

Bumax is Bufab's registered trademark, known as the strongest stainless steel fastener in the world.

Bumax is manufactured in Bufab's own plants in Sweden and meets the requirements of high demanding customers when it comes to quality, corrosion resistance, high strength, fatigue strength, traceability and heat resistance. We deliver safety and reliability.

Some of the products in the Bumax family are completely unique that cannot be found anywhere else on the market. All products have full traceability (3.1 certificates available for each item) and are sourced solely from premium European stainless steel manufacturers according to rigid specifications.

INTRODUCING BUMAX® NITRO 109

BUMAX® NITRO 109 was initially developed for customer specific, large diameter, high strength bolting applications within the marine and offshore markets. However, Nitro also offers an excellent option in many other applications where large diameters, high strength and high levels of corrosion resistance is required.

BUMAX® NITRO 109 is nitrogen strengthened austenitic stainless steel which is designed to achieve both high strength and excellent corrosion resistance in chloride rich environments.

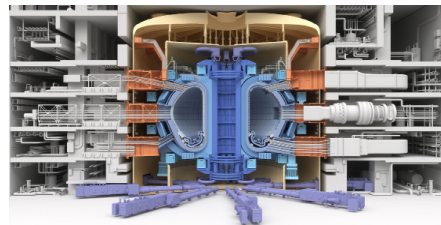
NITRO 109 was develop by BUMAX as a way to deliver high strength fasteners, equivalent to 10.9, at large diameters up to M36. NITRO 109 is now available as a manufactured to order product and the latest addition to the BUMAX high strength stainless range.



APPLICATIONS

BUMAX® NITRO 109 is suitable where high strength, large size fasteners are required in a marine environment. BUMAX® NITRO 109 is characterized by:

- High corrosion resistance in seawater environments (better than 316L/A4).
- High strength - class 10.9 can be offered up to diameters of M36.
- Austenitic microstructure that is non-magnetic and very resilient against risk of hydrogen embrittlement.
- High impact strength at low temperatures
- Good resistance against galling due to its high hardness and an alloy composition containing high levels of both Manganese and Nitrogen
- NITRO 109 is an austenitic stainless grade and benefits from low magnetic permeability.
- NITRO 109 can potentially offer a more cost-effective alternative for many applications where more costly Nickel Alloy fasteners might traditionally be used. Especially applications where larger diameters and higher volumes may be required. For application support, please contact BUMAX technical department.



CHEMICAL COMPOSITION

Table 1. Nominal wt%

	Standard	Cr%	Ni%	Mo%	N%	MN%	PREN
BUMAX® NITRO	UNS S20910	22	12	2	0.3	5	34

¹ BUMAX® NITRO has an austenitic cold worked microstructure, that gains its strength from BUMAX's unique strain hardening manufacturing capabilities.

MECHANICAL PROPERTIES

BUBUMAX® NITRO offers a unique, marine environment resistant stainless steel fastening solution for large size bolts in strength class 10.9.

Previously this was only possible with relatively expensive age hardenable nickel-based alloys.





Grade	Strength Class	Dimension	Tensile strength Rm, min		Yield strength Rp0.2, min	
			MPa	ksi	MPa	ksi
BUMAX® NITRO 109	EQV. 10.9	M30 - M36	1,000	145	900	130
BUMAX® NITRO 100	100	Over M42	1,000	145	800	116

The primary advantage of NITRO 109 is within applications in chloride rich environments. It can be difficult to find corresponding sea water resistant, large diameter, high strength 10.9 solutions on the market. BUMAX® NITRO 109 is designed for large diameter bolts from M30 to

M36. BUMAX can produce Nitro 109 in smaller sizes but it is often a more cost-efficient solution to use BUMAX sea water resistant stock standard grades, such as BUMAX® 109, BUMAX® DX 129 or BUMAX® SDX 109 (contact BUMAX for more information).

CORROSION RESISTANCE

The high chromium, molybdenum and nitrogen content of BUMAX® NITRO 109 offers excellent corrosion resistance. BUMAX® NITRO 109 in seawater and many other medias offers superior corrosion resistance to other more common grades of 316L and A4 stainless material.

PREN Number or PREN (Pitting Resistance Equivalent Number), is a widely accepted method of rank-ing and comparing the relative corrosion resistance of different stainless steel materials in chloride bearing medias. The PRE Number is based on a well-known formula and provides a good indication of the pitting and crevice corrosion resistance, as a function of the alloying content in the material. The higher the PRE number, the more resistant the stainless-steel material will be against pitting corrosion in seawater and chloride bearing medias.

Corrosion resistance in saltwater depends on several parameters such as salt concentration, temperature, location and design. Engineers

often consider a PREN of minimum 34 to be seawater resistant and this requirement can often be found in marine fastener specifications and standards. Typical PRE values of BUMAX material grades are shown in the table below, versus more common generic grades of A4/316 stainless steel material.

Pitting Resistance Equivalent Number (PREN) Comparison

Grade	PRE (= %Cr + 3.3 x %Mo + 16 x %N)
Generic A4-80	25
BUMAX® NITRO 109	27
BUMAX® DX 109	34
BUMAX® DX 129	36
BUMAX® SsDX 109	43

PRODUCT OFFERING

BUMAX® NITRO 109 is manufactured on request.

BUMAX® NITRO 109 is not a stock standard product but most screw and bolt designs can be produced to order. The dimension range for

BUMAX® NITRO 109 is M30-M36. Contact your local BUMAX sales representative for more information.

BUMAX® NITRO 109 is coated with our special wax as standard. This helps to guarantee a low and consistent friction coefficient for accurate

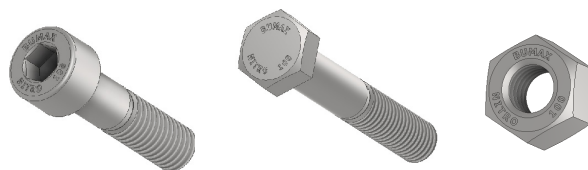
installation and also minimizes any risk of galling. Recommended preload and tightening torque data can be found at www.bumax-fasteners.com.

BUMAX® NITRO 109 is manufactured at the BUMAX factory in Sweden, where we maintain very high levels of quality and service. This also enables us to produce small quantities for prototyping, testing and validation.

Contact the BUMAX sales team and let us know how we can help you.

MARKING

All BUMAX® NITRO 109 fasteners are marked with BUMAX plus NITRO or BUMAX, NITRO and the strength class. We can also provide individual marking according to special customer requests.



TESTING, CERTIFICATION & TRACEABILITY

All BUMAX® fasteners are fully traceable, with 100% of all material and manufacture exclusively within Western Europe. All BUMAX production undergoes full testing in accordance with ISO 3506 and every product is available with optional 3.1 test certification. Products are traceable down to individual box labels (material cast and production number) and can be cross referenced against the 3.1 certificates.

Disclaimer: The information contained in this data sheet is for guidance only and summarizes Bufab best knowledge and is considered accurate as of the version date. Since the use of BUMAX products is not within the control of Bufab, the user has the obligation to determine the suitability of the product for its intended application and assumes all risk and liability for its safe use.