

# BUMAX<sup>®</sup> Hard



# BUMAX® Hard – self-tapping screws for maximum performance

With its BUMAX® range, Bulten Stainless has further reinforced its position as the leading developer of high-strength, anti-corrosion fasteners.

The latest addition to the range is BUMAX® Hard – a group of acid-proof, self-tapping screws which can simply cut threads in the same way as equivalent hardened carbon steel screws.

- The BUMAX® Hard plate screw is suitable for fitting to sheet metal and profiles of carbon steel, as well as to anti-corrosion/acid-proof thin sheet where the plate thickness equals that between thread revolutions.
- The BUMAX® Hard Taptite is excellent for fitting to sheet metal and profiles of carbon steel and anti-corrosion/acid-proof steel – the surface-treated version handles material hardness up to approx. 200 HV.

There is an increasing demand for higher performance and lower weight in modern designs – not least as an energy-saving measure.

This naturally increases the demands on fasteners. Stronger, self-tapping, corrosion-resistant screws typify modern requirements.

BUMAX® Hard is the powerful answer from Bulten Stainless.

## Guide analyses for a few acid-proof steels

BUMAX® products are manufactured from Swedish steel SS 14.2343, equivalent to EN 1.4436. The carbon content is no more than 0.03% and the alloy content - chrome, nickel and molybdenum - is higher than in A4 EN 1.4401, the steel usually used exclusively for A4 fasteners.

BUMAX® steel is often called 2343/316L Hi Mo and it gives products corrosion properties and strength beyond the norm.

The table below shows the chemical composition of acid-proof steel. It includes A4 AISI 316 and 316L – the usual for fasteners – and the acid-proof steel of BUMAX® products.

Steel type	C max	Cr	Ni	Mo
A4 (316)	0.080	16.0-18.0	10.0-14.0	2.0-3.0
A4 (316L)	0.030	16.0-18.0	10.0-14.0	2.0-3.0
BUMAX 88	0.030	16.5-18.5	11.0-14.5	2.5-3.0
BUMAX 109	0.030	16.5-18.5	11.0-14.5	2.5-3.0
BUMAX Hard	0.030	16.5-18.5	11.0-14.5	2.5-3.0

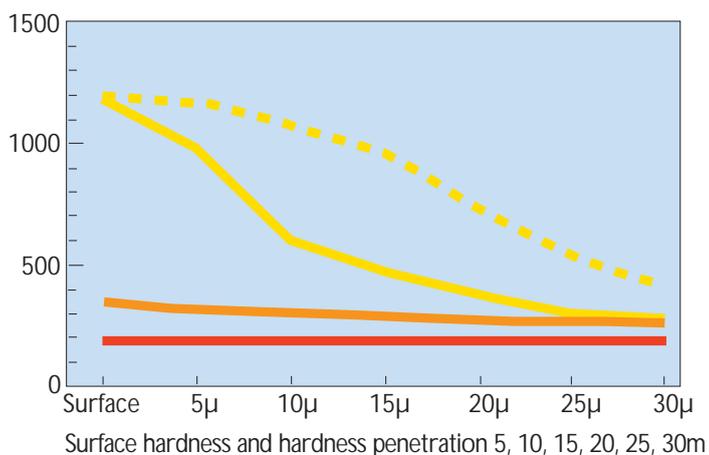
## Corrosion properties

The most common types of corrosion in acid-proof steel are spot corrosion, crevice corrosion and general corrosion. The steel's chemical composition has a major effect on the corrosion properties, with the superior properties being mainly provided by the alloy substances chrome (Cr), nickel (Ni) and molybdenum (Mo). The low carbon content (C) is not so important in this respect. It is mainly in high temperatures that low carbon content is essential.

Laboratory tests show that our variant of SS 14.2343 – from which the BUMAX® products are made – is a superior A4 316/316L standard in all media and against all types of corrosion.

## Mechanical properties of BUMAX® Hard fasteners

BUMAX® Hard acid-proof fasteners  
Hardness equals HV 0.05



- ■ ■ BUMAX® Hard 33 (non standard)
- ■ ■ BUMAX® Hard 22 (standard stock)
- ■ ■ BUMAX® 88
- ■ ■ Glödgat A4

## Tightening torque and forces

In order for a screw joint to work satisfactorily, it is important that it is fitted correctly. This also applies to BUMAX® Hard Taptite.

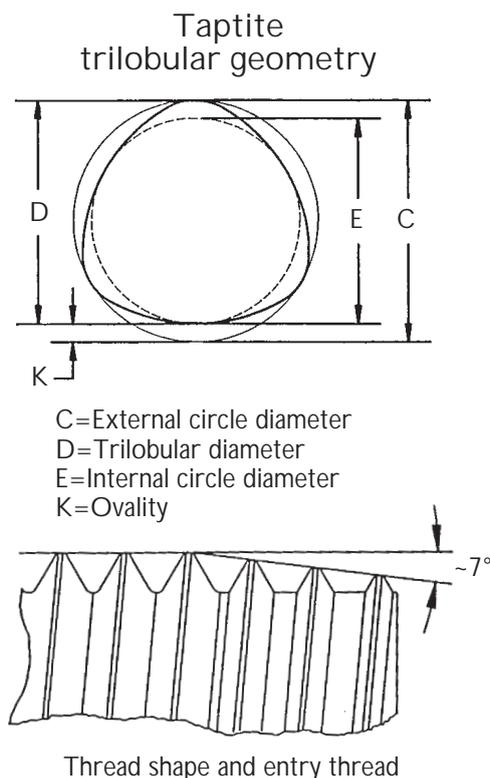
The tables show the ultimate strength of the screw, the recommended tightening torque and approximate thread-cutting torque. The tables also show suitable hole diameters for safe function.

### Torque and strength for Taptite

Thread	Ultimate strength Nm min	Tightening torque Nm rek	Thread-cutting torque Nm approx.
M3	4.5	1.3	0.7
M4	7.9	3	1.8
M5	13	6	3.5
M6	20	12	8
M8	30	25	15
M10	52	49	28

## BUMAX® Hard Taptite

BUMAX® Hard Taptite is a self-tapping/thread-cutting screw. Thanks to its special trilobular shape, its conical entry thread and its good surface hardness, the BUMAX® Hard Taptite can cut metric threads in structural steel and cold-rolled, austenitic, anti-corrosion steel with a hardness of up to approx. 200 HV. The special Taptite shape is shown in the figures below.



## Hole diameters – drilled or punched holes

Taptite material thickness or thread length						
Thread	0.1-1.5	1.51-2.5	2.51-4	4.1-6.5	6.6-10	10.1-15
M3	2.7	2.8	2.8	2.85		
M4	3.65	3.65	3.7	3.75	3.8	
M5		4.6	4.7	4.7	4.75	
M6		5.5	5.6	5.6	5.65	5.7
M8			7.5	7.5	7.6	7.7
M10			9.3	9.3	9.4	9.5

*With punched holes in austenitic anti-corrosion steel, deformation hardening can cause a hardness of more than 200 HV at the hole edge, resulting in fitting problems.*

## BUMAX® Hard Self Tapping (ST) plate screws:

BUMAX® Hard ST screws have a conventional plate screw thread and differ from usual anti-corrosion plate screws thanks to their high surface hardness.

### Hole diameters and plate thickness (T) for Bumax® Hard ST thread

T	Screw diameter					
	ST2.9	ST3.5	ST4.2	ST4.8	ST5.5	ST6.3
<0.56	2.2	2,6				
0.56-0.63	2.3	2.7	3.2	3.7		
0.64-0.75	2.3	2.8	3.2	3.7	4.3	
0.76-0.88	2.4	2.8	3.2	3.8	4.3	4.9
0.89-1.25	2.4	2.8	3.3	3.8	4.4	4.9
1.26-1.38	2.5	2.8	3.5	3.9	4.5	4.9
1.39-1.75	2.6	2.9	3.8	3.9	4.6	5.0
1.76-2.25		3.0	3.8	4.0	4.7	5.2
2,26-3.0		3.2	3.9	4.1	5.0	5.3
3.1-4.0				4,4	5,1	5,8

## Stock and special

Stock BUMAX® Hard have the superior Torx grip and range from M3 - M8. Self tapping (ST), i.e. plate screws, are stocked with diameter range ST2.9 - ST5.5.

Because we make BUMAX® Hard products at our factory, we can also offer special manufacture according to customer needs and requirements. BUMAX® Hard can be made to several designs, such as different head shapes and grips.

## ISO 9001 and QS 9000

Quality always has top priority at Bulten Stainless, and we target our work to continuously improve our quality. Activities are controlled by our quality assurance system which is certified by TÜV to ISO 9001 and QS 9000 – a system used by a large section of the automotive industry.



# Your supplier of anti-corrosion fasteners

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