



BUMAX[®]

THE WORLDS STRONGEST
STAINLESS STEEL BOLT

BUMAX[®]

A BUFAB BRAND

- ◆ BUMAX[®] is a registered trademark and known as the **strongest stainless steel bolt in the market.**
- ◆ We are **experts in materials.** BUMAX[®] is **manufactured in** Bufab's plants in **Sweden** and we meet the requirements from high-end demanding customers when it comes to **quality, corrosion resistance, high strength, traceability** and **heat resistance.**
- ◆ We can find **solutions for you** and can **meet the demands in demanding environments.**
- ◆ All BUMAX[®] products have **full traceability** and are made of highest quality steel from European manufactures.

BUMAX® starts where standard ends

Our customers can be found in oil and gas, pulp and paper, marine, petrochemical, energy and many other industries where standard fasteners simply cannot do the job.

Some of the products in the BUMAX® family are **completely unique products** that cannot be found anywhere else on the market.

We work constantly to find the **best fastener solutions** with our customers and are eager to participate and contribute in an early stage in our customers development projects.

With our competence in fasteners and materials we have many times developed "impossible" nuts and bolts.

Your problem is our challenge!



Reliable and resistant

Corrosion

We have knowledge and products to give you a safe, reliable and long lasting fastener solution for every application and corrosive environment.

Temperature resistance

BUMAX® fasteners can be custom made and depending on the grade, they can operate in temperatures between 200 - 815°C.

Magnetic Permeability

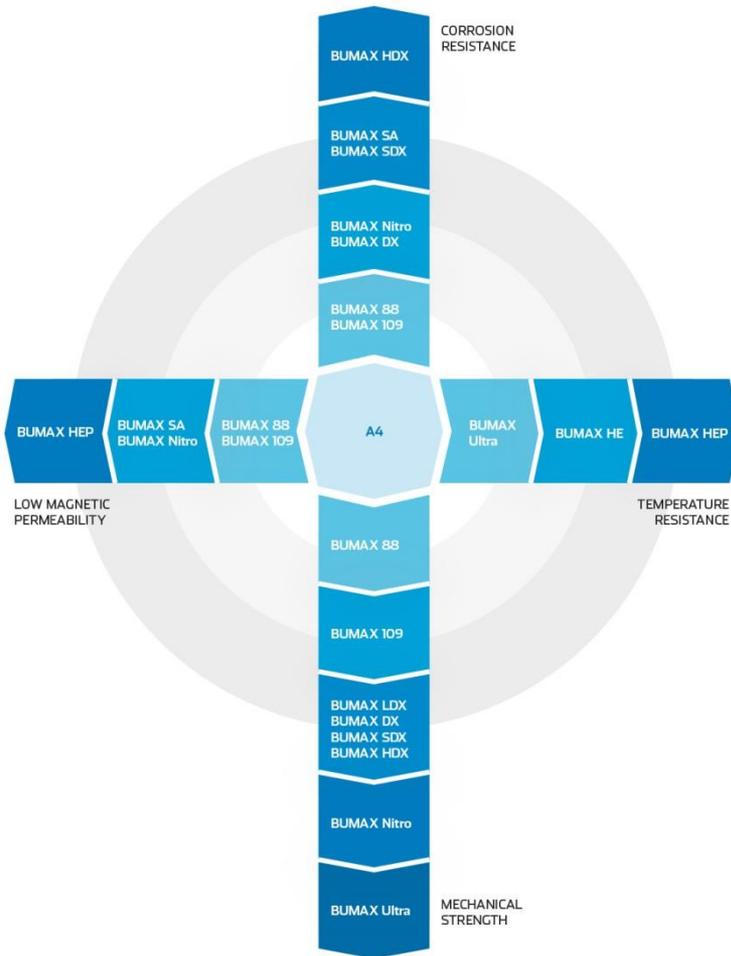
BUMAX® fasteners can be supplied with extremely low permeability and are often used in advanced applications like fusion reactors or particle accelerators. We can also supply fasteners with very high magnetic permeability and low coercive field strength.

Strength

We have delivered fasteners with a tensile strength exceeding the strength class 15.9 for applications where down sizing, clamping force and strength are critical. In the product range we offer stainless fasteners ranging from strength class 8.8 to 15.9. Despite of the high strength our unique materials offer a unique combination of ultra high strength and good ductility.



BUMAX® grade selection cross



Stainless steel fasteners have properties which make them **excellent choices for a wide range of applications**. It is essential to consider required properties such as corrosion resistance, temperature resistance, mechanical strength and magnetic permeability.

BUMAX[®] portfolio

Nominal wt%

GRADE	EN	UNS	Microstructure	C max	Cr	Ni	Mo	Other	PRE ¹⁾
BUMAX 88	1.4432, 1.4436, 1.4435	S31603	Austenitic	0.03	17	11.5	2.7		27
BUMAX 109	1.4432, 1.4436, 1.4435	S31603	Austenitic	0.03	17	11.5	2.7		27
BUMAX Nitro		S31675	Austenitic	0.035	20.5	10	2.4	N 0.4	35
BUMAX SA	1.4547	S31254	Austenitic	0.01	20	18	6.2	N, Cu	43
BUMAX LDX ²⁾	1.4162	S32101	Ferrite-Austenitic		21.5	1.5	0.3	N 0.22, Mn 5	26
BUMAX DX	1.4462	S31803, S32205	Ferrite-Austenitic	0.03	22	5.2	3.2	N 0.18	36
BUMAX SDX	1.4410	S32750	Ferrite-Austenitic	0.03	25	7	4	N 0.3	42
BUMAX HDX	1.4658	S32707	Ferrite-Austenitic	0.03	27	6.5	4.8	N 0.4, Co	49
BUMAX Ultra		S46910	Martensitic	0.02	12	9	4	Al, Ti, Cu	25
BUMAX HE	1.4980	S66286	Austenitic	0.08	15	26	1.5	Ti, V	
BUMAX HEP	2.4952	N07080	Austenitic	0.10	19	>65	-	Al, Ti, Co	

¹ PRE (Pitting Resistance Equivalent) number shows the pitting corrosion resistance of stainless steels. A higher PRE number indicates better corrosion resistance. The PRE is defined as, in weight-%: $PRE = \% Cr + 3.3 \times \% Mo + 16 \times \% N$

² Standard offer for Bumax Lean Duplex is 1.4162 (PRE 26), but we have also the possibility to supply 1.4661 (PRE 33)

Why use high strength fasteners?

- ◆ Reduce size
- ◆ Save weight, reduced size and fewer bolts
- ◆ Smaller screw joints
- ◆ Compact design
- ◆ Fewer amount of bolts with maintained clamp load
- ◆ Increased clamping force
- ◆ Increased safety factor
- ◆ Better relaxation and fatigue resistance
- ◆ Reduced cost, smaller/fewer fasteners and increased productivity in hole drilling and threading

BUMAX
Ultra

BUMAX
HDX

BUMAX
109

A4-80

Quality

- ISO 9001
- ISO 14001, environmental management
- The Pressure Equipment Directive PED No 97/23/EC (BUMAX® 88)
- ISO/TS 16949, management system for Automotive Industry
- CE marking for non-preloaded applications according to EN 15048
- Norsok M-650 D60



BUMAX®		Qualification Test Record (QTR) NORSOK M-650		DTR No.: SD06-11232750A	
Manufacturer name/address: Web page: Reference standard:		Bumax AB Bultången 30 S-812 49 Astorhammar Sweden tjuv@bumax.se NORSOK M-650, Edition 4		Rev. No.: 1	
Material designation and MDS No.:		ASTM A192 Gr. UNS S32750 MDS D60 rev 2		Rev. No.: 1	
Manufacturing Summary doc. No.:		Manufacturing summary			
Products and manufacturing process(es):		Stubbolts, Norsok M-650 MDS D60 rev 2			
Mandatory conditions and sub-conditions:		Machining at Bulten Linn AB Threading at Bumax AB Quality control Bumax AB Inspect, Corrosion and Micrographic inspection made by Sarosiv P&D			
Other information:		Bumax Stainless AB has changed the company name to Bumax AB, effective since 16.09.2015			
Qualification expires:		01.09.2020			
Tested and qualified thickness and weight					
Products and manufacturing process(es):	Test record No.	Tested thickness	Qualified thickness	Test piece weight kg	Qualified weight kg
Stubbolts	D60-1	1%	±1%		
Qualification/acceptance signatures					
Manufacturer: Bumax AB	Test record No. D60-1	Prepared by/Date: 28.09.2015	Checked by/Date: 28.09.2015		
		Boris Soren		Carin Tronelius	
The manufacturer and this QTR are evaluated and found to be in compliance with the requirements of NORSOK M-650 for supply of the above listed products and materials. This acceptance does not exempt any purchaser from his responsibility to ensure that this qualification is valid for his products within the essential variables of NORSOK M-650.					
Qualified/Accepted by (company name address):		Signature/Date: Torbjörn Hansson 28.09.2015			
APPROVED Torbjörn Hansson					

BALDER + BUMAX® = TRUE



On the west coast of Sweden, in a town called Gothenburg, you can find an amusement park called Liseberg. It has been voted by international experts to be “World’s best wooded roller coaster”.

When Balder initial was built they used a mix of ISO 10642 in A4-70 and yellow zinc plated ISO 10642 carbon steel 8.8/10.9. Following problems were seen:

- The A4-70 fasteners could not stand the strain/load of the roller coaster, fasteners were too weak. The consequence was that the bolts were frequently breaking.
- The 8.8 bolts were corroding quickly and then breaking.
- The bolts, both A4-70/8.8, were lasting 1-2 years in the application where they went broken earlier.

In 2009 Liseberg decided to change the problematic fasteners and changed them for BUMAX®; and ISO 14581 with a less recessed torx. This was a very successful change and they have not seen any broken or corroded bolts after more than 4 years of usage.



SOLUTIONIST