

Code	Description	Size	Colour
21423	Gorilla Boltfix Anchoring Adhesive	300ml	Grey (when mixed)

1. Description

Gorilla Boltfix Anchoring Adhesive is a rapid curing 2-part chemical anchoring system based on epoxy acrylate. Gorilla Boltfix Anchoring Adhesive is styrene free. It is suitable for exterior applications.

2. Characteristics

- Styrene free (low odour)
- Fast Cure time
- 100% waterproof
- Wide application area, even in wet drill holes

3. Technical Data

Base:		Polyester Styrene Free		
Consistency:		Stable paste		
Curing System:		Chemical Reaction		
Reactivity	Temperature (1)	Gelling & Working Time	Full Cure – Dry Base (2)	Full Cure – Wet Base (3)
(1) Cartridge Temperature = 15°C	≥ 5°C	25 min	120 Min	240 Min.
(2) Curing time on Dry Surface (20°C/65%R.H.)	≥ 10°C	15 min	80 Min	160 Min
2x Dry Curing time when on Wet surface	≥ 20°C	6 min	45 Min.	90 Min.
	≥ 30°C	4 min	25 Min.	50 Min.
	≥ 35°C	2 min	20 Min	40 Min.
Cartridge Temperature:		+5°C to +20°C		
Minimum Installation Temperature:		+5°C to +35°C		
Working Life Temperature:		-40°C to +80°C		
Density: (EN 196 Part1)		1,74 kg/dm ³		
Compressive Strength: (EN 196 Part1)		75 N/mm ²		
Bending Strength: (EN 196 Part1)		30 N/mm ²		
Dynamic Modulus: (EN 196 Part1)		4000 N/mm ²		
Mixing Ratio:		10 : 1		
Specific Gravity:		1.74g/cm ³		
VOC (%)		<3%		
VOC (g/litre)		<50		

*This varies according to ambient conditions such as temperature, humidity, substrate etc

4. Applications

- A chemical anchor for bolts, studs, threaded rods (zinc plated or hot dip, stainless steel and high corrosion resistance steel), reinforcing bars, internal threaded rods, profiled rod.
- Application in uncracked concrete, solid brick and hollow brick with commercial threaded rods
- Overhead application
- Suitable for attachment points close to the edge, where anchoring is free of expansion forces.
- Concrete – standard, aerated hollow block (with sleeve)
- Fixing handrails and other steel structures
- Mortar repair

5. Packaging

- 300ml cartridge

6. Shelf Life

18 months in unopened packaging in a dry and cool/dark storage place at temperatures between +5°C and +25°C.

7. Product Features

- Medium and heavy-duty load application
- Quick curing
- Suitable for vertical and overhead application
- Two nozzles with each cartridge
- Cartridge can be used at a later date by cleaning and resealing

8. Application Instructions

Surfaces

Type: All usual porous building substrates, including non-cracked concrete, light-concrete, porous-concrete, solid masonry, hollow brick, natural stone, hammer drilled holes, (poor adhesion to smooth non-porous materials).

State: Clean, dry, free of dust and grease.

Preparation: Before Cure: Wipe of excess and clean using white spirits or Gorilla Solvent cleaner.

After Cure: Let fully cure, remove mechanically.

Repair with Gorilla Bolt Fix

Instructions for Use

- Drill hole at recommended depth
- Clean drill hole with brush and air pump thoroughly, (remove standing water in hole).
- Screw static mixer onto cartridge
- Dispense the first 10 cm of the product to waste (on piece of cardboard) until an even colour (dark grey) is achieved, and the product is well mixed
- Solid stone: fill the drill hole from bottom up. Hollow brick: insert sleeve and fill it bottom up, so that the resin is pressed through the tiny holes of the sleeve
- Insert anchoring rod with twisting left-right motion
- Inspect the drill hole for adequate filling
- Observe hardening time. Don't move the anchoring rod during curing
- Leave the excess of product to cure as well. Remove it mechanically with hammer and chisel once cured
- Install component, applying the right torque

Due to the range of substrates on the market recommend preliminary compatibility tests prior to commencement of application.

Note: There is a risk of staining on porous substrates such as natural stone. On such substrates a preliminary compatibility test is recommended.

9. Cautions

- If gel time expires use spare static mixer
- If used on natural stone, stone may discolour, should be checked prior to application.
- Not designed for underwater use
- Do not shorten or cut nozzle
- Do not apply to uncured concrete
- Diamond coned holes will require roughening
- Ensure hole is free of debris/ contaminants prior to application of Gorilla Boltfix®
- Do follow the specification detail outlined in charts 1-7

Application Instructions

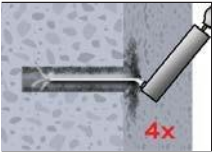
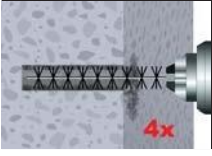
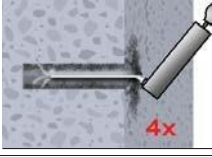
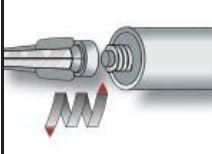
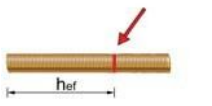
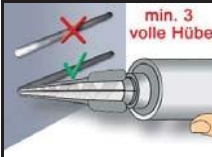
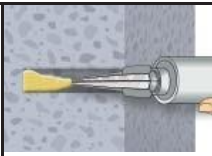
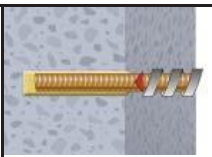
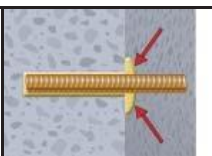

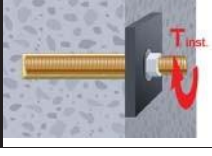
	1. Drill with hammer drill mode a hole into the base material to the size and embedment depth required by the selected anchor.
 or	2a. Standing water must be removed before cleaning. Starting from the bottom or back of the bore hole, blow the hole clean with compressed air or a hand pump a minimum of four times. If the bore hole ground is not reached an extension shall be used. The hand-pump can be used for anchor sizes up to bore hole diameter 20 mm. For bore holes larger than 20mm or deeper than 240mm, compressed air (min. 6 bar) must be used.
 or	2b. Check brush diameter acc. to table 1 and attach the brush to a drilling machine or a battery screwdriver. Brush the hole with an appropriately sized wire brush of four times. If the bore hole ground is not reached with the brush, a brush extension shall be used.
 or	2c. Finally blow the hole clean again with compressed air or a hand pump a minimum of four times. If the bore hole ground is not reached an extension shall be used. The hand-pump can be used for anchor sizes up to bore hole diameter 20 mm. For bore holes larger than 20mm or deeper than 240mm, compressed air (min. 6 bar) must be used.
	3. Attach a supplied static-mixing nozzle to the cartridge and load the cartridge into the correct dispensing tool. For every working interruption longer than the recommended working time as well as for new cartridges, a new static-mixer shall be used.
	4. Prior to inserting the anchor rod into the mortar filled bore hole, the position of the embedment depth shall be marked on the anchor rods.
	5. Prior to dispensing into the anchor hole, squeeze out separately a minimum of three full strokes and discard non-uniformly mixed adhesive components until the mortar shows a consistent grey colour.
	6. Starting from the bottom or back of the cleaned anchor hole fill the hole up to approximately two-thirds with adhesive. Slowly withdraw the static mixing nozzle as the hole fills to avoid creating air pockets. Observe the gel-/ working times given.
	7. Push the threaded rod or reinforcing bar into the anchor hole while turning slightly to ensure positive distribution of the adhesive until the embedment depth is reached. The anchor should be free of dirt, grease, oil or other foreign material.
	8. Be sure that the anchor is fully seated at the bottom of the hole and that excess mortar is visible at the top of the hole. If these requirements are not maintained, the application has to be renewed.
	9. Allow the adhesive to cure to the specified time prior to applying any load or torque. Do not move or load the anchor until it is fully cured.
	10. After full curing, the add-on part can be installed with the max. torque by using a calibrated torque wrench.

Chart 1 - Cleaning the Drill Hole – Concrete

Threaded rod	Bore hole- \varnothing	Brush- \varnothing	min. brush- \varnothing	Brush length
(mm)	(mm)	(mm)	b,min (mm)	L (mm)
M 8	10,0	12,0	0,0	70
M 10	12,0	4,0	12,0	70
M 1	14,0	16,0	14,0	0
M 16	18,0	0,0	18,5	30
M 20	24,0	26,0	24,0	30

Chart 2 - Setting Parameter – Concrete

Anchor size				M8	M10	M12	M16	M20
Edge distance	$1,0 \times h_{ef}$		mm	0	90	1	25	170
Min. edge distance	$5,0 \times d$	mi	mm	40	0	60	0	
Axial distance	$2,0 \times h_{ef}$		mm	160	18	22	250	340
Min. axial distance	$5,0 \times d$	mi	mm	40	0	60	0	
Embedment depth		ef	mm	0	90	1	25	70
Min. part thickness		mi	mm	$ef + 30 \text{ m}$			$ef + 2d$	
Anchor diameter			mm			1	16	
Drill diameter			mm	1	2	14	1	24
Installation torque		T_{nst}	Nm	1	2	40	60	12

Chart 3 - Performance Data – Concrete (TENSION LOADS)

Anchor size				M8	M10	M12	M16	M20
Steel failure								
Characteristic tension resistance, Steel, zinc plated or hot dip, property class 5.8		N _{Rk,s}	[kN]	18	29	42	78	122
Characteristic tension resistance, Steel, zinc plated or hot dip, property class 8.8		N _{Rk,s}	[kN]	29	46	67	125	196
Partial safety factor		γ _{Ms,N}		1,50				
Characteristic tension resistance, Stainlesssteel A4 and HCR		N _{Rk,s}	[kN]	26	41	59	110	172
Partial safety factor		γ _{Ms,N}		1,87				
Pullout and concrete cone failure ¹⁾								
Characteristic bond resistance in concrete C20/25								
50°C/80°C ²⁾	uncracked concrete	N _{Rk,p} = N _{Rk,c} ^U	[kN]	12	18	25	28	47
Partial safety factor (dry and wet)		γ _{Mp} = γ _{Mc}		1,8				
Embedment depth		h _{ef}	[mm]	80	90	110	125	170
Edge distance		c _{cr,N}	[mm]	80	90	110	125	170
Axial distance		s _{cr,N}	[mm]	2 × c _{cr,N}				

Increasing factors for non-concrete concrete ψ_c			$(f_{ck}^{0,30})/2,63$
Splitting failure			
Edge distance	$c_{cr,sp}$	[mm]	$c_{cr,N} \geq h_{ef} (2,5 - h/h_{ef}) \geq 2,4 h_{ef}$
Axial distance	$s_{cr,sp}$	[mm]	$2 \times c_{cr,sp}$
Partial safety factor (dry and wet)	γ_{Msp}		1,8

The data in this table are intended to use together with the design provisions of ETAG 001 Annex C

- 1) shall be determined acc. this table or acc. to 5.2.2.4, Annex C of ETAG 001. The smaller value is decisive.
- 2) short term temperature / Long term temperature. Long term concrete temperatures are roughly constant over significant periods of time. Short term elevated temperatures are those that occur over brief intervals, e.g. as a result of diurnal cycling.

Chart 4 - Performance Data – Concrete (SHEAR LOADS)

Anchor size			M8	M10	M12	M16	M20
Steel failure without leaver arm							
Characteristic shear resistance, Steel, zinc plated or hot dip, property class 5.8	V _{Rk,s}	[kN]	9	15	21	39	61
Characteristic shear resistance, Steel, zinc plated or hot dip, property class 8.8	V _{Rk,s}	[kN]	15	23	34	63	98
Partial safety factor	γ _{Ms,V}		1,25				
Characteristic shear resistance, Stainless steel A4 and HCR	V _{Rk,s}	[kN]	13	20	30	55	86
Partial safety factor	γ _{Ms,V}		1,56				
Steel failure with leaver arm							
Characteristic bending moment, Steel, zinc plated or hot dip, property class 5.8	M ⁰ _{Rk,s}	[Nm]	19	37	65	166	324
Characteristic bending moment, Steel, zinc plated or hot dip, property class 8.8	M ⁰ _{Rk,s}	[kN]	30	60	105	266	519
Partial safety factor	γ _{Ms,V}		1,25				
Characteristic bending moment, Stainless steel A4 and HCR	M ⁰ _{Rk,s}	[kN]	26	52	92	232	454
Partial safety factor	γ _{Ms,V}		1,56				
Concrete Pryout failure							
Factor k			2,0				
Partial safety factor	γ _{Mcp}		1,5				
Concrete edge failure							
Effective length of anchor in shear loading	l _r	[mm]	80	90	110	125	170
Outside diameter of anchor	d _{nom}	[mm]	10	12	14	18	24
Partial safety factor	γ _{Mc}		1,5				

The data in this table are intended to use together with the design provisions of ETAG 001 Annex C

Chart 5 - Recommended Loads – Concrete

The recommended loads are only valid for single anchor for a roughly design, if the following conditions are valid:

dry or wet bore hole, uncracked concrete C20/25, steel 5.8 $c_{cr,N}$

$s_{cr,N}$

h_{ef}

If the conditions are not fulfilled the loads must be calculated acc. to ETAG 001 Annex C.

The safety factors are already included in the recommended loads.

Anchor size			M8	M10	M12	M16	M20
Embedment depth	h_{ef}	[mm]	80	90	110	125	170
Edge distance	$c_{cr,N}$	[mm]	$1,5 \times h_{ef}$				
Axial distance	$s_{cr,N}$	[mm]	$3,0 \times h_{ef}$				
Recommended tension load 50°C/80°C ²⁾	N_{rec}	[kN]	4,7	7,1	10,0	11,2	18,8
Recommended shear load without lever arm for Steel property class 5.8 ¹⁾	V_{rec}	[kN]	5,1	8,6	12,0	22,3	34,9

1) Shear load with lever arm acc. Annex C of ETAG 001.

2) short term temperature / Long term temperature. Long term concrete temperatures are roughly constant over significant periods of time. Short term elevated temperatures are those that occur over brief intervals, e.g. as a result of diurnal cycling.

Chart 6 - Performance Data - Masonry

Stone	Strength class	Recommended loads		Standard sleeves				Wing sleeve	
				M6	M8	M10	M12	M8	M10
Hollow brick	HLz 4	F_{rec}	[kN]	0,3	0,3	0,3	0,3	0,3	0,3
	HLz 6			0,4	0,4	0,4	0,4	0,4	0,4
	HLz 12			0,7	0,8	0,8	0,8	0,8	0,8
Sand -lime hol-low brick	KSL 4	F_{rec}	[kN]	0,3	0,3	0,3	0,3	0,3	0,3
	KSL 6			0,4	0,4	0,4	0,4	0,4	0,4
	KSL 12			0,7	0,8	0,8	0,8	0,8	0,8
Sand -lime solidbrick ¹⁾	KS 12	F_{rec}	[kN]	0,5	1,7	1,7	1,7	1,7	1,7
Solid brick ¹⁾	Mz 12	F_{rec}	[kN]	0,5	1,7	1,7	1,7	1,7	1,7
Light concrete hollow brick	Hbl 2	F_{rec}	[kN]	0,3	0,3	0,3	0,3	-	-
	Hbl 4			0,5	0,6	0,6	0,6	-	-
Concrete hollowbrick	Hbn 4	F_{rec}	[kN]	0,5	0,6	0,6	0,6	-	-

Installation parameters									
Axial distance plug group		$s_{cr,N \text{ Group}}$	[mm]	HLz, KSL, MZ, KS = 100 Hbl, Hbn = 200				100	
Min. axial distance plug group ²⁾		$s_{min \text{ Group}}$	[mm]	HLz, KSL, MZ, KS = 50 Hbl, Hbn = 200				50	
Axial distance between single plugs		$s_{cr,N \text{ Single}}$	[mm]	250				250	
Edge distance		$c_{cr,N}$	[mm]	250				200 (250) ³⁾	
Min. edge distance ⁴⁾		c_{min}	[mm]	250				50 (60) ³⁾	
Embedment depth of rod	with sleeve	h_{ef}	[mm]	50	85	85	85	80	90
	without sleeve	h_{ef}	[mm]	60	80	90	110	80	90
	with sleeve	h_0	[mm]	55	90	90	90	105	105

Drilling depth	without sleeve	h_o	[mm]	65	85	95	115	85	95
Minimum part thickness		h_{min}	[mm]	110			125	110	
Drill diameter		d_o	[mm]	11	16	16	16	14	16
Hole diameter in fixed element		d_f	[mm]	7	9	12	14	9	12
Installation torque		T_{inst}	[Nm]	3	8	8	8	2	2

- 1) Anchoring in masonry of solid lime-sand bricks (KS) and masonry bricks (Mz) does not require perforated sleeve.
- 2) It is permissible to go below the axial spacing to the minimum value for anchor pairs and groups of four, if the permissible loads are reduced.

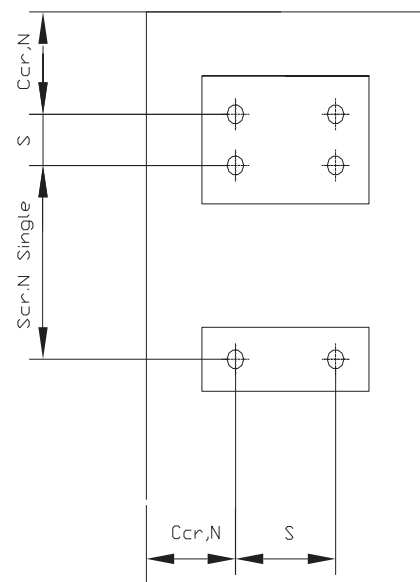
The maximum loads must not be exceeded.

- 3) Value in brackets applies to solid bricks (Mz and KS).
- 4) Applies to masonry with top load or proof of tilt. Does not apply to shear loads directed towards a free edge

Chart 7 - Performance Data - Masonry

Reduced permissible loads with reduced axial spacing per anchor in anchor groups:

$s_{cr,N \text{ Group}} \geq s > s_{min}$
 Anchor pairs:
 $red F = \chi s \cdot F_{rec}$
 $\chi s = \frac{1}{2} (1 + s/s_{cr,N \text{ Group}}) \leq 1,0$
 Groups of four:
 $red F = \chi s_1 \cdot \chi s_2 \cdot F_{rec}$
 $\chi s_{1,2} = \frac{1}{2} (1 + s_{1,2}/s_{cr,N \text{ Group}}) \leq 1,0$
 F_{rec} = Permissible load per anchor
 $red F$ = Reduced load per anchor
 $s_{cr,N \text{ Group}}$ = Axial spacing
 s = Reduced axial spacing



Permissible load in [kN] for each single brick				
Brick format		< 4 DF	4 bis 10 DF	≥ 10DF
Without top load	max F [kN]	1,0	1,4	2,0
With top load	max F [kN]	1,4	1,7	2,5

Warning: Product has limitations. Please ensure when using this product that you read the instructions carefully. Soudal recommends testing prior due to the diversity of substrates and applications that are out of Soudal's control. Soudal cannot accept accountability for adverse results.

10. Health and Safety Recommendation

- Apply the usual industrial hygiene.
- Please refer to MSDS for more detailed information

Remark

*The directives and data contained in this documentation is provided in good faith and accurately reflect Soudal's knowledge when its products are properly stored, handled and applied under normal conditions in accordance with Soudal's recommendations. In practice, the diversity of the materials, substrates, environments, site conditions, product storage, handling and application are such that no warranty can be given in respect to the merchantability or fit for purpose, of any product. All users must determine the product suitability for their purposes through testing. This technical data sheet and product properties may change without notice so users, suppliers and retailers of Soudal products should always check that the data sheets they have are the latest. To the maximum extent permitted by law, Soudal disclaims all warranties in relation to either the manufacture, storage and end use of the product. All orders are accepted subject to our current terms of trade. **If any clarification is required, please contact Soudal Technical Services or email info@soudal.co.nz.***

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Last Updated: June 2021