	E_C	[N/mm ²]		77
Tensile strength (EN ISO 527-1; type 1A - EN ISO 527-2)				
cured adhesive	σ_m	[N/mm ²]	0	70,9
	ϵ_m	[%]	0	1,3
	σ_m	[N/mm ²]	20	68,6
	ϵ_m	[%]	20	2,2
	σ_m	[N/mm ²]	50	44,1
	ϵ_m	[%]	50	4,6
Tensile modulus (EN ISO 527-1; type 1A - EN ISO 527-2)				
cured adhesive	E_t	[N/mm ²]	0	5821
	E_t	[N/mm ²]	20	5534
	E_t	[N/mm ²]	50	3621
Flexural strength (DIN EN ISO 178)				
cured adhesive	σ_{fB}	[N/mm ²]	20	122
	ϵ_{fB}	[mm]	20	-
	E_f	[N/mm ²]	20	-
Dynamic mechanical properties (EN ISO 6721-1, -2)				
Glass transition temperature	$T_{G, to}$	[°C]	-20...135	71

4. Thermal properties

Thermal isolation characteristics of cured adhesive

(EN 993-15)

Thermal conductivity	λ	[W/(m·K)]	RT	0,44
Thermal resistance	R_{th}	[K/W]	RT	2,30

Thermal expansion coefficient (TMA)

(ISO 11359-2)

Mean coefficient of linear thermal expansion	α	[10 ⁻⁶ /K]	-40...T _g	1 st run: 47,49 2 nd run: 45,81
	α	[10 ⁻⁶ /K]	T _g ...150	2 nd run: 133,76

Glass transition temperature (TMA)

(ISO 11359-2)

Glass transition temperature	T _G	[°C]	-40...80	2 nd run: 67,67
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Reaction enthalpy (DSC)

(EN ISO 11357-2)

Reaction enthalpy	$\Delta H_{tot,t}$	[J/g]	-40...180	-334,9
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5. Electrical properties

Electrical properties

(EN 60243-1 (VDE 0303 part 21); DIN EN 62631-3-1:2017-01; DIN EN 62631-3-2:2016-10)

Electric strength		[kV/mm]	RT	-
Specific (volume) resistivity	ρ	[Ω cm]		3,68·10 ¹⁴
Surface resistivity	σ	[Ω]		7,79·10 ¹⁴

6. Chemical properties

Compatibility with construction materials

(Hilti internal test procedure)

Cleaning: dry "d" or with ethanol "e"

Effects: no (-), optical (o), damage of material while cleaning (d), residue (r), adhesion low (a-), medium (a), strong (a+)

Thermoplastics				
PMMA	Polymethyl methacrylate (Plexiglas, Plexidur)	Until curing	RT	d (-), e (-)
		After curing		d (a)(r), e (-)
PS	Polystyrene (Luran, Vestyron)	Until curing	RT	d (-), e (-)
		After curing		d (a)(d), e (d)
PC	Polycarbonat (Makrolon, Lexan)	Until curing	RT	d (-), e (-)
		After curing		d (a+)(r), e (r)
PETG	Polyethylenterephthalat glycole modified (Kodar)	Until curing	RT	d (-), e (-)
		After curing		d (a+)(d), e (d)
PA-6 (PA-B)	Polyamide B: Polycarprolactam (Durethan, Ultramid, Nylon, Ertalon)	Until curing	RT	d (-), e (-)
		After curing		d (a)(r), e (-)
POM	Polyacetal resin, Homo- / Copolymer (Delrin Hostaform C, Ertacetal)	Until curing	RT	d (-), e (-)
		After curing		d (-), e (-)
PET	Polyethylen terephthalat (Hostadur, Ertalyte)	Until curing	RT	d (-), e (-)
		After curing		d (a+)(r), e (r)

PE-HD	Polyethylen (high density) hard (Hostalen, Lupolen, Vestolen, TIVAR)	Until curing	RT	d (-), e (-)
		After curing		d (-), e (-)
PE-1000	Polyethylen highest molecular hard (Hostalen GUR, Tivar 1000)	Until curing	RT	d (-), e (-)
		After curing		d (-), e (-)
PP	Polypropylen (Hostalen PP, Vestolen P)	Until curing	RT	d (-), e (-)
		After curing		d (-), e (-)
PPs	Polyphenyl sulfide (Techtron)	Until curing	RT	d (r), e (-)
		After curing		d (a)(r), e (d)
ABS	Acryl-Butadien-Styrene CoPo (Terluran)	Until curing	RT	d (o), e (d)
		After curing		d (a)(o), e (o)
PVC-hard	Polyvinyl chloride hard (Hostalit, Vestolit)	Until curing	RT	d (o), e (-)
		After curing		d (a)(d), e (d)
PVC-soft	Polyvinyl chloride soft (Vestolit Coroplast)	Until curing	RT	d (-), e (-)
		After curing		d (a)(d), e (d)
PTFE	Polytetrafluroethylen (Teflon, Hostaflon)	Until curing	RT	d (-), e (-)
		After curing		d (-), e (-)
PUR	Polyurethan (Elastomer) (Vulkollan Adiprene, Elastopal)	Until curing	RT	d (-), e (-)
		After curing		d (a)(o), e (-)
Organic insulating materials				
EPS	Expanded polystyrene foam, hard (Styropor)	Until curing	RT	d (o), e (o)
		After curing		d (a+)(d), e (d)
XPS	Extruded polystyrene foam, hard (Styrodur)	Until curing	RT	d (o), e (o)
		After curing		d (a+)(d), e (d)
PUR	Polyurethane foam, hard	Until curing	RT	-
		After curing		-
PIR	Polyisocyanurate or polyiso foam, hard	Until curing	RT	d (o), e (o)
		After curing		d (a+)(d), e (d)
Elastomer				
EPDM (APTK)	Ethylene propylene diene rubber	Until curing	RT	d (o), e (o)
		After curing		d (-), e (-)
NBR	Acrylonitrile butanediene rubber	Until curing	RT	d (d), e (d)
		After curing		d (d), e (d)
Thermoplastics used for glass composites				
EVA	Ethylen-Vinylacetat (EV guard)	Until curing	RT	-
		After curing		-
PVB	Polyvinylbutyral (Trosivol, Safflex)	Until curing	RT	-
		After curing		-
SGP	SentryGlas Plus (Trosifol)	Until curing	RT	-
		After curing		-
● Wood				
-	Spruce (Soft wood)	Until curing	RT	d (o), e (o)
		After curing		d (a+)(d), e (d)
-	Cork (Soft wood)	Until curing	RT	d (o), e (o)
		After curing		d (a+)(d), e (d)

Metal				
-	Aluminum (Soft metal)	Until curing	RT	d (o), e (o)
		After curing		d (a)(r), e (o)
-	Brass (Soft metal)	Until curing	RT	d (d), e (d)
		After curing		d (a+)(r), e (r)
-	Copper (Soft metal)	Until curing	RT	d (o), e (-)
		After curing		d (a)(o), e (o)
Polysiloxanes				
Silikon - Acetat	acid polymerization (Ottoseal S25, S27, S28, S50, S69, S100, S105, Sikasil-E Plus)	Until curing	RT	d (-), e (-)
		After curing		d (a)(o), e (o)
Silikon - Amine	alkaline polymerization (Ottoseal S51, S54)	Until curing	RT	d (o), e (o)
		After curing		d (a)(o), e (-)
Silikon - neutral	Basic: Oxim - neutral poimerization (Ottoseal S7, S9, S10, S17, S18, S34, S68, S70, S94, S110, S115, S117, S140, S730)	Until curing	RT	d (o), e (-)
		After curing		d (a)(-), e (-)
Silikon - neutral	Basic: Alkoxy – neutral polymerization (Ottoseal S72, S80, S81, S112, S120, S121, S125, S130, S140, S610, S670; Sikasil-N, Dow Corning Dowsil™ 790, Dowsil™ 933)	Until curing	RT	d (-), e (-)
		After curing		d (a+)(d), e (d)
Acrylic sealant	Acrylate dispersion (Ottoseal A205, A207)	Until curing	RT	d (o), e (o)
		After curing		d (a+)(d), e (d)
Natural stone				
Marble Carrara	Calc-silicate rock; calcite	Until curing	RT	d (o), e (o)
		After curing		d (a+)(d), e (d)
Granite	Feldspar, quartz and mica	Until curing	RT	d (o), e (o)
		After curing		d (a+)(r), e (r)
Sandstone	Quartz	Until curing	RT	d (o), e (o)
		After curing		d (a+)(r), e (r)
Basalt	Calcium iron magnesium silicates, feldspar	Until curing	RT	d (o), e (o)
		After curing		d (a+)(r), e (r)
Serpentine	Chrysotile, clinochrysotile, orthochrysotile, parachrysotile, lizardite, or antigorite	Until curing	RT	d (o), e (o)
		After curing		d (a+)(r), e (r)
pH-value (EN 1245)				
cured adhesive 10 % in water		-	RT	9

7. Durability

Resistance against UV radiation (impact on compressive strength)

(DIN EN ISO 4892-2; EN ISO 604)

			[%]
Cured adhesive; reference	σ_M [N/mm ²]	RT	100
	E_C [N/mm ²]		100
Cured adhesive; 1 month UV radiation	σ_M [N/mm ²]		101
	E_C [N/mm ²]		55
Cured adhesive; 2 months UV radiation	σ_M [N/mm ²]		103
	E_C [N/mm ²]		80
Cured adhesive; 3 months UV radiation	σ_M [N/mm ²]		101
	E_C [N/mm ²]		82

Durability against temperature (effect on compressive strength)

(EN ISO 604)

			[%]
Cured adhesive; reference	σ_M [N/mm ²]	RT	100
	E_C [N/mm ²]		100
Cured adhesive after 4 h impact at 80 °C	σ_M [N/mm ²]		101
	E_C [N/mm ²]		91
Cured adhesive after 4 h impact at 120 °C	σ_M [N/mm ²]		100
	E_C [N/mm ²]		85
Cured adhesive after 4 h impact at 150 °C	σ_M [N/mm ²]		105
	E_C [N/mm ²]		84
Cured adhesive after 4 h impact at 200 °C	σ_M [N/mm ²]		107
	E_C [N/mm ²]		95
Cured adhesive after 4 h impact at 250 °C	σ_M [N/mm ²]		114
	E_C [N/mm ²]		78
Cured adhesive after 4 h impact at 300 °C	σ_M [N/mm ²]		3
	E_C [N/mm ²]		-

Note: Mentioned data are typical values. Stated material properties aren't subject to a periodically check.