REVISS SERVICES

SUPPLY SPECIFICATION
LOW CARBON STAINLESS STEELS

Design Approval	D W Rogers D W Rogers ..... (signature) date: 11/07/00
Management Approval	D A Coppell ..... (signature) date: 18/7/2000
Quality System Approval	B S Patel Bharat S Patel ..... (signature) date: 20/7/2000
Controlled file number	

1.0 PURPOSE AND SCOPE

This purpose of this document is to define the essential physical and chemical properties of the group of materials generally known as low carbon, austenitic stainless steels. It also provides guidance for manufacturers in the selection and use of these materials. It applies only to the raw material forms of sheet, plate, strip, rod, bar, tube and pipe. It does not apply to proprietary items such as fasteners and mesh.

2.0 REFERENCES

- SS 028: current issue: Quality assurance requirements for controlled purchases.
- BS 970: Part 3: 1991: Bright bars for general engineering purposes.
- BS 1449: Part 2: 1983: Specification for stainless and heat resisting steel plate, sheet and strip.
- BS 1501: Part 3: 1990: Specification for corrosion and heat resisting steels: plates, sheet and strip.
- BS 3605: Pt 1: 1991: Specification for seamless tubes.
- BS 3605: Pt 2: 1992: Specification for longitudinally welded tubes.
- BS EN ISO 3651-2: 1998: Ferritic, austenitic, and ferritic-austenitic (duplex) stainless steels. Corrosion tests in media containing sulphuric acid.

3.0 DEFINITIONS

- Purchaser : REVISS Services (UK) Ltd.
- Supplier or Manufacturer : Organisation named in the purchase order.

4.0 QUALITY ASSURANCE

- General requirements are detailed in SS 028.
- See purchase order and any specifications referenced therein for any supplementary requirements.

5.0 GENERAL

- The purchase order takes precedence over the manufacturing drawing.
- The manufacturing drawing takes precedence over this specification.
- The manufacturing drawing will specify the principle dimension(s) and form of the raw material and any additional requirements.

6.0 SPECIFICATION

6.1 STANDARDS

The table lists acceptable UK standards and a selection of German and US equivalents current at the time of writing:

Material Form	UK	German	USA
Sheet and Strip	BS 1449, Pt 1	DIN 17440 DIN 17441	ASTM A240
Plate	BS 1449, Pt 2	DIN 17440	ASTM A240

Material Form	UK	German	USA
	BS 1501, Pt 3		
Rod and Bar	BS 970, Pt 3	-	ASTM A479
Tube	BS 3605	DIN 50049 3.1.B	ASTM A269 ASTM A213 ASTM A511
Pipe	BS 3605	DIN 500493.1.B	ASTM A312 ASTM A376 ASTM A358 ASME SA312

6.2 MATERIAL GRADES

The table lists acceptable UK grades and a selection of equivalent grades current at the time of writing:

UK (BS 970)	French (AFNOR)	German (WNr)	Italian	Japanese (JIS)	Swedish (SIS)	USA (SAE)
304S11	Z2CN18.10	1.4306	X2CrNi 18 11	SUS304L	14 23 52	304L
316S11 316S13	Z2CND17.12	1.4404 1.4435	X2CrNiMo 17 12	SUS316L	14 23 53 14 23 48	316L

6.3 INTERGRANULAR CORROSION

All materials must be capable of passing the intergranular corrosion test specified in BS EN ISO 3651-2, Method A, or equivalent.

6.4 OTHER STANDARDS AND GRADES

Materials conforming to other equivalent national or international standards may be used subject to written permission from the Purchaser. Such materials shall meet the following chemical and mechanical requirements and the intergranular corrosion test specified above:

6.4.1 304L

Composition (% maximum unless stated)								Strength (min MPa)		Elongation
C	Si	Mn	P	S	Cr	Mo	Ni	Tensile	0.2% Strain	$5.65\sqrt{So}^*$
0.030	1.00	2.00	0.045	0.030	20.0 17.0	-	13.0 8.0	480	173	40% min

* or 50 mm gauge length (So = cross-sectional area, thus length is equivalent to 5D on cylindrical test piece).

6.4.2 316L

Composition (% maximum unless stated)								Strength (min MPa)		Elongation
C	Si	Mn	P	S	Cr	Mo	Ni	Tensile	0.2% Strain	$5.65\sqrt{So}^*$
0.030	1.00	2.00	0.045	0.030	18.5 16.5	3.0 2.0	15.0 10.0	480	173	40% min

7.0 RAW MATERIAL SIZES

The manufacturing drawing will state the stock material sizes in one system of units. The manufacturer may deviate from the specification in two instances:

Machined items:

Where the primary dimension (thickness, width or diameter) is subsequently machined down the size may be taken as a guide only. The manufacturer may use any appropriate stock size.

Imperial/metric parity:

Where the item is not machined, and materials are not available in the unit system specified, the manufacturer may use the following equivalent sizes. It is the manufacturer's responsibility to ensure that all mating dimensions are adjusted so that fits and clearances are maintained.

Imperial (inch)	1/8	3/16	1/4	3/8	1/2	5/8	3/4	7/8	1.0	1.5	2.0
Metric (mm)	3	5	6	10	12	16	20	22	25	40	50

Imperial (swg)	22	20	18	16	14	12	10	8	6	4	2
Metric (mm)	0.75	1	1.25	1.5	2	2.5	3.5	4	5	6	7

8.0 DOCUMENTATION

The Supplier shall provide certified evidence from the manufacturer or from his own testing that the chemical composition and mechanical properties meet this specification or one of the equivalents cited previously. All documentation shall reference the original cast or heat number.