



West Special
Fasteners



Alleima



Sanicro® 35 & 35-HS Special fasteners available NOW!

West Special Fasteners are proud to have a trusted working relationship with Alleima, working together to ensure OEM's have a known partner for special fasteners, to support all project requirements for fasteners in Sanicro® 35 materials.

With technical collaboration at the heart of the project, West Special Fasteners can offer fasteners **right now** in both **Sanicro® 35 and Sanicro® 35 35-HS**, on reasonable lead times. Fasteners can even be hot formed in either grade, using the latest in induction heating and modern technologies, saving end users money and delivering fasteners on quick lead times.

Having an understanding on how the material machines, ensuring you get the expected results on the finished fastener, along with supplying to the highest quality, are all vital aspects in meeting OEM expectations.

Typical fasteners available in these grades include:

- Hexagon Head Bolts
- Hexagon Nuts
- Studbolts Socket
- Socket Capscrews
- Socket Countersunk Screws
- Setscrews
- Many other special fasteners and bespoke machined parts

Where we expect this grade to fit within the market

Material for fasteners is selected for many reasons, including mechanical strength, hardness (NACE), corrosion resistance (including but not limited to; crevice, pitting, stress and hydrogen induced stress corrosion - with the latter Sanicro® 35 & 35-HS being virtually immune to) and hydrogen embrittlement.

Adding cost, durability and availability to the mix, gives the designer several considerations. Sanicro® 35 & 35-HS allow several of these considerations to be met as standard, giving solid comparisons, exceeding other grades of materials capabilities and offering solutions to some common issues on certain grades. As Sanicro® 35 shows excellent resistant to hydrogen embrittlement, since it has high austenitic phase stability.

Sanicro® 35 is not a precipitation-hardened grade which the latter may experience hydrogen embrittlement. Results, shown in constant load testing at 4°C in 3% NaCl at -1050 mVSCE, indicates that Sanicro® 35 is not prone to hydrogen embrittlement and is a viable option for subsea applications.

As a specialist manufacturer of fasteners in stainless steels and exotic alloys, we are excited to see a material that will only benefit OEM's. Looking at common specific grades for Oil & Gas markets, we can offer the following comparisons on cost & strength:

Material cost – from high to low:

Alloy C276/C22
Alloy 925
Alloy 718
Alloy 625
Sanicro® 35-HS
Super Duplex HS (B7/L7
Equivalent) **Sanicro® 35**
Alloy 825
XM19
Super Duplex

Typical Mechanical Strength (tensile & Yield) – from high to low:

Alloy 718 (depending on condition API6A /B637)
Sanicro® 35-HS
Alloy 925
Super Duplex HS (B7/L7 Equivalent)
Super Duplex
Alloy 625
Sanicro® 35
XM19
Alloy C276/C22
Alloy 825

Both **Sanicro® 35 & 35-HS** offer significant opportunity for usage for the Oil & Gas market. Costs below or in line with comparable materials, mechanical properties above or in line with comparable materials, added to improvements on critical areas such as corrosion, have highlighted **Sanicro® 35 & 35-HS** as grades of material that can change the market.

West Special Fasteners are proud to be part of this trusted relationship and look forward to this grade becoming a major material for the products we manufacture.



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Sanicro® 35 & 35-HS

Sanicro® 35 is a high-performance super-austenitic stainless steel alloy for use in demanding corrosive environments, it offers exceptional corrosion resistance with a pitting resistance equivalent number (PREN) greater than 52. Its high mechanical strength & durability make it suitable for industrial applications such as; chemical processing, oil and gas, and biorefineries. Also available is HS condition, with increased mechanical properties

Typical applications can include:

- Heat exchangers
- Evaporators
- Offshore piping systems
- Oil and gas drilling tools
- Waste heat recovery exchangers



Sanicro® 35 Grades & Equivalents:

- UNS N08935
- ASTM B649

Typical Chemical Analysis

C	Si	Mn	P	S	Cr	Ni	Mo
≤0.030	≤0.50	1.200	≤0.030	≤0.020	26.0-28.0	34.0-36.0	6.1-7.1
W	N	Cb/Nb	Ti	Co	Cu	Al	B
	0.25-0.36				0.40		
V	Fe	Mg	Ta	Ca	O	Bi	Se
	BAL						
Sn	Zn	Pb	Y	Cb/Nb+ Ta	Ni+Co	H	PREN

Typical Mechanical Properties

	Sanicro® 35	Sanicro® 35-HS
Tensile Strength	750 MPa Min	1000 MPa Min
0.2% Proof Stress	370 MPa Min	830 MPa Min
Elongation	40% Min	
Reduction of Area		
Hardness	300 HB Max	40 HRC Max
Impacts	300 J / >220 ft.lb @ -60°C/ -76°F	200 J @ -60° 100 J @ -101°
Other Remarks	Impact results shown above, especially in Sanicro® 35-HS, are impressive in comparison to Super Duplex High Strength - which has difficulties @ -101°C.	

Product Forms Available:

- Hexagon Head Bolts
- Hexagon Nuts
- Studbolts
- Socket Capscrews
- Socket Countersunk Screws
- Socket Setscrews
- & Many other special fasteners and bespoke machined parts

Products can be produced to customer drawings or relevant British (BS), American (ASME, ANSI), European (DIN, UNI) or International Standards (ISO).

Metric & Imperial fasteners are all available in several sizes. Thread forms include, but are not limited to - UNC, UNS, UNF, BSW, BSF, Whitworth, Metric, Metric Fine.



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