Technical data sheet

AT-HP
High Performance Resin

SIMPSON Strong-Tie

AT-HP is a styrene free methacrylate resin suitable for high performance fixing applications in threaded rod into concrete.

- *Easy to dispense and fast curing, it's specially designed for structural fixings and construction uses.*
- *ETA Option 8 for threaded rod and rebar*

Features

Material

- Styrene free methacrylate resin.
- Threaded rod: galvanised steel and stainless steel A4-70.

Benefits

- Fast curing.
- Low odour.
- Non-flammable.
- Easy to dispense.

Applications

Header member

- Non-cracked concrete.
- Solid blocks.
- Hollow blocks.
- AAC Blocks.

For Use With

- Threaded rod and rebar connections.
- Racking.
- Balconies.
- Facades.

Hollow block.

Post to concrete.

Technical Data

Références

References	Product information				
	Grey color	Beige color	Content [ml]	Weight [kg]	Packaging qty [pcs]
ATHP300BG-PL	x	-	300	0.575	12

Design resistance – Tension – NRd [kN] – hef = 8d – Carbon steel 5.8

References	Design resistance – h_{ef} = 8d – Carbon steel 5.8							
	Tension - N_{Rd} [kN]							
	Cracked concrete				Non-cracked concrete			
	C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60
AT-HP + LMAS M10	-	-	-	-	15.9	17.8	19.3	19.3

Concrete :
1. The design loads have been calculated using the partial safety factors for resistances stated in ETA-approval(s). The loading figures are valid for unreinforced concrete and reinforced concrete with a rebar spacing s ≥ 15 cm (any diameter) or with a rebar spacing s ≥ 10 cm, if the rebar diameter is 10mm or smaller.
2. The figures for shear are based on a single anchor without influence of concrete edges. For anchorages close to edges (c ≤ max [10 hef; 60d]) the concrete edge failure shall be checked per ETAG 001, Annex C, design method A.
3. Concrete is considered non-cracked when the tensile stress within the concrete is\sigmaL +\sigmaR ≤ 0. In the absence of detailed verification\sigmaR = 3 N/mm² can be assumed (\sigmaL equals the tensile stress within the concrete induced by external loads, anchors loads included).

Design resistance – Tension – NRd [kN] – hef = 12d – Carbon steel 5.8

References	Design resistance – h_{ef} = 12d – Carbon steel 5.8							
	Tension - N_{Rd} [kN]							
	Cracked concrete				Non-cracked concrete			
	C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60
AT-HP + LMAS M10	-	-	-	-	19.3	19.3	19.3	19.3

Concrete :
1. The design loads have been calculated using the partial safety factors for resistances stated in ETA-approval(s). The loading figures are valid for unreinforced concrete and reinforced concrete with a rebar spacing s ≥ 15 cm (any diameter) or with a rebar spacing s ≥ 10 cm, if the rebar diameter is 10mm or smaller.
2. The figures for shear are based on a single anchor without influence of concrete edges. For anchorages close to edges (c ≤ max [10 hef; 60d]) the concrete edge failure shall be checked per ETAG 001, Annex C, design method A.
3. Concrete is considered non-cracked when the tensile stress within the concrete is\sigmaL +\sigmaR ≤ 0. In the absence of detailed verification\sigmaR = 3 N/mm² can be assumed (\sigmaL equals the tensile stress within the concrete induced by external loads, anchors loads included).

Design resistance – Tension – NRd [kN] – hef = 8d – Stainless steel A4-70

References	Design resistance – h_{ef} = 8d – Stainless steel A4-70							
	Tension - N_{Rd} [kN]							
	Cracked concrete				Non-cracked concrete			
	C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60
ATHP300BG-PL	-	-	-	-	-	-	-	-
AT-HP + LMAS M10	-	-	-	-	15.9	17.8	19.6	20.7

Concrete :
1. The design loads have been calculated using the partial safety factors for resistances stated in ETA-approval(s). The loading figures are valid for unreinforced concrete and reinforced concrete with a rebar spacing s ≥ 15 cm (any diameter) or with a rebar spacing s ≥ 10 cm, if the rebar diameter is 10mm or smaller.
2. The figures for shear are based on a single anchor without influence of concrete edges. For anchorages close to edges (c ≤ max [10 hef; 60d]) the concrete edge failure shall be checked per ETAG 001, Annex C, design method A.
3. Concrete is considered non-cracked when the tensile stress within the concrete is\sigmaL +\sigmaR ≤ 0. In the absence of detailed verification\sigmaR = 3 N/mm² can be assumed (\sigmaL equals the tensile stress within the concrete induced by external loads, anchors loads included).

Design resistance – Tension – NRd [kN] – hef = 12d – Stainless steel A4-70

References	Design resistance – h_{ef} = 12d – Stainless steel A4-70							
	Tension - N_{Rd} [kN]							
	Cracked concrete				Non-cracked concrete			
	C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60
AT-HP + LMAS M10	-	-	-	-	21.9	21.9	21.9	21.9

Concrete :
1. The design loads have been calculated using the partial safety factors for resistances stated in ETA-approval(s). The loading figures are valid for unreinforced concrete and reinforced concrete with a rebar spacing s ≥ 15 cm (any diameter) or with a rebar spacing s ≥ 10 cm, if the rebar diameter is 10mm or smaller.
2. The figures for shear are based on a single anchor without influence of concrete edges. For anchorages close to edges (c ≤ max [10 hef; 60d]) the concrete edge failure shall be checked per ETAG 001, Annex C, design method A.
3. Concrete is considered non-cracked when the tensile stress within the concrete is\sigmaL +\sigmaR ≤ 0. In the absence of detailed verification\sigmaR = 3 N/mm² can be assumed (\sigmaL equals the tensile stress within the concrete induced by external loads, anchors loads included).

Technical data sheet

AT-HP
High Performance Resin

Design resistance – Shear – VRd [kN] – hef = 8d – Carbon steel 5.8

References	Design resistance – h_{ef} = 8d – Carbon steel 5.8							
	Shear - V_{Rd} [kN]							
	Cracked concrete				Non-cracked concrete			
	C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60
AT-HP + LMAS M10	-	-	-	-	12	12	12	12

Concrete :
1. The design loads have been calculated using the partial safety factors for resistances stated in ETA-approval(s). The loading figures are valid for unreinforced concrete and reinforced concrete with a rebar spacing s ≥ 15 cm (any diameter) or with a rebar spacing s ≥ 10 cm, if the rebar diameter is 10mm or smaller.
2. The figures for shear are based on a single anchor without influence of concrete edges. For anchorages close to edges (c ≤ max [10 hef; 60d]) the concrete edge failure shall be checked per ETAG 001, Annex C, design method A.
3. Concrete is considered non-cracked when the tensile stress within the concrete is\sigmaL +\sigmaR ≤ 0. In the absence of detailed verification\sigmaR = 3 N/mm² can be assumed (\sigmaL equals the tensile stress within the concrete induced by external loads, anchors loads included).

Design resistance – Shear – VRd [kN] – hef = 12d – Carbon steel 5.8

References	Design resistance – h_{ef} = 12d – Carbon steel 5.8							
	Shear - V_{Rd} [kN]							
	Cracked concrete				Non-cracked concrete			
	C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60
AT-HP + LMAS M10	-	-	-	-	12	12	12	12

Concrete :
1. The design loads have been calculated using the partial safety factors for resistances stated in ETA-approval(s). The loading figures are valid for unreinforced concrete and reinforced concrete with a rebar spacing s ≥ 15 cm (any diameter) or with a rebar spacing s ≥ 10 cm, if the rebar diameter is 10mm or smaller.
2. The figures for shear are based on a single anchor without influence of concrete edges. For anchorages close to edges (c ≤ max [10 hef; 60d]) the concrete edge failure shall be checked per ETAG 001, Annex C, design method A.
3. Concrete is considered non-cracked when the tensile stress within the concrete is\sigmaL +\sigmaR ≤ 0. In the absence of detailed verification\sigmaR = 3 N/mm² can be assumed (\sigmaL equals the tensile stress within the concrete induced by external loads, anchors loads included).

Design resistance – Shear – VRd [kN] – hef = 8d – Stainless steel A4-70

References	Design resistance – h_{ef} = 8d – Stainless steel A4-70							
	Shear - V_{Rd} [kN]							
	Cracked concrete				Non-cracked concrete			
	C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60
AT-HP + LMAS M10	-	-	-	-	12.8	12.8	12.8	12.8

Concrete :
1. The design loads have been calculated using the partial safety factors for resistances stated in ETA-approval(s). The loading figures are valid for unreinforced concrete and reinforced concrete with a rebar spacing s ≥ 15 cm (any diameter) or with a rebar spacing s ≥ 10 cm, if the rebar diameter is 10mm or smaller.
2. The figures for shear are based on a single anchor without influence of concrete edges. For anchorages close to edges (c ≤ max [10 hef; 60d]) the concrete edge failure shall be checked per ETAG 001, Annex C, design method A.
3. Concrete is considered non-cracked when the tensile stress within the concrete is\sigmaL +\sigmaR ≤ 0. In the absence of detailed verification\sigmaR = 3 N/mm² can be assumed (\sigmaL equals the tensile stress within the concrete induced by external loads, anchors loads included).

Design resistance – Shear - VRd [kN] – hef = 12d – Stainless steel A4-70

References	Design resistance – h_{ef} = 12d – Stainless steel A4-70							
	Shear - V_{Rd} [kN]							
	Cracked concrete				Non-cracked concrete			
	C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60
AT-HP + LMAS M10	-	-	-	-	12.8	12.8	12.8	12.8

Concrete :
1. The design loads have been calculated using the partial safety factors for resistances stated in ETA-approval(s). The loading figures are valid for unreinforced concrete and reinforced concrete with a rebar spacing s ≥ 15 cm (any diameter) or with a rebar spacing s ≥ 10 cm, if the rebar diameter is 10mm or smaller.
2. The figures for shear are based on a single anchor without influence of concrete edges. For anchorages close to edges (c ≤ max [10 hef; 60d]) the concrete edge failure shall be checked per ETAG 001, Annex C, design method A.
3. Concrete is considered non-cracked when the tensile stress within the concrete is\sigmaL +\sigmaR ≤ 0. In the absence of detailed verification\sigmaR = 3 N/mm² can be assumed (\sigmaL equals the tensile stress within the concrete induced by external loads, anchors loads included).

Design resistance – Bending moment – MRd [Nm] – Concrete

References	Design resistance – Bending moment – M_{Rd} [Nm]	
	Carbon steel 5.8	Stainless steel A4-70
AT-HP + LMAS M10	29.6	34

Concrete :
1. The design loads have been calculated using the partial safety factors for resistances stated in ETA-approval(s). The loading figures are valid for unreinforced concrete and reinforced concrete with a rebar spacing s ≥ 15 cm (any diameter) or with a rebar spacing s ≥ 10 cm, if the rebar diameter is 10mm or smaller.
2. The figures for shear are based on a single anchor without influence of concrete edges. For anchorages close to edges (c ≤ max [10 hef; 60d]) the concrete edge failure shall be checked per ETAG 001, Annex C, design method A.
3. Concrete is considered non-cracked when the tensile stress within the concrete is\sigmaL +\sigmaR ≤ 0. In the absence of detailed verification\sigmaR = 3 N/mm² can be assumed (\sigmaL equals the tensile stress within the concrete induced by external loads, anchors loads included).

Design resistance – Tension – NRd [kN] – Rebar

References	Design resistance – N_{Rd} – Carbon steel 5.8 [kN]							
	Non-cracked concrete							
	h_{ef} = 8d				h_{ef} = 12d			
	C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60
AT-HP + Ø8	6.3	7	7.7	8.1	9.4	10.5	11.5	12.2
AT-HP + Ø12	14.1	15.8	17.3	18.3	21.1	23.6	26	27.4
AT-HP + Ø14	19.1	21.4	23.6	24.9	28.7	32.2	35.3	37.3
AT-HP + Ø16	23.2	26	28.6	34.8	34.8	39	42.8	52.2
AT-HP + Ø20	36.3	40.6	44.6	47.2	54.4	61	66.9	70.8
AT-HP + Ø25	52.3	58.6	64.4	68	78.5	87.9	96.6	102.1

Design resistance – Shear – VRd [kN] – Rebar

References	Design resistance – V_{Rd} – Carbon steel 5.8 [kN]							
	Non-cracked concrete							
	h_{ef} = 8d				h_{ef} = 12d			
	C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60
AT-HP + Ø8	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3
AT-HP + Ø12	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7
AT-HP + Ø14	28	28	28	28	28	28	28	28
AT-HP + Ø16	36.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7
AT-HP + Ø20	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3
AT-HP + Ø25	90	90	90	90	90	90	90	90

Technical data sheet

AT-HP
High Performance Resin

SIMPSON Strong-Tie

Design resistance – Bending moment – MRd [Nm] – Rebar

References	Design resistance – Bending moment – M_{Rd} [Nm]
AT-HP + Ø8	22
AT-HP + Ø12	74.7
AT-HP + Ø14	118.7
AT-HP + Ø16	176.7
AT-HP + Ø20	345.3
AT-HP + Ø25	674.7

Installation

Curing Schedule

Temperature of the anchorage base $T_{base\ material}$	Working time (Gel time) t_{gel}	Curing time (in dry concrete) $t_{cure,\ dry}$	Curing time (in wet concrete) $t_{cure,\ wet}$
$0°C \leq T_{base\ material} < +5°C$	25 min	90 min	3:00 h
$5°C \leq T_{base\ material} < +10°C$	17 min	70 min	2:20 h
$10°C \leq T_{base\ material} < +20°C$	12 min	65 min	2:10 h
$20°C \leq T_{base\ material} < +30°C$	6 min	60 min	2:00 h
$30°C \leq T_{base\ material} \leq +40°C$	3 min	45 min	1:30 h

- **Manual Air Cleaning (MAC) for all drill hole diameters $d_0 \leq 24$ mm and drill holl depth $h_0 \leq 10d$:**
  4x blowing (hand pump)
  4x brushing
  4x blowing (Hand pump)
- **Compressed Air Cleaning (CAC) for all drill hole diameters d_0 and drill hole depths :**
  2x blowing (min. 6 bar - oil free compressed air)
  2x brushing
  2x blowing (min. 6 bar - oil free compressed air)
- **Cartridge temperature (Bond material) : ≥ +20°C**

Drilling methods

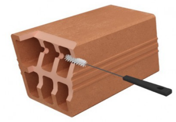
Solid brick/concrete	Percussion/hammer drilling
Hollow/perforated brick	Rotation drilling
Aerated concrete	Percussion/hammer drilling

Technical data sheet

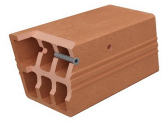
AT-HP
High Performance Resin

SIMPSON Strong-Tie

Drill.

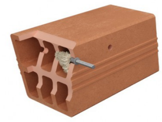


Brush.

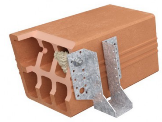


Insert sieve.

Inject the resin.



Insert the rod, turning slowly.



Once set, full load capacity is reached.

Drill.

Remove dust by brushing and blowing,

Fill the hole to half or two thirds, Withdrawing the nozzles with each pump.

Insert the rod, turning slowly.

Once set, full load capacity is reached.

Installation parameters – Concrete

References	Installation parameters - Concrete					
	Ø drilling [d_0] [mm]	Max. fixture hole Ø [d_f] [mm]	Drilling depth (8d) [h_0=h_{ef}=8d] [mm]	Drilling depth (12d) [h_0=h_{ef}=12d] [mm]	Wrench size [SW]	Installation torque [T_{inst}] [Nm]
AT-HP + LMAS M10	12	12	80	120	17	20

Spacing, edge distances and member thickness - Concrete

References	Spacing, edge distance and member thickness - Concrete									
	Effective embedment depth (8d) [$h_{ef,8d}$] [mm]	Characteristic spacing for $h_{ef,8d}$ [$S_{cr,N}$] [mm]	Characteristic edge distance for $h_{ef,8d}$ [$c_{cr,N}$] [mm]	Min. member thickness for $h_{ef,8d}$ [h_{min}] [mm]	Effective embedment depth (12d) [$h_{ef,12d}$] [mm]	Characteristic spacing for $h_{ef,12d}$ [$S_{cr,N}$] [mm]	Characteristic edge distance for $h_{ef,12d}$ [$c_{cr,N}$] [mm]	Min. member thickness for $h_{ef,12d}$ [h_{min}] [mm]	Min. spacing [S_{min}] [mm]	Min. edge distance [C_{min}] [mm]
AT-HP + LMAS M10	80	240	120	110	120	360	180	150	50	50

AT-HP
High Performance Resin

Installation parameters – Rebar

References	Installation parameters - Rebar		
	Ø drilling [d_0] [mm]	Drilling depth (8d) [h_0=h_{ef}=8d] [mm]	Drilling depth (12d) [h_0=h_{ef}=12d] [mm]
AT-HP + Ø8	12	64	96
AT-HP + Ø12	16	96	144
AT-HP + Ø14	18	112	168
AT-HP + Ø16	20	128	192
AT-HP + Ø20	25	160	240
AT-HP + Ø25	32	200	300

Spacing, edge distances and member thickness – Rebar

References	Spacing, edge distance and member thickness - Rebar									
	Effective embedment depth (8d) [$h_{ef,8d}$] [mm]	Characteristic spacing for $h_{ef,8d}$ [$S_{cr,N}$] [mm]	Characteristic edge distance for $h_{ef,8d}$ [$c_{cr,N}$] [mm]	Min. member thickness for $h_{ef,8d}$ [h_{min}] [mm]	Effective embedment depth (12d) [$h_{ef,12d}$] [mm]	Characteristic spacing for $h_{ef,12d}$ [$S_{cr,N}$] [mm]	Characteristic edge distance for $h_{ef,12d}$ [$c_{cr,N}$] [mm]	Min. member thickness for $h_{ef,12d}$ [h_{min}] [mm]	Min. spacing [S_{min}] [mm]	Min. edge distance [C_{min}] [mm]
AT-HP + Ø8	64	192	96	100	96	288	144	100	40	40
AT-HP + Ø12	96	288	144	126	144	432	216	174	60	60
AT-HP + Ø14	112	336	168	148	168	504	252	204	70	70
AT-HP + Ø16	128	384	192	168	192	576	288	232	80	80
AT-HP + Ø20	160	480	240	210	240	720	360	290	100	100
AT-HP + Ø25	200	600	300	264	300	900	450	364	125	125