

Technical Data Sheet

Date of compilation: 10/08/2021

ARC CHEMICAL ANCHOR

DESCRIPTION

Arc Chemical Anchor is a styrene free polyester injection mortar for general purpose. It is suitable for use in concrete, solid, hollow or perforated masonry as bricks and cavity blocks in a wide range of applications: fixing of gates, balustrades, banisters, roller blinds, panes, antennas, consoles, cable trays, industrial machinery etc.



FEATURES

- Anchors for use in concrete and masonry
- Anchors for use in structures subject to dry or wet environmental conditions
- Styrene free, low odour, only irritant
- Easy to extrude and to inject
- Thixotropic, can be applied in vertical or horizontal direction
- Fast curing

PHYSICAL PROPERTIES

Nature:	Unsaturated polyester styrene free
Colour:	Light grey
Specific weight:	1,7 kg/l at 20 °C
Compressive Strength:	50'0 MPa (EN 196-1)
Compressive Strength:	57'9 MPa (EN 12190)
Flexural Strength:	30'0 MPa (EN 12190)
VOC (ASTM D 2369):	12 gr/l mixing application
VOC (EN ISO 16000):	The product meets the requirements of the emissions class EMICODE EC 1 PLUS and meets the requirements of the Class A+ of the decree no. 2011-321 of March 23, 2011 of the French Ministry of Ecology, Sustainable Development, Transport and Housing.

WORKING & HARDENING TIMES

Base material temperature (°C)	5	10	15	20	25	30	35
Working time (min)	20	13	9	6	4	3	2
Loading time in dry (min)	120	90	60	45	30	20	15
Loading time in wet (min)	180	135	90	68	45	30	23

The minimum temperature for injection is +5°C

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THREADED RODS - DESIGNATION AND MATERIALS

Part	Designation	Material
Steel, zinc plated $\geq 5 \mu\text{m}$ acc. to EN ISO 4042 or Steel, hot-dip galvanised $\geq 40 \mu\text{m}$ acc. to EN ISO 1461 and EN ISO 10684		
1	Anchor rod	Steel, EN 10087 or EN 10263 Property class 5.8 or 8.8 EN ISO 898-1
2	Washer EN ISO 887, EN ISO 7089, EN ISO 7093 or EN ISO 7094	Steel, zinc plated or hot-dip galvanised
3	Hexagon nut EN ISO 4032	Property class 5 (for class 5.8 rod) EN 20898-2
Stainless steel		
1	Anchor rod	Material 1.4401/ 1.4404 / 1.4571, EN 10088-1 Property class 70 EN ISO 3506
2	Washer EN ISO 887, EN ISO 7089, EN ISO 7093 or EN ISO 7094	Material 1.4401/ 1.4404 / 1.4571, EN 10088
3	Hexagon nut EN ISO 4032	Material 1.4401/ 1.4404 / 1.4571, EN 10088 Property class 70 (for class 70 rod) EN ISO 3506

INSTALLATION PARAMETERS IN SOLID MASONRY (without sleeve):

Threaded rod		M8	M10	M12	
Nominal drill hole diameter	d_0	[mm]	10	12	14
Maximum diameter hole in the fixture	d_{fix}	[mm]	9	12	14
Brush diameter	d_b	[mm]	13	14	16
Embedment depth	h_{ef}	[mm]	80	85	95
Depth of the drilling hole	h_1	[mm]	$h_{\text{ef}}+5$		
Torque moment	T	[N·m]	4	8	10
Thickness of fixture	$t_{\text{fix, min}}$	[mm]	>0		
	$t_{\text{fix, max}}$	[mm]	<1.500		

INSTALLATION PARAMETERS IN HOLLOW MASONRY (with sleeve):

Threaded rod		M8	M10	M12
Polypropylene Plastic sleeve			16 x 85	20 x 85
Nominal drill hole diameter	d_0	[mm]	16	20
Maximum diameter hole in the fixture	d_{fix}	[mm]	12	14
Brush diameter	d_b	[mm]	16	20

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Embedment depth	h_{ef}	[mm]	85	85
Depth of the drilling hole	h_1	[mm]	$h_{ef}+5$	
Torque moment	T	[N·m]	4	6
Thickness of fixture	$t_{fix, min}$	[mm]	>0	
	$t_{fix, max}$	[mm]	<1.500	

Characteristic Resistance under tension and shear load

	Threaded rod	M8	M8	M8	M10	M10	M10	M12	M12	M12
Installation and use category		wet/wet	wet/wet	dry/dry	wet/wet	wet/wet	dry/dry	wet/wet	wet/wet	dry/dry
Optibric PV	f_b	8	11.5	11.5	8	11.5	11.5	8	11.5	11.5
	$N_{Rk,P}$	0.6	0.75	0.9	0.6	0.75	0.9	0.6	0.75	0.9
	$V_{Rk,B}$	2.5			4			3.5		
Partial Safety Factor		2.5								
Gero	f_b	20	30	30	20	30	30	20	30	30
	$N_{Rk,P}$	0.5	0.75	0.9	0.75	0.9	1.2	0.6	0.9	1.2
	$V_{Rk,B}$	2			6			4.5		
Partial Safety Factor		2.5								
Porotherm	f_b	12	17.7	17.7	12	17.7	17.7	12	17.7	17.7
	$N_{Rk,P}$	0.75	0.9	1.2	0.9	0.9	1.2	0.75	0.9	0.9
	$V_{Rk,B}$	2			4			5		
Partial Safety Factor		2.5								
Solid Brick	f_b	30	70	70	30	70	70	30	70	70
	$N_{Rk,P}$	0.9	1.2	1.5	0.75	1.2	1.5	1.2	1.5	2
	$V_{Rk,B}$	2.5			3			3.5		
Partial Safety Factor		2.5								
Bimattone, Mattone Doppio	f_b	10	47.8	47.8	10	47.8	47.8	10	47.8	47.8
	$N_{Rk,P}$	0.6	1.2	1.5	0.5	0.9	1.2	0.6	1.5	1.5
	$V_{Rk,B}$	2.5			3			3.5		
Partial Safety Factor		2.5								
	f_b	Mean compressive strength of masonry unit, N/mm ²								
	$N_{Rk,P}$	Characteristic Resistance in tension, KN								
	$V_{Rk,B}$	Characteristic Resistance in shear, KN								

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Position of anchors: indicative layout

Brick	Anchor size								
	M8			M10			M12		
	C_{min} [mm]	S_{min} [mm]	S_{cr} [mm]	C_{min} [mm]	S_{min} [mm]	S_{cr} [mm]	C_{min} [mm]	S_{min} [mm]	S_{cr} [mm]
Optibric PV	100	560	200	100	560	200	120	560	200
Gero	100	276	133	100	276	133	120	276	133
Porotherm	100	450	250	100	450	250	120	450	250
Solid Brick	120	240	240	127.5	255	255	142.5	285	285
Bimattone / Mattone Doppio	100	250	120	100	250	120	120	250	120

S_{min} - minimum spacing, mm

C_{min} - minimum edges distance, mm

S_{cr} - critical spacing (splitting), mm

Displacement under tension load

Threaded rod installation and use category			M8	M8	M10	M10	M12	M12
			WET/WET	DRY/DRY	WET/WET	DRY/DRY	WET/WET	DRY/DRY
Optibric PV $f_b = 11.5\text{N/mm}^2$	F	[kN]	0.27	0.22	0.29	0.23	0.30	0.24
	δ_{N0}	[mm]	0.10	0.10	0.01	0.01	0.01	0.01
	$\delta_{N\infty}$	[mm]	0.21	0.21	0.02	0.02	0.02	0.02
Gero $f_b = 30.0\text{N/mm}^2$	F	[kN]	0.28	0.22	0.39	0.31	0.36	0.29
	δ_{N0}	[mm]	0.02	0.02	0.05	0.04	0.03	0.02
	$\delta_{N\infty}$	[mm]	0.03	0.03	0.09	0.08	0.06	0.05
Porotherm $f_b = 17.7\text{N/mm}^2$	F	[kN]	0.36	0.29	0.42	0.34	0.34	0.27
	δ_{N0}	[mm]	0.03	0.02	0.03	0.02	0.01	0.01
	$\delta_{N\infty}$	[mm]	0.07	0.03	0.07	0.05	0.02	0.02
Solid Brick $f_b = 70.0\text{N/mm}^2$	F	[kN]	0.51	0.41	0.43	0.34	0.65	0.52
	δ_{N0}	[mm]	0.03	0.02	0.07	0.07	0.01	0.01
	$\delta_{N\infty}$	[mm]	0.06	0.04	0.15	0.13	0.02	0.02
Bimattone / Mattone Doppio $f_b = 47.8\text{N/mm}^2$	F	[kN]	0.53	0.43	0.42	0.34	0.53	0.43
	δ_{N0}	[mm]	0.03	0.02	0.01	0.08	0.04	0.04
	$\delta_{N\infty}$	[mm]	0.07	0.04	0.21	0.15	0.09	0.09

F - Admissible service load

δ_{N0} - Short term displacement under tension load

$\delta_{N\infty}$ - Long term displacement under tension load

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Displacement under shear load

				M8	M10	M12
Optibric PV $f_b = 11.5\text{N/mm}^2$	F	[kN]	Design tension load	0.73	1.26	1.12
	δ_{V0}	[mm]	Short term displacement under shear	0.61	0.95	1.29
	$\delta_{V\infty}$	[mm]	Long term displacement under shear	0.91	1.42	1.94
Gero $f_b = 30.0\text{N/mm}^2$	F	[kN]	Design tension load	0.65	1.77	1.40
	δ_{V0}	[mm]	Short term displacement under shear	0.53	1.72	1.03
	$\delta_{V\infty}$	[mm]	Long term displacement under shear	0.79	2.57	1.55
Porotherm $f_b = 17.7\text{N/mm}^2$	F	[kN]	Design tension load	0.58	1.16	1.46
	δ_{V0}	[mm]	Short term displacement under shear	0.46	0.85	1.26
	$\delta_{V\infty}$	[mm]	Long term displacement under shear	0.69	1.28	1.88
Solid Brick $f_b = 70.0\text{N/mm}^2$	F	[kN]	Design tension load	0.83	0.86	1.08
	δ_{V0}	[mm]	Short term displacement under shear	0.53	1.94	0.61
	$\delta_{V\infty}$	[mm]	Long term displacement under shear	0.80	2.90	0.92
Bimattone / Mattone Doppio $f_b = 47.8\text{N/mm}^2$	F	[kN]	Design tension load	0.92	1.07	1.05
	δ_{V0}	[mm]	Short term displacement under shear	0.82	1.40	1.12
	$\delta_{V\infty}$	[mm]	Long term displacement under shear	1.22	2.10	1.68

PERFORMANCE DATA FOR RODS INTO CONCRETE

Anchor	Installation					Characteristic Resistance N_{Rk}	Design Resistance	Service load concrete 20/25	
	Rod Class 5.8	Drill diameter d_0	Embedment depth h_{ef}	Standard edge distance C_{cr}	Standard anchor distance S_{cr}			Torque moment T_{inst}	Tensile
	[mm]	[mm]	[mm]	[mm]	[N.m]	[kN]	[kN]	[kN]	[kN]
M8	10	80	120	240	10	15.4	7.3	5.2	6.0
M10	12	90	135	270	20	22.5	10.7	7.7	9.5
M12	14	110	165	330	40	34.6	16.5	11.8	13.8
M16	18	125	188	375	60	47.9	22.8	16.3	26.3
M20	24	170	255	510	100	81.4	38.8	27.7	42.0

Overhead installation for drill diameter $d_0 \leq 18\text{mm}$ and $h_{ef} \leq 125\text{mm}$ and Temperature $\leq 20^\circ\text{C}$

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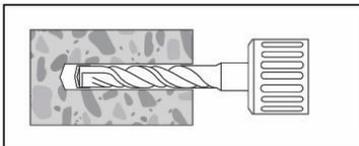
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NUMBER OF ANCHORS PER DIAMETER

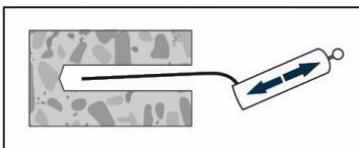
Anchor	Installation in hollow structures													
	Sleeve 16/85							Sleeve 16/130						
Rod	150ml	165ml	280ml	300ml	345ml	380ml	410ml	150ml	165ml	280ml	300ml	345ml	380ml	410ml
M8	6	6	11	12	13	15	16	4	4	7	8	9	10	11
M10	6	6	11	12	13	15	16	4	4	7	8	9	10	11
M12	6	6	11	12	13	15	16	4	4	7	8	9	10	11
M16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M20	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Anchor	Installation of rods in concrete						
	150ml	165ml	280ml	300ml	345ml	380ml	410ml
Rod	150ml	165ml	280ml	300ml	345ml	380ml	410ml
M8	34/38	38/42	64/71	69/76	79/87	87/96	94/104
M10	21/23	23/26	40/44	42/47	49/54	54/59	58/64
M12	12/14	14/16	24/26	25/28	29/32	32/36	35/38
M16	7/8	7/8	13/14	13/15	15/17	17/19	18/21
M20	2/3	3/4	5/6	6/7	6/8	7/8	8/9

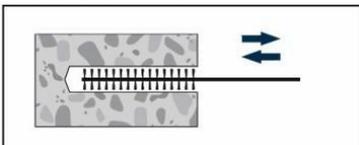
INSTALLATION INSTRUCTION FOR CONCRETE OR SOLID MASONRY



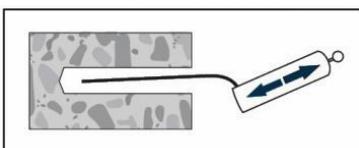
Drill the hole with the correct diameter and depth using a rotary percussive machine. Check the perpendicularity of the hole during the drilling operation.



Clean the hole from drilling dust, core fragments, oil, water, grease and other contaminants prior to mortar injection with manual blower and steel bristles manual brush.



The hole shall be cleaned by at least 4 blowing operations, by at least 4 brushing operations followed by at least 4 blowing operations.

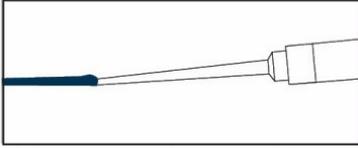


Before brushing, clean the brush and check if the brush diameter is sufficient. The threaded rod should be free of dirt, grease, oil or other foreign material.

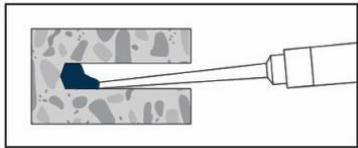
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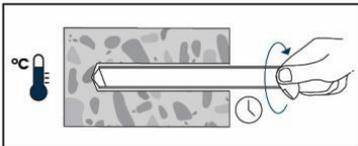
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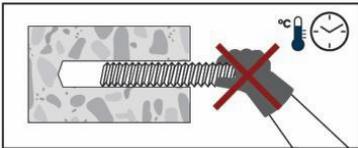
Before starting to use a new cartridge discard the first swings of the product until a homogeneous colour is achieved.



Fill the drilled hole uniformly starting from the drilled hole bottom, in order to avoid trapping of air; remove the mixer slowly bit by bit during pressing-out. Filling the drill hole with a quantity of the injection mortar corresponding to 2/3 of the drill hole depth.

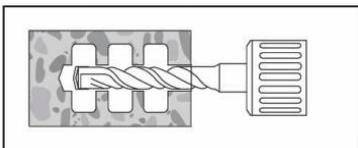


Insert immediately the threaded rod slowly and with a slight twisting motion, removing excess of injection mortar around the threaded rod.

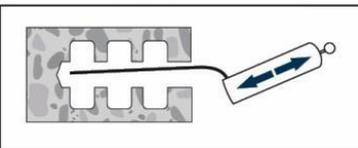


Wait the curing time.
Do not move or load the anchor until is fully cured.

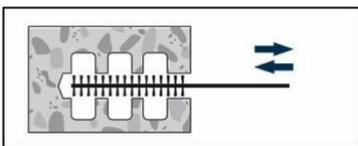
INSTALLATION INSTRUCTION FOR HOLLOW/PERFORATED MASONRY



Drill the hole with the correct diameter and depth using a rotary percussive machine. Check the perpendicularity of the hole during the drilling operation.



Clean the hole from drilling dust, core fragments, oil, water, grease and other contaminants prior to mortar injection (with manual blower and standard manual brush).

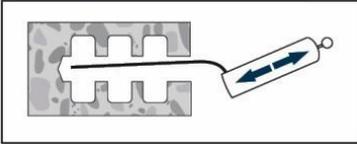


The hole shall be cleaned by at least 4 blowing operations, by at least 2 brushing operations followed by at least 4 blowing operations.
Before brushing clean the brush and check if the brush diameter is sufficient.

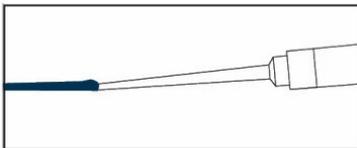
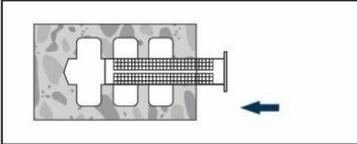
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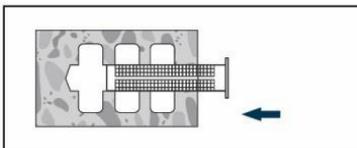
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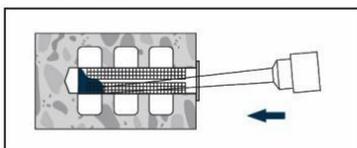
The threaded rod should be free of dirt, grease, oil or other foreign material. For hollow materials introduce the correct size sleeve. Remove the centering cap from the plastic sleeve. Insert in the hole the plastic sleeve.



Before starting to use a new cartridge discard the first swings of the product until a homogeneous colour is achieved.



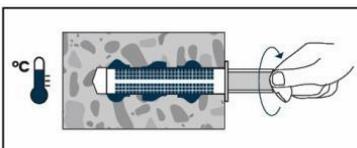
Remove the centering cap from the plastic sleeve. Insert in the hole the plastic sleeve.



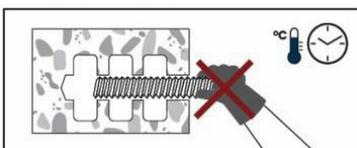
Fill the sleeve uniformly starting from the bottom; remove the mixer slowly bit by bit during pressing-out: remove the mixer about 10 mm for each pressing operation.

Fill the sleeve completely.

Put on the centering cap on the filled plastic sleeve.



Insert immediately the threaded rod, slowly and with a slight twisting motion, removing excess of injection mortar around the threaded rod. Observe the processing time.



Wait the curing time.

Do not move or load the anchor until is fully cured.

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STORAGE & PACKAGING

Store the product in a ventilated place away from direct exposure to sunlight. Keep between 5°C and 25°C. Shelf life is 18 months in unopened packaging. It is supplied in 300ml cartridge. 12 units/box.

HEALTH & SAFETY

Follow instructions of product label. For more information check the Safety Data Sheet. Compliant with the National Statutory Regulation for Health and Safety at Work and Waste Disposal.

REMARKS

Before injection, verify the expiry date of the product, the support resistance and the ambient temperature.
Setting and any subsequent adjustment are only possible during working time.

NOTE

All products should be sold in accordance with the manufacturer's instructions. The manufacturer cannot be held responsible where conditions of use are beyond our control. Full information and advice is freely available from our Technical Services Department e-mail technical@arcbuildingproducts.ie. Whilst any information contained herein is to the best of our knowledge true and accurate, no warranty is given or implied in connection with any recommendations or suggestions made by us, our representatives, agents, or distributors, as the conditions of use and any labour involved are beyond our control. Our warranty is therefore limited to the quality of supplied product.