UGIMA® 4571

Chemical Analysis	C	Si	Mn	Ni	Cr	Mo	Ti	P	S
	≤0.05 max	≤ 1	≤ 2	10,5 – 11,5	16,5 – 18,5	2 – 2,5	≥ 5C (0.7 max)	≤ 0.045	0,015 – 0,030

22-02-2013 – REV05

General Presentation

UGIMA® 4571 is an improved machinability stainless steel manufactured only by Ugitech.

Its properties are identical to those of 4571 except for its machinability, which is even better than that of 4571:

- UGIMA® 4571's new technological advances are extremely advantageous, whatever the machining conditions, machine or tooling used.
- Productivity increases of 15 to 30% over grade 4571, the current market standard, have been obtained.

Classification

Titanium Stabilised Austenitic Stainless Steel with improved machinability

Standards

Steel designation					
Europe (EN)		USA	Japon	ISO	
Number	name	UNS	JIS	Number	name
1.4571	X6CrNiMoTi17-12-2	-	SUS316 Ti	4571-316-35-I	X6CrNiMoTi17-12-2

Other steel designation				
USA	France	Germany	UK	Sweden
AISI	AFNOR	DIN	BS	SS
-	Z6CNDT17.12	1.4571	320S31	2350

Delivered in accordance with the following standards :'EN 10272 : Pressure device

available with ADW2certificate

Mechanical Properties

	Résistance à la traction	Limite élastique	Elongation	
	Rp0,2% (MPa)	Rm (MPa)	A (%)	Z (%)
Without work	**280**	**560**	**56**	**72**
Work-hardened by drawing*	**390/590**	**620/760**	**52/31**	**70/66**

(ranges provided for information only taking into account the applied reduction rates. Increased tensile strength and hardness is obtained by cold working)*

Physical Properties

Density (kg/m3)	Module d'élasticité (MPA)	Thermal conductivity (W/m.°C)	Expansion Coefficient (/°C)	Electrical Resistivity (µΩ.mm)
7950	200000	15 W/m°C at 20°C	16.8 x 10-6 (between 20°C and 200°C)	740 at 20° C.

Magnetic and electrical properties

Non-magnetic in annealed condition.

Slight magnetism is produced by cold-working operations.

Weight of round bars (kg/m)	0.0062 x D2 (D: diameter in mm)
Weight of hexagonal bars (kg/m)	0.0068 x H2 (H: distance between sides in mm)
Weight of square bars (kg/m)	0.0078 x c2 (c: square side)

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Corrosion resistance

UGIMA® 4571 has excellent ability to withstand corrosion.

- in natural environments:
  Water, rural and urban atmospheres, industrial atmospheres and even in the presence of moderate concentrations of chlorides and acids
- in food processing and agricultural environments
- in numerous acid (sulphuric, phosphoric and organic) and chloride chemical environments, under certain temperature and concentration conditions.

UGIMA® 4571 is resistant to inter-granular corrosion in the same way as 1.4571.

UGIMA® 4571 is pickled in the same way as 1.4571 grade steel.

Remark: The corrosion resistance of a stainless steel depends on many factors related to the composition of the corrosive atmosphere (chloride concentration, presence or absence of oxidising agents, temperature, pH, agitation or no agitation, and so on), as well as to the preparation of the material (surfaces free from metal particles, surface finish, such as hardening, polishing, and so on). Precautionary measures should be taken for certain tests such as the saline mist test (French standard NFX 41002): for example marking labels (that might cause corrosion run-outs and reduce the test resistance time) should not be used on the sample.

The table below illustrates a performance scale (with three levels: good/average/excellent) in different environments:

Environment	behavior
Nitric acid	Good
Phosphoric acid	Average
Sulphuric acid	Average
Acetic acid	Good
Sodium carbonate	Average
NaCl (Saline mist)	Good
Humidity	Excellent
Petroleum	Average
Sea water	Average

Warm processing

Forging

Heating temperature: 1150 - 1200°C

Forging temperature: between 1200°C and 950°C

Air cooling (or water cooling if deformation is not a problem)

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Machinability

UGIMA® 4571 offers improved machining performance as a result of the optimization of the inclusion population. This expands the range of cutting conditions suited to the production of machined parts. The productivity gains brought by this new grade are derived from extended tool life, good chip breakability and good surface finish.

If you would like to use the grade to best advantage for your components and working environment, contact our Technical service via your usual commercial contact.

Welding

UGIMA® 4571 can be MIG or TIG welded, with or without filler material, using laser or resistance welding techniques.

When using filler wire, we recommend using ER318 (Nb stabilised). For cold applications, ER316LSi wire can also be used.

To minimize thermal cracking problems, tight control over welding parameters is required. To do this, always ensure when using arc welding that the linear welding power is limited.

Heat Treatment

The annealing treatment that gives UGIMA® 4571 its lowest properties includes heating to 1020°C - 1120°C, followed by rapid air or water cooling. In this case, the properties obtained will be:

Rm = 500 - 700 Mpa $Rp_{0.2} \geq 200$ Mpa A% ≥40%

Products available

Product	Form	Finition	Tolerance	Dimensions (mm)
Hot rolled and cold finished bars	Round		13 to 9	
Bars	Hexagonal		11	

Do not hesitate to contact us for further information

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