

Technical Data Sheet

UGI® 4032

Chemical composition (%)

C	Si	Mn	Ni	Cr	Mo	N	P	S	Cu
≤ 0.025	0.4 – 0.7	4.0 – 4.5	1.6 – 2.0	20.5 – 21.0	0.25 – 0.50	0.13 – 0.17	≤ 0.035	≤ 0,030	≤ 0,40

12/01/2025 – REV 00

General Presentation

UGI® 4032 is an austenitic-ferritic (duplex) stainless steel containing a minimum of 20.5% chromium and 1.6% nickel. It is specially designed as a cost-effective alternative to austenitic grades such as 1.4301 / 1.4307 (AISI 304 / 304L).

This grade complies with the chemical composition of grade 1.4482 according to EN 10088-1, while offering guaranteed corrosion resistance through a PREN (Pitting Resistance Equivalent Number) ≥ 23.

As with other duplex grades, the mechanical properties of UGI® 4032 are significantly higher than those of austenitic stainless steels.

Classification

Austenitic-ferritic / Duplex stainless steel

Designation

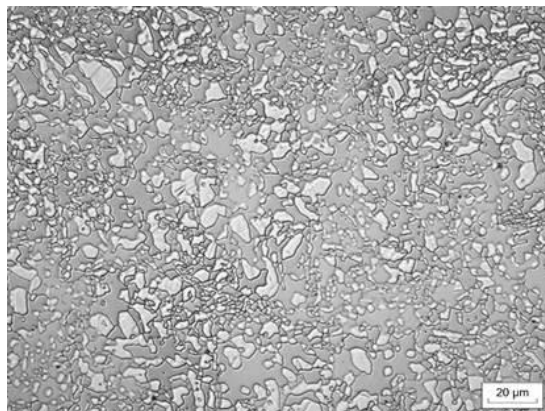
Material N°		
Europe EN	USA UNS	Japon SUS
1.4482 - X2CrMnNi21-5-3		

Microstructure

After "solution annealing" in the temperature range 980 °C – 1,050 °C, with water, oil or air cooling, UGI® 4032 is composed of ferrite and austenite in comparable quantities (see macrograph opposite) . As a result, it is partially ferromagnetic (it can be "magnetised").

During strong cold deformation (wire drawing, etc.), one part of the austenite is transformed into martensite and UGI® 4032 becomes more magnetic.

It is not advised to use UGI® 4062 above 300 °C in order to keep all its properties (refer to hot working paragraph).



Mechanical properties

Like all austenitic–ferritic stainless steels, UGI® 4032, in the hyper-quenched (solution-annealed) condition, exhibits higher mechanical strength in this state than austenitic stainless steels of the 1.4301/1.4307 type.

Mechanical properties

Condition	Diameter	Yield strength	Tensile strength	Elongation	Striction	Hardness
(°C)	(mm)	(MPa)	(MPa)	(%)	(%)	Brinell (HB)
Solution annealed and cold drawn	2 ≤ Ø ≤ 20	≥ 650	800 – 1100	≥ 15		
Solution annealed and cold drawn	20 < Ø ≤ 30	≥ 450	650 – 1100	≥ 15		
Solution annealed and cold drawn	30 < Ø ≤ 50	≥ 450	650 – 900	≥ 25	≥ 60	
Solution annealed	2 ≤ Ø ≤ 115	≥ 450	650 – 900	≥ 25	≥ 60	≤ 320

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Physical properties

Temperature	Density	Modulus of elasticity	Thermal conductivity	Expansion coefficient (between 20 °C and T°)	Electrical resistivity
(°C)	(kg/dm³)	(GPa)	(W/m.K)	(10-6/°C)	(μΩ.mm)
20	7,7	200	15		0,95
100		194		14,0	
200		186		14,5	
300		180		14,5	

Corrosion resistance Localized Pitting Corrosion

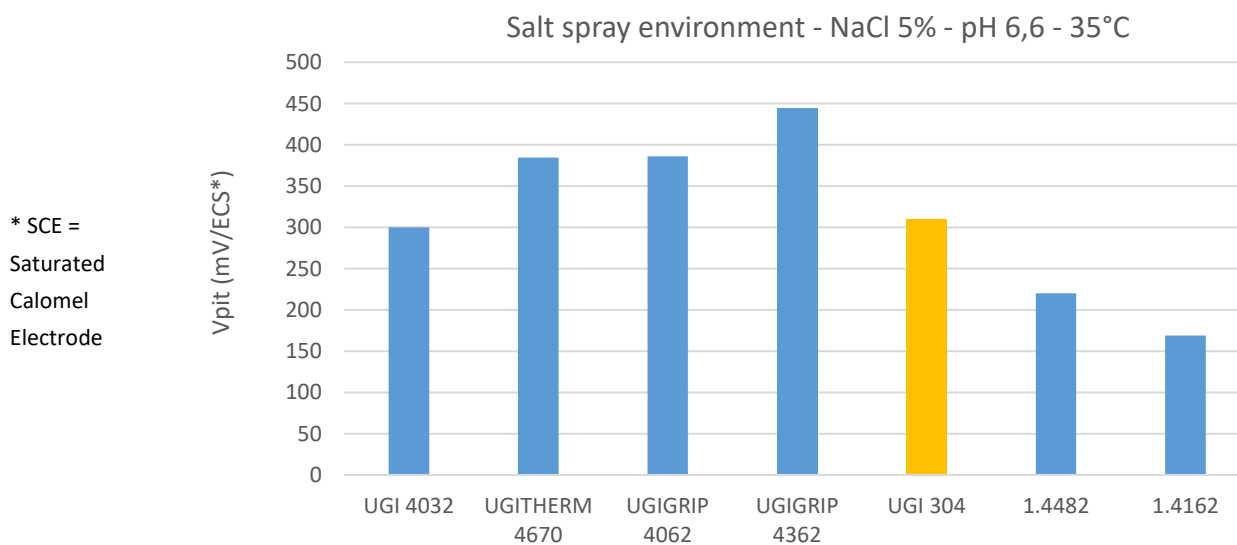
A first way to assess corrosion resistance in chloride environments is the **PREN value**, calculated as: **PREN = %Cr + 3.3 × %Mo + 16 × %N**. The higher the PREN, the better the resistance to pitting. UGI® 4032 was designed so that **PREN ≥ 23**.

Because of this, the German BAM (Bundesanstalt für Materialforschung) classifies UGI® 4032 as **CRC III** according to **DIN EN 1993-1-4**.

A second method is the **pitting potential measurement** per **ISO 15158**, performed on smooth or notched samples in a NaCl 5 g/L solution at 35°C and pH 6.6. A higher pitting potential indicates better resistance.

The provided graph shows that all Ugitech “lean duplex” grades, including UGI® 4032, perform at least as well as, or better than, austenitic grade 304. Conversely, other commercially available lean duplex grades (e.g., 1.4482 without PREN minimum or 1.4162) show lower corrosion resistance than 304.

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Hot working

UGI® 4032 exhibits satisfactory forgeability between 1000°C and 1200°C. At the same temperature, the forging loads required for UGI® 4032 are lower than those of austenitic stainless steels, while its ductility is slightly lower. It is recommended to reheat between 1100°C and 1200°C, and after hot working, to cool rapidly (in oil or water) in order to avoid the formation of embrittling precipitates (sigma phase) that may occur between 900°C and 400°C, which is why service temperatures above 300°C are not advised. A solution annealing treatment between 950°C and 1050°C restores the ductility of UGI® 4032 if the material has been previously cold-worked. This heat treatment does not need to exceed 30 minutes, but it must be followed by rapid cooling.

old transformation

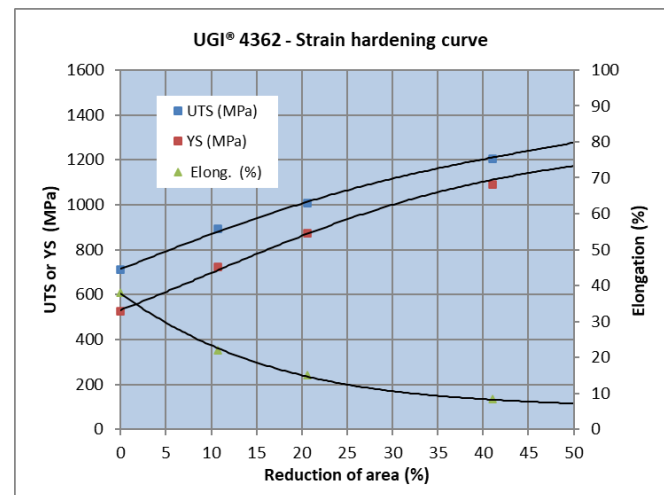
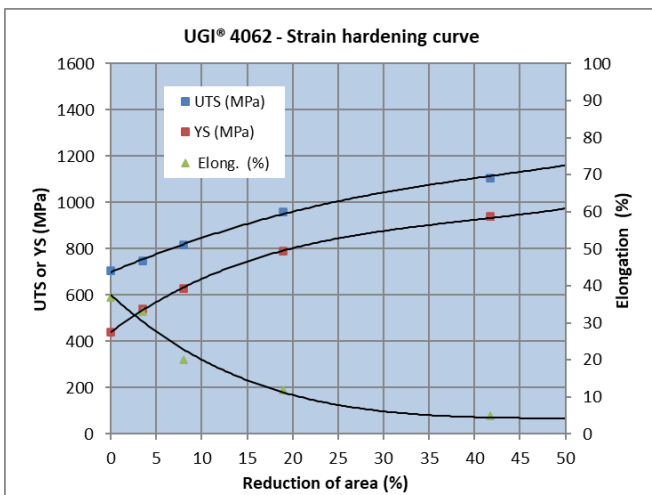
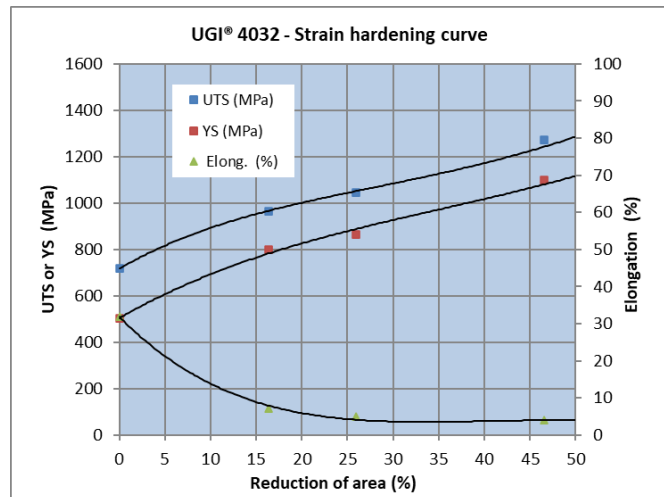
UGI® 4032 is suitable for cold forming by conventional methods such as drawing or wire drawing.

Its mechanical properties are comparable to those of UGI® 4062 and UGI® 4362 in solution-annealed or cold-ribbed conditions.

In the solution-annealed condition:

Yield strength UGI® 4062 < UGI® 4032 < UGI® 4362

After cold-working with a **10–15% area reduction**, as typically applied to cold ribbed reinforcing bars, the ranking remains the same.



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Pickling – Passivation – Electropolishing

Conditions usually applied to austenitic grade 1.4301 should be adapted case-by-case.
Please contact Ugitech for recommendations..

Available Products

Product	Form	Condition	Dimensions (mm)
Wire rod	Round	Solution annealed	Ø 5,5 to 32 mm
Bare	Round	Cold drawn	Ø 2 to 50mm
Bars	Round	Cold ribbed	Ø 6 to 25mm
Wire	Round	Cold ribbed	Ø 6 to 14 mm

For cold-notched bars and wires, geometries and mechanical properties comply with:

NF A 35-014
B500B/B650B/B750B,
BS 6744 and DIN488

Other dimensions available on request.

Applications

Reinforcing bars for thermal bridge connectors

Cold-drawn bars for shear connectors

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