

For the first time yield strength introduced into mechanical properties ie

Up to and including $\frac{3}{4}$ inch thick	16 tons/sq.in.
Over $\frac{3}{4}$ " up to $1\frac{1}{2}$ " thick	15 tons/sq.in.
Over $1\frac{1}{2}$ " thick	14.75 tons/sq.in.
Ultimate tensile strength	28 to 33 tons/sq.in.

#### BS15 1961 Mild Steel for General Structural Purposes

Steel processes as 1948 plus any of the oxygen processes.  
Carbon content 0.25% to make suitable for welding.  
If oxygen process used nitrogen content not more than 0.008%.

The full chemical content now given against three grades viz:—

	Grade 1	Grade 2	Grade 3
Carbon	0.25%	0 to 0.25%	0 to 0.25%
Copper	0	0.20 to 0.35%	0.35 to 0.5%
Sulphur	0.06%	0 to 0.06%	0 to 0.06%
Phosphorus	0.06%	0 to 0.06%	0 to 0.06%

The carbon content of 0.25% on material up to 2 inches thick, above to be agreed between maker and user.

Yield strength and ultimate strength as 1948.

This was the last issue of BS 15 being replaced by BS 4360: 1968.

Additional specifications for steel before 1968 included the following:—

#### BS 548 1934 High Tensile Structural Steel for Bridges and General Building Construction.

Steel processes were similar to BS 15 1930 (which excluded basic Bessemer process).

The chemical properties included

Carbon	maximum of 0.30%
Sulphur	maximum of 0.05%
Phosphorus	maximum of 0.05%
Copper	up to 0.6%

The mechanical properties included:—

Yield Strength	
Thickness up to and including $1\frac{1}{4}$ "	23 tons/sq.in.
Over $1\frac{1}{4}$ " up to and including $1\frac{3}{4}$ "	22 tons/sq.in.
Over $1\frac{3}{4}$ " up to and including $2\frac{1}{4}$ "	21 tons/sq.in.
Over $2\frac{1}{4}$ " up to and including $2\frac{3}{4}$ "	20 tons/sq.in.
Over $2\frac{3}{4}$ "	19 tons/sq.in.
Ultimate tensile strength	37 to 43 tons/sq.in.

#### War emergency amendment to BS 548 1942

Sulphur and Phosphorus allowance increased to 0.06%.

Note:— This specification was withdrawn in 1965.

#### BS 968 1941 (War emergency standard) High Tensile (Fusion Welding Quality) Structural Steel for Bridges and General Building Purposes.

The chemical properties included:

Carbon	maximum of 0.23%
Silicon	maximum of 0.35%
Manganese	maximum of 1.8%
Chromium (optional)	maximum of 1.0%
Nickel (optional)	maximum of 0.5%
Sulphur	maximum of 0.06%
Phosphorus	maximum of 0.06%
Copper	maximum of 0.6%

NB. Manganese plus Chromium not more than 2.0%.

The mechanical properties were as BS 548.

#### War time amendment No 1 to BS 968 1943

The chemical properties were divided into two classes viz:—

		Class (a)	Class (b)
Carbon	maximum of	0.23%	0.23%
Silicon	maximum of	0.35%	0.35%
Manganese	maximum of	1.8%	0.8%
Nickel	maximum of	0.5%	0.5%
Chromium	maximum of	0.35%	0.8%
Sulphur	maximum of	0.06%	0.06%
Phosphorus	maximum of	0.06%	0.06%
Copper	maximum of	0.6%	0.6%

Because chromium was in short supply the Class (b) steel only to be called up in exceptional circumstances.

The mechanical properties included:—

Material up to and including  $\frac{3}{4}$ " thick

Yield Strength	21 tons/sq.in.
Ultimate Tensile Strength	35 to 41 tons/sq.in.
Material over $\frac{3}{4}$ " thick	
Yield Strength	19 tons/sq.in.
Ultimate Tensile Strength	33 to 39 tons/sq.in.

#### BS 968 1962 High Tensile (Fusion Welding Quality) Structural Steel for Bridges or General Building Purposes.

A new steelmaking process produced steel with improved yield strength.

Chemical properties (ladle analysis)

Carbon	maximum 0.20% — 0.22% over $\frac{5}{8}$ " thick
Silicon	maximum 0.35% — increased to 0.5% in 1965

Manganese	maximum 1.5%	} Total not to exceed 1.6%
Chromium	maximum 0.5%	
Sulphur	maximum 0.05%	
Phosphorus	maximum 0.05%	

Mechanical properties —

Yield Strength

Thickness up to and including $\frac{5}{8}$ "	23 tons/sq.in.
over $\frac{5}{8}$ " up to and including $1\frac{1}{4}$ "	22.5 tons/sq.in.
over $1\frac{1}{4}$ " up to and including 2"	22 tons/sq.in.
Over 2" to be agreed	

Ultimate Tensile Strength 32 to 39 tons/sq.in.

This specification was also replaced by BS 4360 1968

#### BS4360 1968 Weldable Structural Steels

This was the first issue of a comprehensive specification covering steels previously specified in BS15 BS968 BS2762 and BS3706 but appreciably increasing the range of steels

Four groups of steels were included with ultimate tensile strength with a minimum of 26, 28, 32 and 36 tons/sq.inch and corresponding yield strengths.

The specification was also widened to include tolerance: on plates, tolerances on sections being covered elsewhere

Amendment Slip No 1 to BS4360 1968 was published in September 1969 and as well as correcting minor error: altered the number to BS4360 Part 1 Inch Units.

BS4360 Part 2 1969 Metric Units was issued without any technical alteration to Part 1.

#### BS4360 1972 Weldable Structural Steels

This revision to the specification cancelled the imperial version hence it reverted to a number without the addition of Part 1 or Part 2.

The scope of the specification was extended to include weathering steels and the whole format was altered and improved.