

## S275JR+AR

## S355JR+AR

## S355J0+N

STRUCTURAL STEELS in accordance with

SANS 50025 / EN 10025 – 2004

### GENERAL DESCRIPTION

These grades of steel are intended for structural work where no significant forming or bending must be done. These grades can be bolted, riveted and welded in a full range of structural and fabricated items including bridges, box girders, cranes and other general structural projects.

The grade designations of SANS 50025 / EN10025-2 refer to the minimum yield strength of each grade for thicknesses less than or equal to 16mm. The steel should be selected in accordance with the strength requirements as shown in Table 2. The JR, J0 & J2 suffixes refer to different impact requirements. An average impact energy value of 27 Joules must be achieved on full size specimens in the longitudinal direction in all applicable cases. The suffix AR refers to the As-Rolled condition. If the material is normalised then this will be indicated by a '+N' appearing as a suffix.

The SANS 50025 / EN10025 structural steel grades are all readily weldable by means of the usual metal arc processes.

Table 1: Chemical composition (ladle analysis, %) as per SANS 50025 / EN 10025

Grade	Max C content for t in mm			Mn max	Si max	P max	S max	Cu <sup>2</sup> max	N <sup>1</sup> max
	t≤16	>16 t≤	t>40						
<b>S275JR</b>	0,21	0,21	0,22	1,5	-	0,035	0,035	0,55	0,012
<b>S355JR</b>	0,24	0,24	0,24	1,6	0,55	0,035	0,035	0,55	0,012
<b>S355J0</b>	0,20	0,20	0,22	1,6	0,55	0,035	0,035	0,55	0,012

### Notes

1. The maximum value for nitrogen does not apply if the chemical composition shows minimum total aluminium content of 0,020% or if sufficient other nitrogen binding elements are present. The nitrogen binding elements shall be mentioned in the inspection document.
2. Cu content above 0,4% may cause hot shortness during forming.

Table 2. Mechanical properties as specified in SANS 50025 / EN 10025

Grade	Yield (MPa) min	Tensile (MPa) min	Charpy V-notch longitudinal	
	Strength at t = 16mm		Temp (°C)	Energy (J) t=16mm
S275JR <sup>1</sup>	275	410 / 560	20	27
S355JR <sup>1</sup>	355	470 / 630	20	27
S355J0	355	470 / 630	0	27

Notes

1. Verification of the specified impact value is only carried out when agreed at the time of the enquiry and order.

**DIMENSIONS**

The plate mill can produce products from 5mm to 100mm thick depending on the grade. See thickness ranges in Plate Price List. The available dimensions for such plates are given in the data sheet: Plate Mill Product Dimensions (file reference A1.3).

The hot strip mill can produce products from 1,6mm to 13,0mm thick depending on the grade. See thickness ranges in Hot Rolled Price List. The dimensions available are given in the data sheet: Hot Strip Mill Product Dimensions (file reference A1.1)

**TOLERANCES**

Material 6mm and thicker produced at the plate mill is supplied with dimensional tolerances in accordance with EN 10029. If not specified, tolerances will be according to "Class A". Material produced on the hot strip mill is supplied with dimensional tolerances in accordance with EN 10051.

**SURFACE INSPECTION**

All plates manufactured through the plate mill are inspected and defects repaired in accordance with EN 10163-2: 1991 Class A Subclass 1, unless otherwise agreed.

**ULTRASONIC TESTING**

If specified at the time of order, ultrasonic testing shall be carried out in thickness ≥6,00mm in accordance with EN 10160.

**CERTIFICATION**

All material described in this data sheet is supplied with analysis and test certificates.

**WELDABILITY**

When welding thick plates, reference should be made to BS EN 1011-2:2001 "Welding – Recommendations for welding of metallic materials Part 2: Arc welding of ferritic steels".

The carbon equivalent value (CE) should be calculated from the values of the chemical composition indicated on the test certificates for the plates concerned.

The formula to be used is: 
$$CE = C + \frac{Mn}{6} + \frac{Cr + Mo + V}{5} + \frac{Ni + Cu}{15}$$