

GLOSSARY

Term	Definition
304	Stainless Steel grade UNS S30400. The most common form of stainless steel used in tank and pressure vessel manufacture.
316	Stainless Steel grade UNS S31600. 316 offers a higher corrosion resistance than grade 304 with higher content of nickel. Often described as marine grade due to its higher corrosion resistance.
150# RF Flange	The 150# is a number used to identify the pressure rating of the flange (In this case 150 lbs). And the 'RF' identifies the face of the flange which is a Raised Face (RF) in this case. These flanges come in a number of different pressure ratings.
304L/316L	Slightly different grades of 304 and 316 stainless steel that have lower levels of carbon content and is used in applications where sensitisation corrosion might occur in welded components.
Agitator	A mixer or stirrer fitted to a tank in order to move or blend the contents in the tank. This can be done smoothly or vigorously to suit the required product and process.
ANSI B16.5	American National Standards Institute - Pipe flanges and flanged fittings.
API650	American Petroleum Institute - Welded tanks for oil storage.
AS1210	Australian Standard - Pressure vessels.
AS1657	Australian Standard - Fixed platforms, walkways, stairways and ladders - Design, construction and installation.
AS1692	Australian Standard - Steel tanks for flammable and combustible liquids.
AS2129	Australian Standard - Flanges for pipes, valves & fittings.
AS3992	Australian Standard - Pressure equipment - Welding and brazing qualification.
AS4100	Australian Standard - Steel structures.

AS4343	Australian Standard - Pressure equipment - Hazard levels.
AutoCAD	Autodesk 2D drafting software.
BOM	Bill Of Materials; this is a compiled list of all materials required in the manufacture of a tank or vessel.
BSM Union	BSM (British Standard Milk) Unions are sanitary and hygienic stainless steel tube couplings which consist of a nut, liner male part and o-ring. Our tank nozzles will often be a length of tube with a BSM male part welded to the end, to enable connecting the tank to a tube line in the overall process. BSM fittings are tightly fastened and require tools to remove and retighten.
CIP	Clean In Place
Cladding - Hard	The outer casing of a tank or vessel that is made from material generally <1.2mm and of a welded construction. This is often of a stainless steel construction for sanitary environments.
Cladding - Soft	The outer casing of a tank or vessel that is generally made from >1.0mm material and of a riveted construction. The material used can be carbon steel, aluminium or stainless steel of various profiles to suit the given application.
Cone	A conical end of a tank.
Crown Radius	The fixed radius of a dished head or dished end.
Dimple Jacket (Heat Exchange)	A method of heat transfer where a thin, stainless steel skin is formed and affixed to the external of a tank shell with spot welds located in a regular "dimple" pattern, in order to create cavity between the second skin and the external tank wall. Heating or cooling medium can then be pumped through this cavity to maintain the temperature of the product within the tank.
Dished Head or End	End cap on a cylindrically shaped vessel incorporating a dish with a fixed radius. Commonly used where the design requires more strength than can be achieved with a cone or flat end. These are formed Furphy Engineering by cold pressing (dishing) a circular plate, before roll forming a "knuckle" at the outside perimeter to enable to join and butt weld to a vessel strake.
Duplex Steel	Stainless steel that has the properties of both austenitic and ferritic steels. Most common is 2205 grade (UNS S31803 and/or UNS S32205). High Chromium and Molybdenum contents give excellent corrosion resistance and the microstructure gives high strength and resistance to stress corrosion cracking.
DXF	Drawing Exchange Format.

Fitting	Any nozzle, protrusion or opening in a tank or vessel. These will generally house or connect to instrumentation or pipe work and facilitate the operation of the vessel.
Flange	A plate or ring used to form a rim at the end of a pipe when fastened or welded to the pipe. This is used for bolting or connecting various fittings or other pipes.
GA	General Arrangement (Engineering Drawing).
Galvanizing	A surface protection coating applied to carbon steel to provide long term corrosion protection. This process involves immersion of steel into molten zinc to produce a coating of zinc-iron alloy.
Gantt Chart	A chart with a series of horizontal lines used to plan and display the amount of production completed over time in relation to the amount planned for the project.
Half Pipe Jacket	An external heat exchanger in which a half (cross-section) of pipe is rolled around and welded to the external tank surface. This is then used to pump a heating medium through to control the temperature of the product within the vessel. This method is used when large volume of medium is present or when a substantial change in temperature is required.
Hydrostatic Test	This is a method of testing our stainless steel pressure vessels for both strength and leaks. This is conducted by filling the vessels with water to a level to achieve a calculated test pressure as per AS1210.
Industries	Varies areas of commercial activity. Furphy Engineering manufacture stainless steel tanks for a number of industries including; Dairy, Brewing, Chemical, Energy, Mining, Industrial, Food & Beverage, Pulp & Paper, Water & Environment, Wine, Galvanizing, Pharmaceutical
Insulation	Used to maintain temperature of a product within a tank (or to prevent hot external surfaces). The type of insulation used is dependent on the product within the tank. Rockwool is used for hot products and polystyrene or spray foam is used for cool products. Various thicknesses are available for each insulation type to meet process requirements.
Inventor	Autodesk 3D modelling software used to model our stainless steel tanks and pressure vessels prior to manufacture.
ISO 9001	Quality Management Systems Accreditation Furphy Engineering is ISO 9001 accredited.
ITP	Inspection & Test Plan, This is a quality assurance and control document used to specify requirements and record results of all inspections and tests throughout the manufacture of our stainless steel tanks and vessels.

Keyhole Plasma Arc Welding	(KPAW) is an arc welding process used extensively by Furphy Engineering to give x-ray quality results, uniform weld appearance and excellent efficiency. It is similar to gas tungsten arc welding (GTAW), the electric arc is formed between an electrode (which is usually but not always made of sintered tungsten) and the work piece.
Knuckle	The rolled edge formed in a cone, dished or flat end. The purpose of this is for added strength and distribution of forces. It also enables the end to butt against the vessel strake for circumferential welding.
Laser Welded Dimple Jackets	A type of external heat exchanger which is used extensively by Furphy Engineering producing a high quality, versatile, yet cost effective product. A thin, second stainless steel skin is laser welded to the external walls, cones or heads of a stainless steel tank, in a dimple pattern. The jacket is then pressurised to deform the second skin and create a cavity, which a heating or cooling medium can be pumped through to control the temperature of the product within the tank. This method is commonly used when maintaining the product temperature is a priority.
MDR	Manufacturer's Data Report. This is a report provided to the client after the supply of a stainless steel tank or vessel, containing any required drawings and manufacturing & testing documentation such as ITP's and hydrostatic test reports.
MIG	Metal Inert Gas welding or Metal Active Gas welding, is a welding process in which an electric arc forms between a consumable wire electrode and the workpiece metal. This form of welding is the most common manual industrial welding process used today
MIG Welding	Metal Inert Gas welding, also known as Gas Metal Arc Welding (GMAW), is an arc welding process which uses a consumable wire electrode to produce the weld.
NB	Nominal Bore (NB) is one of two numbers used for specifying steel pipe size (The other being Schedule). Nominal Bore is used for identifying the nominal outside diameter of the pipe, and has a constant dimension for each given size.
Nozzle	A nozzle refers to any section of tube, pipe and other fitting on our stainless steel tanks. Nozzle numbers are used to identify their positions and services. These can include process lines including CIP, inlets or outlets, overflows, instrumentation connections such as temperature and pressure transmitters, and more.
Pickling	Pickling is the removal of any high temperature scale and any adjacent low chromium layer of metal from the surface of stainless steel by chemical means.
Pipe Flange	A pipe flange is a disc, collar or ring that attaches to pipe with the purpose of providing increased support for strength, blocking off a pipeline or implementing the attachment of more items. They are usually welded or screwed to the pipe end and are connected with bolts.

Planisher	A machine used to flatten a welded seam to prepare it for automated polishing and to relieve residual stresses from the welding process.
Pressure Vessel	A tank designed to hold liquids or gases at a pressure which is substantially different from the ambient pressure. Furphy Engineering design and manufacture stainless steel pressure vessels with assistance from internal design engineers in accordance with AS 1210.
RFQ	Request For Quote. This will be provided by a potential client who requires a price, lead time and/or details for Furphy Engineering to design, fabricate, deliver and/or install stainless steel tanks and vessels. RFQ's are received in a variety of detail and sizes.
SCH 40S	The schedule (SCH) is one of two numbers used for specifying steel pipe size, (The other being Nominal Bore). It is a non-dimensional number used for identifying the wall thickness of steel pipe. 40S is the equivalent rating to the standard (STD) wall thickness. Other schedule sizes include 10S, 40S, 80S and 160S; an increase in schedule relates to an increase in wall thickness. The suffix "S" after the number is always used for stainless steel to differentiate from carbon steel.
Skirt	A type of tank support (which resembles a skirt). This is a rolled piece of steel with a base ring which is welded to the bottom of a tank or vessel. Skirts are more commonly used for supporting larger silos or pressure vessels due to their continuous profile which distributes loads on the vessel and provides added support strength.
Spray Foam Insulation	A type of polyurethane insulation which will achieve a vapour seal, usually applied by spraying onto the surface of a tank with specialised equipment.
Spud	Pressure transducer – a fitting located in the lower section of a tank to relay pressure information that can be correlated to give information about the level of fluid inside the tank.
Stainless Steel	A type of steel containing chromium, which properties provide resistance to tarnishing and rust. Commonly used in tank and vessel manufacture for sanitary applications or as an alternative to fabricating and coating a carbon steel tank.
Strake	A section of a tank made by rolling a stainless steel sheet or length of coil into a cylinder and welding the longitudinal seam joint.
Straking	Joining of two strakes by welding together during stainless steel tank fabrication.
Table D or E	Types of flat plate flanges within AS2129, with Table E being the most popular for applications with water.

Tank Trailer (or Sticks Trailer).	Special trailer designed to transport our over dimensional tanks and vessels.
Tanks	Containers that hold liquids, gases or solids which require either short or long term storage and/or processing.
TIG Welding	Tungsten Inert Gas welding, also known as Gas Tungsten Arc welding (GTAW), is an arc welding process which uses a non-consumable tungsten electrode to produce the weld. Most commonly used to weld thin sections of non-ferrous metals such as stainless steel, aluminium, magnesium and copper alloys
Torispherical Head	A common type of dished head where the fixed radius of both the dish and the knuckle are based on a percentage of the diameter in order to provide strength.
Transport cradles	Cradles which are often custom fabricated and used to lay a tank or vessel on a transport vehicle so as to support and eliminate damage.
Tri Clover Union	Tri clover unions are sanitary and hygienic stainless steel tube couplings which consist of 2 ferrules, an o-ring and a clamp. Our tank nozzles will often be a length of tube with a tri clover ferrule welded to the end to enable connecting the tank to a tube line in the overall process. Tri clover clamps do not require tools to remove and reclamp.