



Glossary of Terms  
Stainless Steel

**Alloy** A combination of two or more metals, or of metals and other elements. An alloy is formed by adding the 'alloying elements' to the 'parent' metal in the molten state. The parent metal usually accounts for more than 50% of the resultant mixture.

Stainless Steel is an alloy of Iron plus Chromium (minimum 10.5%) with a small amount of Carbon plus various other elements (such as Nickel, Molybdenum, Titanium, Manganese) depending upon the grade.

**Anneal, Annealing** A heat treatment cycle used to soften and restore ductility after cold working and to relieve internal stresses in a work piece. *Related terms: Solution Treatment, Stress Relieving*

**Anode** The electrode in an electrochemical, or corrosion, cell from which a current flows into the cell. In corrosion processes material is dissolved at the anode.

**Anodic Protection** Electrochemical corrosion protection, achieved by increasing the electrode potential of the steel.

**As-welded** Tubular products made by continuously welding formed strip that were not subject to a heat treatment such as annealing after welding.

**Austenite** A face centred cubic (FCC) phase found in all steels. In most carbon and low alloy steels it is present only above 760°C. In austenitic stainless steels their chemical composition stabilises austenite to room temperature and even cryogenic temperatures. Austenite is non-magnetic.

**Austenitic Stainless Steel** Stainless Steels that contain a minimum of 18% Chromium and sufficient Nickel, or a combination of Nickel, Manganese and Nitrogen, to stabilise the face centred cubic (FCC) phase austenite down to cryogenic temperatures – This phase is normally present only above 760°C in most steels, These steels are, except in very particular circumstances, non-magnetic and have good ductility but relatively high work hardening rates. They have excellent corrosion resistance to most environments, although susceptible to stress corrosion cracking (SCC) above 60°C. Pitting and crevice corrosion can occur in chloride environments except with Type/Grade 316 where the Molybdenum content inhibits, but cannot always fully prevent, these problems. They cannot be hardened by heat treatment - The mechanical properties can only be increased by cold working.

**Billet, Bloom** A rolled or forged semi-finished product intended for further working by re-rolling or forging. Billets are usually square with chamfered or radiused corners. *Related terms: Slab*

**Bright Annealing** Annealing performed in a furnace with an inert atmosphere so that no scale is formed and the resulting surface has a bright finish. *Related terms: Annealing*

**BSP, BSP Thread, Whitworth Thread** British Standard Pipe Thread, also called Whitworth Thread, with 14 threads per inch.

**Carbide** A compound formed when an element, usually a metal, combines with Carbon. The carbides of metals are usually very hard. Both Iron and Chromium readily form carbides – Chromium has the greater affinity so will form its carbide in preference to Iron. This is a significant disadvantage in stainless steels as any carbide formation depletes the amount of chromium available to form the protective oxide layer. This is one reason why stainless steels have very low Carbon

content (maximum 0.03% in low Carbon grades). *Related terms: Carbide, Inter-granular Corrosion, Sensitisation, Stabilised Grades*

**Carbide Precipitation** This occurs in an alloy when the thermal conditions and processing allow one or more of the constituents react with any available Carbon to form discrete particles within the microstructure. Usually this is undesirable in austenitic and ferritic stainless steels as chromium carbide is formed preferentially and compromises the corrosion resistance.

**Cast, Heat, Melt** These terms are used interchangeably for the product of a single melting or refining furnace charge. Occasionally, if the furnace contents are cast into a number of different forms, these may be called separate casts.

**Cathode** The electrode in an electrochemical cell, through which positive electric current leaves an electrolyte. The electrode reaction at a cathode is a reduction of ions or molecules in the electrolyte by electrons emitted from the cathode. In corrosion processes, reduction of dissolved oxygen and emission of hydrogen are two common reactions. The current flow causes positive ions to migrate towards the cathode.

**Cathodic Protection** Electrochemical corrosion protection achieved by lowering the electrode potential.

**Cold Drawing** Drawing hollow or solid products through a hardened steel or tungsten carbide die at room temperature. Cold drawing reduces the O.D. or wall thickness, or both. It produces smooth surface finishes and develops closer tolerances. Cold drawing increases hardness and mechanical properties. In welded hollow products it promotes weld area recrystallisation during subsequent annealing. Cold drawing of hollow sections is usually done with a mandrel in the bore (drawn over mandrel).

**Cold Rolling** Passing sheet or strip at room temperature between a pair of rotating rolls. The reduction in thickness may be very light, as in the finishing process applied to hot rolled sheets, or heavy as in the cold rolling of narrow strip. Cold rolling improves surface finish, increases hardness and mechanical properties and develops tighter dimensional tolerances.

**Cold Working** Changing the shape, dimensions, mechanical properties and surface finish of a work-piece by mechanical deformation at room temperature. It may be accomplished by rolling, forging drawing, pressing, forming, bending, swaging, etc.

**Concentricity** In tubular products this describes how closely the centres of the two circles that respectively describe the outside diameter and bore coincide. The separation of these two centres causes variation in wall thickness around the tube and eccentricity. *Related terms: Eccentricity*

**Corrosion** Degradation of a material by chemical or electrochemical reaction with its immediate environment.

**Corrosion Fatigue** Cracking, possibly initiated and certainly accelerated, in a work-piece subjected to alternating or cyclic stresses in the presence of a corrosive medium. It will cause premature, often unexpected, failure. *Related terms: Fatigue*

**Corrosion Product** The residue, or product, that is formed when a corrosion reaction occurs.

**Creep** The tendency of a metal to flow or deform permanently under an applied load that is lower than its yield point. It is time and temperature dependent, the rate always increases with temperature.

**Crevice Corrosion** Localised corrosion that occurs in narrow crevices where stagnant, non-aerated, liquid can accumulate. It is a particular problem with alloys, such as stainless steels, that rely on a passive film to protect them as these films are unstable in the presence of high concentrations of Chloride Cl<sup>-</sup> and Hydrogen H<sup>+</sup> ions. The lack of aeration prevents the passive film from regenerating so attack can proceed. Good design is the key to preventing crevice corrosion.

**Deformation** The change in dimensions and/or shape of a material or work-piece due to applied forces. Deformation can be elastic or permanent. Elastic deformation happens when the work-piece returns to its previous dimensions or shape when an applied load below the yield point is removed. Loads above the yield point cause permanent deformation when the change in shape or dimension is not reversed when the load is removed. *Related terms: Yield Point*

**Descaling** The removal of surface scale from hot worked or heat treated products by acid pickling or mechanical means such as grit or shot blasting. Caution is advised if stainless steels are mechanically descaled as blasting media can be embedded in the surface and act as corrosion initiation sites.

It can also refer to the removal of scale formed during hot working processes by the application of water, coal dust, brushwood, oil, etc.

**Ductility** The ability of a metal or alloy to deform without cracking or failing under tensile loads. Materials with low ductility exhibit brittle behaviour and fail at more modest loads. Ductility typically decreases at lower temperatures and most materials will become brittle below a certain temperature called the Ductile-Brittle Transition.

**Duplex Stainless Steels** Duplex stainless steels have a two-phase microstructure consisting of grains of ferritic and austenitic stainless steel. The proportions are approximately 50% of each phase.

Duplex stainless steels:

- are stronger, by a factor of up to 2, than the austenitic and ferritic grades
- are tougher and more ductile than the ferritic grades
- have better stress corrosion resistance than the austenitic grades.

*Related terms: Ferritic Stainless Steels, Austenite, Ferrite, Austenitic Stainless Steel*

**Eccentricity** This occurs in tubular products when the centres of the circles that describe the outside diameter and the bore do not coincide. It manifests itself as a variation in wall thickness around the tube. *Related terms: Concentricity*

**Electrochemical Corrosion** Corrosion, or metal dissolution, caused by the reaction  $M \rightarrow M^{+} + e^{-}$  at the anode.

**Electrochemical Protection** The prevention of corrosion in an electrolyte by manipulation of the electrode potential of steel.

**Electrode** There are two electrodes in an electrochemical or corrosion cell, the anode and cathode. They are the electron conductors, through which electrons can enter and leave an electrolyte permitting reactions such as dissolution at the anode and deposition at the cathode to occur.

**Electrode Potential** The potential difference in a solution between the test electrode and a reference electrode, e.g. a saturated calomel electrode.

**Electrode Reaction** A chemical half or partial reaction that occurs at an electrode surface. It is called a half or partial reaction as only either the oxidation or the reduction part of the overall cell reaction occurs at any one electrode.

**Electrolyte** An electrically conducting medium, such as a salt solution or a molten salt through which an electric current is transported by ions.

**Electrolytic Polishing** An electrochemical method of imparting brilliance to the surface of a metal. The work-piece is made the anode and by careful selection of electrolyte and processing parameters a thin, uniform, surface layer is removed. It may be regarded as the opposite of electro plating.

**Extrusion** The process in which a preheated billet is constrained within a strong container in a press and then pushed by a ram through a shaped die. The product, or extrusion, has the shape of the die along its whole length. Although some simple shapes are extruded in Stainless Steel, this process is most commonly used for Aluminium.

**Fatigue** The localised, progressive and permanent damage or structural change that occurs to a material subjected to repeated, fluctuating, loads that are lower, often much lower, than the static yield strength of the material. Good design is the key to minimising or mitigating fatigue problems.

**Ferrite** A body centred cubic (BCC) phase found in most carbon and low alloy steels. It is magnetic and is why most steels themselves are magnetic. It transforms above 760°C into the non-magnetic, face centred cubic (FCC) phase austenite.

**Ferritic Stainless Steels** Ferritic stainless steels are iron chromium alloys that contain a minimum of around 10.5% Chromium. They have a body centred cubic (BCC) ferrite microstructure. They contain little or no Nickel and hence are less expensive than austenitic stainless steels. They generally have somewhat better mechanical properties than the austenitic grades but have inferior corrosion resistance except, importantly, they do have superior stress corrosion cracking resistance.

**Free Machining Stainless Steels** Many standard compositions of stainless also have a “free machining” variant with enhanced machinability. This is achieved by adding small amounts of certain alloying elements to the steel during melting. These added elements produce inclusions in the microstructure that act as chip breakers and can also lubricate the cutting action, increasing cutting speeds by approximately 75% on stainless steel. Sulphur is particularly good for heavy machining because of the large and fairly continuous inclusions. Selenium additions have also been used, especially in the USA, but are not available from European suppliers.

**General Corrosion** Corrosion in which the whole exposed surface is attacked by the corrosive medium at a broadly uniform rate. All corrosion is deleterious but general corrosion is more predictable and may be readily monitored and so managed. This is in contrast to the localised forms of attack such as pitting corrosion, crevice corrosion, inter-granular corrosion and stress corrosion cracking where the attack is very localised and can be

intense causing unexpected, premature, failure. *Related terms: Pitting Corrosion, Crevice Corrosion, Inter-granular Corrosion, Stress Corrosion Cracking*

**Grain Size** A measure of the area or volume of grains (crystals) in polycrystalline material.

Grain size is reported in a number of ways:-

- Number of grains per unit of area or volume,
- Average diameter,
- As a grain size number derived from area measurements and comparison with a standard chart.

**Grain Structure** The shape, size, distribution and disposition of metal crystals and their crystal structure within a solid metal or alloy.

**Guillotining** The cutting of plate, sheet or strip to size or length using guillotine shears. For the guillotining of stainless steels, as compared to mild/carbon steels, the shearing blades need to be sharper and have a reduced clearance.

**Heat Exchanger** A device that facilitates the efficient transfer of heat energy from one fluid to another.

The fluids are often kept apart by solid barriers, either the walls of tubes, or the formed sheets of clam shell type heat exchangers. Typically a heat exchanger will have many tubes or clam shells assembled in either bundles or stacks connected by manifolds. One fluid flows outside the assembly whilst the other flows inside.

**Hollow, Tube Hollow** Interchangeable terms for a hot finished semi-finished product from either an extrusion or piercing process. They are the feedstock for cold drawing or cold reduced tube production.

**Huey Test** A corrosion test for evaluating the inter-granular corrosion resistance of stainless steels by boiling in refluxed 65% nitric acid for five consecutive 48-hour periods, each period starting with fresh acid.

**Immunity** In corrosion terms a thermodynamically stable condition. In other words there is no corrosion attack.

**Inclusion** Non-metallic particles within the microstructure. Some, sulphides and selenides, are deliberately formed in the metal during its manufacture, others are an inevitable result of melting and casting. Good practice dictates that the second type be kept to minimal levels as they are deleterious. *Related terms: Free Machining Stainless Steels*

**Inter-granular Corrosion** Preferential, concentrated, corrosion attack at the grain boundaries. It is highly deleterious and usually caused by the precipitation of carbide particles in the grain boundaries after welding or incorrect thermal processing. *Related terms: Sensitisation, Sensitised, Weld Decay*

**Localised Corrosion** A general term for, often high rate, corrosion attack affecting restricted, specific, parts of the surface. *Related terms: Pitting Corrosion, Crevice Corrosion, Stress Corrosion Cracking*

**Manipulation Tests** Tests performed on full section or sector specimens to evaluate the ability of the work-piece to withstand possibly severe manipulation. Crush, flare, bend, flare and flange, flatten, reverse flatten, reverse bend and Van Stone flange tests may be used.

**Martensite** A non-equilibrium, hard, phase that can exist in some steels. It is formed if a steel with sufficient Carbon content, usually above 0.35 to 0.4%, is heated into the austenite temperature range above 760°C, held at that temperature for a period and then quenched rapidly to room temperature. The Carbon, which is present in the lower temperature ferrite phase as carbides, dissolves in the austenite and, on quenching is trapped in, and strains, the lattice increasing the hardness. This reaction is the mechanism by which all Carbon and most alloy steels are hardened.

**Martensitic Stainless Steels** Martensitic grades of stainless steel are corrosion resistant, although less so than the austenitic grades, but can be hardened by heat treatment.

They are straight Chromium steels containing little or no Nickel. They are magnetic and are mainly used where hardness, strength, and wear resistance along with corrosion resistance are required. Typical applications include cutlery, surgical instruments, fasteners, valves, pumps, springs and components for food processing.

**Mechanical Properties** The properties of a material that reveal its elastic or plastic behaviour under an applied load. They govern its suitability for any mechanical application. The usual properties considered are modulus of elasticity, yield or 0.2%/1.0% proof strength, ultimate tensile strength, elongation and fatigue limit. *Related terms: Tensile Strength*

**Mill Coil** The hot rolled strip product of a single cast billet or slab.

**Mill Edge** The edge produced when sheet or strip is rolled on the flat surfaces only.

**Moneypenny-Strauss Test** A corrosion test that uses copper sulphate solution containing sulphuric acid to determine the susceptibility to inter-granular corrosion of stainless steel.

**Non-Destructive Test** Any test method, including eddy current, ultrasonic and dye-penetrant, used to detect surface and subsurface defects without damaging or destroying the product.

**Orange Peel** The surface roughening of sheet or strip that develops on subsequent cold deformation if the grain size is too coarse. The appearance is similar to the skin of an orange.

**Ovality** Any difference between the maximum and minimum outside diameters of a tube.

**Oxide Film, Passive Film** Generally it is the oxide layer spontaneously formed on the surface of a metal or alloy by its reaction with the oxygen in the atmosphere. Specifically in stainless steels it is the protective chromium oxide film that forms on alloys containing more than 10.5% chromium that is impervious to many corroding media. It is why stainless steels are "stainless".

**Passivation** Treatment in oxidising acids to remove light surface contamination by iron based materials left by machining or wire brushing and to enhance the naturally occurring chromium oxide film. Any residual contaminants can act as sites for corrosion cells. Heavy contamination or other contaminants (mill scale, etc.) should be removed by acid pickling before passivation.

**Phase** Any constituent part of an alloy, e.g. elemental metal, solid solution, or inter-metallic compound, that is physically and chemically homogeneous and distinct within the microstructure.

**Physical Properties** The intrinsic properties of a material, e.g. density, electrical conductivity, thermal conductivity, thermal expansion that govern its behaviour and potential for use in an application.

**Pickling, Acid Pickling** The removal, by immersion in a solution containing nitric and hydrofluoric acids, of the scale left after hot working or annealing. It leaves a matt grey finish. *Related terms: Passivation*

**Pinch Passing, Skin Passing** A cold rolling pass, with minimal reduction of thickness, of annealed sheet or strip. It reduces the tendency to kinks, flats and stretcher strains on subsequent manipulation. Flat material so treated is described as 'skin passed', 'pinch passed', 'non-kinking', 'non-flattening' or 'killed'. The material will also be brighter and have closer tolerances.

**Pipe, Pipes** Tubular products made to Nominal Bore and Schedule Wall Thickness dimensions specified by ANSI/ASTM standards. Sizes specifically for Stainless Steel Pipe are to ANSI B36.19 where the Schedule Wall Thickness has an S after the number to denote Stainless – e.g. Schedule 40S. Stainless Steel Pipe can also be made to the ANSAI B36.10 sizes intended for carbon/mild/alloy steels where the schedule has no S after it.

**Pit** A corroded hollow in a metal surface, caused by localised corrosion (pitting).

**Pitting Corrosion** Concentrated, localised, corrosion attack that can reach considerable depths and cause premature failure.

**Precipitation Hardening Stainless Steels** Precipitation hardening stainless steels are Iron, Nickel, Chromium alloys that also contain precipitation hardening additions such as Aluminium, Titanium, Copper, Niobium and Molybdenum. They offer higher mechanical properties than the austenitic grades, with lower toughness and do have comparable corrosion resistance.

**Pressure Test** A hydraulic or pneumatic test for tubes to prove that the material can withstand a specified pressure for a specified time without leakage or rupture.

**Proof Strength** The tensile load required to extend a sample of material by 0.2% (RP0.2) or 1% (RP1.0). Measured in Newtons per square mm (Nmm<sup>2</sup>) or Mega-Pascals (MPa).

**Recrystallisation** The change in crystal structure of a cold worked metal that occurs when heated through a specific temperature range.

**Roll Marks** Periodic surface marks on a work-piece caused by imperfections on the surface of a roll.

**Rolled-in Scale** A surface defect caused by patches of scale that were pressed into the surface of the work-piece during rolling.

**Roller Levelling** The process of flattening sheet metal by passing it through a roll train of staggered rolls. Levelling is achieved by precisely bending metal strip back and forth as it is passed through a the series of small-diameter offset rolls.

**Sensitisation** Sensitisation occurs because Chromium has a higher affinity for Carbon than does Iron. Welding and some heating cycles provide the thermal energy for chromium carbides form in preference and these precipitate within the microstructure. This process causes the steel to become susceptible to corrosion as the matrix areas around the carbide are depleted in Chromium and cannot form the protective oxide film. *Related terms: Carbide, Inter-granular Corrosion, Sensitised, Stabilised Grades*

**Sensitised** This describes the condition of a stainless steel that, having been welded or otherwise thermally processed, now has chromium carbide particles present in the grain boundaries. In this condition the steel becomes susceptible to corrosion as the matrix areas around the carbide are depleted in chromium and cannot form the protective oxide film. *Related terms: Carbide, Stabilised Grades, Inter-granular Corrosion, Sensitisation*

**Sheared Edges** The cut edges that are produced when a wide sheet or coil is sheared or slit, by rotary cutters or a guillotine, into narrower widths/lengths.

**Shearing** The operation of cutting sheet or strip to the required size with a guillotine.

**Sinking, Sink Drawing** The cold drawing of a tube without a mandrel in the bore to control bore dimensions. It enables closer tolerances to be achieved on the outside diameter and increases mechanical properties. *Related terms: Cold Drawing*

**Slab** A hot rolled or forged primary feedstock for rolling or forging. The cross-section is rectangular, typically with a width more than twice the thickness.

**Slitting** The operation of continuously cutting a wide coil of strip into a narrower strips by rotary cutters. The narrower strips are usually re-coiled after slitting.

**Solid Solution** The name given to an alloy, e.g. Iron Chromium, phase which appears, in the microstructure, to be one material. In Iron Chromium solid solutions the Iron is the major constituent and the Chromium, the "alloying element", atoms occupy places within the iron lattice and modify its properties. Solid solutions are fundamental in metallurgy. Pure metals have definite melting and freezing points, solid solutions have a melting and freezing range.

**Solution Treatment, Solution Annealing** A heat treatment process to dissolve precipitated carbides followed by quenching or rapid cooling to retain the carbon into solid solution. This restores the chromium content of the matrix and hence the corrosion resistance. *Related terms: Sensitisation, Inter-granular Corrosion*

**Springback, Spring Back** The tendency of a metal work-piece that has been deformed to not stay exactly in the shape to which is has been manipulated, but instead to spring back a little. Stainless steels spring back more than mild/carbon/alloy steels and thus need to be over-bent to a greater degree.

**Stabilised Grades** Stainless Steels whose composition has been modified by additions of Titanium or Niobium to overcome sensitisation and its consequent problems. The mechanism is that these elements have a higher affinity for Carbon than does Chromium so their Carbides form in preference. The Chromium content of the matrix is

therefore not reduced so its corrosion resistance is retained.

**Stainless Steel** Stainless Steel is the term used to describe an extremely versatile family of engineering materials, which are used primarily for their corrosion and heat resistant properties.

All Stainless Steels are alloys of Iron and Chromium, with a minimum Chromium content of about 10.5%, and with varying Carbon content. This Chromium content develops a self-repairing Chromium Oxide surface film which prevents the surface rusting typical of many other types of steel.

Higher Chromium content will further enhance corrosion resistance and some stainless grades also contain other alloying elements including Nickel and Molybdenum.

Most commonly you will see reference to "austenitic stainless steel", "ferritic stainless steel", "martensitic stainless steel", "duplex stainless steel" and "precipitation hardening stainless steel".

**Stainless Steel Designations** Stainless steels are governed by a wide range of Proprietary, National, European and International standards. This range of standards has led over time to the use of a number of designation systems.

Many people are familiar, and comfortable with, the 3-digit system that originated in the USA and was adopted into former British Standards in which

2xx and 3xx designations were applied to austenitic grades (e.g. 201, 304, 304L)

4xx designations were applied to ferritic and martensitic grades (e.g. 410, 430)

In Europe these have now been replaced by BSEN numbers of the type 1.4xxx (e.g. 1.4301) although the American 3-digit system is still widely used.

**Straightness Tolerance, Camber** The permitted deviation from a true straight line, or bow, within a specified length of a product.

The usual methods to determine such a deviation are with a straight edge and dial gauge or a flat plate and feeler gauges.

**Stress** Stress is the measure of the forces acting within a deformable body or work-piece when it is under load. These forces will seek to resist any permanent change in shape of the body or work-piece until the yield point strength of the material has been exceeded.

**Stress Corrosion Cracking** Stress Corrosion Cracking (SCC) is the rapid and often abrupt failure of a normally ductile metal or alloy caused by residual or other stresses in the work-piece and in the presence of specific corroding agents. It is temperature dependent. Austenitic stainless steels are susceptible in chloride environments temperatures above 60°C.

Ferritic grades are immune to this form of attack.

**Stress Relieving** An annealing heat treatment used to reduce internal stresses in steel after fabrication. *Related terms: Annealing*

**Swaging** A cold forging process in which the dimensions of a tube are altered by blows delivered rapidly against its outside diameter. An internal mandrel is usually used.

**Tolerance** The permissible limit, or limits, of variation to a specified parameter such as a dimension or weight per unit length usually expressed as 'plus' or 'minus' value on that quantity.

**Ultimate Tensile Strength, Tensile Strength** The maximum load, in tension, that a material can withstand before breaking. It is calculated as a breaking load for a standard cross section area

and measured in Newtons per square mm (Nmm<sup>2</sup>) or Mega-Pascals (MPa).

**Weld Decay** This describes the condition of a stainless steel that, having been welded or otherwise thermally processed, now has chromium carbide particles present in the grain boundaries. In this condition the steel becomes susceptible to corrosion as the matrix areas around the carbide are depleted in chromium and cannot form the protective oxide film.

**Yield Point, Yield Strength** The tensile load above which a material ceases to behave elastically and will undergo permanent deformation. Measured in Newtons per square mm (Nmm<sup>2</sup>) or Mega-Pascals (MPa).

## CONTACT

**Address:** Please make contact directly with your local service centre, which can be found via the Locations page of our web site  
**Web:** [www.aalco.co.uk](http://www.aalco.co.uk)

## REVISION HISTORY

**Generated** 26 July 2012

## DISCLAIMER

This Data is indicative only and must not be seen as a substitute for the full specification from which it is drawn. In particular, the mechanical property requirements vary widely with temper, product and product dimensions. The information is based on our present knowledge and is given in good faith. However, no liability will be accepted by the Company in respect of any action taken by any third party in reliance thereon.

As the products detailed may be used for a wide variety of purposes and as the Company has no control over their use; the Company specifically excludes all conditions or warranties expressed or implied by statute or otherwise as to dimensions, properties and/or fitness for any particular purpose.

Any advice given by the Company to any third party is given for that party's assistance only and without liability on the part of the Company. Any contract between the Company and a customer will be subject to the company's Conditions of Sale. The extent of the Company's liabilities to any customer is clearly set out in those Conditions; a copy of which is available on request.