

WHY WE RECOMMEND SS370 STAINLESS STEEL FOR STRUCTURAL APPLICATIONS

WHAT IS SS370 STAINLESS STEEL?

SS370 is our trade-name for Grade EN10088: 1.4003 stainless steel. It is a 'utility' grade ferritic stainless steel offering many of the [advantages of austenitic stainless steels](#) but at much [lower cost](#). It has relatively high strength, good corrosion and abrasion resistance properties, and is readily [weldable and formable](#), permitting easy fabrication by conventional techniques. The lower cost of 1.4003 is achieved by reducing the quantities of expensive alloying elements such as Nickel and Molybdenum, whilst retaining the 'stainless' corrosion resistance gained from the 11-12% chromium content.

THE MECHANICAL PROPERTIES OF SS370:

SS370 stainless steel behaves like an austenitic stainless in many aspects, including exhibiting gradual yield characteristics and no definite yield point. It is also a minimum of [16% stronger than S275 structural steel](#), with similar elasticity; and has superior heat resisting properties, retaining 80% of its strength at 500°C compared to 50% for conventional S275 (grade 43A) structural steel. In structural applications, it also has [double the resistance to thermal bridging](#).

Properties of 1.4003; ≤6mm sheet

Mechanical Property	Grade S275 (43A)	SS370 (1.4003)
Density (kg/m ³):	7820	7740
Elastic Modulus (GPa):	205	200
Ultimate Tensile Strength (MPa):	485 typ.	522 typ.
0.2% Yield Stress (MPa):	275 min.	320 min.
Thermal Conductivity (W/m.K, 100°C):	64	30.5
Thermal Expansion Coeff. (µm/m.K):	12.0	11.1

THE CORROSION RESISTANCE OF SS370:

SS370 stainless steel will experience some discolouration on exposure to a corrosive environment, but experiences generally slow material loss; nominally quoted as around 0.002mm thickness loss per year in a [marine atmospheric environment](#). This equates to a potential practical product [lifespan of well over 200 years](#).

In most residential and commercial structural applications SS370 stainless steel will long outlast the building; and in many harsh industrial environments it still offers excellent value and performance compared to the more expensive stainless steels.

The single biggest corrosion advantage of SS370 stainless steel over structural steel is that [it doesn't rely on any form of coating](#), the material itself is corrosion resistant. If required, conventional paint systems can be readily applied to SS370 for aesthetic appeal.

HOW DOES IT COMPARE TO GALVANISED STEEL?

[Galvanised coating corrosion rates are around 10x faster](#) than those of SS370, but even more importantly; the lifespan of galvanised mild steel products in harsher environments, such as a marine atmosphere, is very short indeed once the coating begins to fail. This means the length of time required for SS370 stainless steel to lose nominally 200µm (0.2mm) of material would see a 140µm (coating thickness 0.14mm, 'heavy duty') [galvanised mild steel product completely disintegrate](#), but the SS370 product will still retain virtually full strength, and last hundreds of years more.

In many less aggressive environments, 140µm galvanised mild steel could last hundreds of years, UNLESS the coating is compromised.

Unfortunately coating damage often occurs on site as a result of post-galvanising welding, drilling, cutting, or rough handling in the presence of masonry. However, no such site conditions will affect the longevity of SS370 stainless steel, as its corrosion resistance is an inherent property of the material itself and does not rely on any surface protection.

WHO USES SS370 STAINLESS STEEL?

As a direct result of its [excellent abrasion and corrosion resistant performance](#) and low cost, SS370 (1.4003) finds many applications:

- Bulk & wet materials handling
- Vehicle frames & Chassis
- Bunkers & Hoppers, Tanks & Containers
- Masonry structural support (e.g. lintels)
- Sweeper and gritter vehicles
- Chimneys & Ducting
- Structural framing, Walkways, Stairs & Railings
- Cable trays, Enclosures & Cabinets
- Liquid handling equipment, e.g. weirs & sluice gates

WHAT ARE THE FABRICATION REQUIREMENTS?

In our fabrication process we use equipment dedicated to working stainless steel for minimum risk of contamination, taking into account its higher strength. In our MIG welding we use a 308L filler wire, suitable for both 304 and SS370 stainless steels, ensuring the weld strength and corrosion resistance exceed that of the parent metal. For site operations, SS370 stainless steel can be easily cut with abrasive discs; aluminium oxide is recommended for best performance. Drilling can be accomplished using sharp, high speed drills at slower speeds than mild steel and with water soluble oil cutting fluids for larger holes or thicker materials. SS370 does not work harden to the extent of austenitic stainless steels and in general [does not require special tooling](#), facilitating easy site operations.



... 1.4003 STAINLESS
STEEL; IT MAKES SENSE.

