

PRODUCT CATALOGUE

PIPES | TUBES | FITTINGS | FLANGES | PLATES | VALVES

(REVISION 2.0)



SPECO
ALLOYS INC.



COMPANY PRESENTATION



NOT ONLY KEEPING PROMISES, BUT GOING OVER AND BEYOND THEM



PROFILE

THE COMPLETE "ONE-STOP" SERVICE FOR PLANT OPERATORS, ENGINEERING CONTRACTORS AND FABRICATORS.

INTRODUCTION

Speco Alloys Inc (SpA) is a worldwide stockholder and distributor, in Carbon, Alloy, Stainless, and specials including Duplex, Super Duplex, Hastelloy, Incoloy, and Titanium Alloys, Servicing the Energy Market. SpA has seen a very rapid growth and have excelled in meeting customers satisfaction, thanks to its strong vendor base. The driving force in SpA's achievements has been its connections and reputation that it has built with its vendors. Catering to a wide industry segments means, you have to think ahead and fast.

EXPORT AND PROJECT MANAGEMENT

Speco Alloys Inc (SpA) has extensive experience supplying to the International and Petrochemical Companies and Engineering Contractors and has developed a full Project Management service to satisfy the needs of these customers and service their major projects.

QUALITY ASSURED SERVICE

Speco Alloys Inc (SpA) provides a Quality assured service worldwide and our current ISO 9001 approval, demonstrate our continual improvement and commitment to quality. It is our belief that no principle of business is more critical to success than the commitment to deliver a high quality product manufactured to meet customers and industry requirements and specifications.

TESTING AND FINISHING FACILITIES

A comprehensive facility for plant operators, contractors and fabricators is provided by extensive finishing facilities allowing the "customising" of material to specific client requirements.

We offer Cutting, Beveling, Threading and Machining facilities and a capability for Shotblasting and Coating. Mechanical, Chemical and Non-Destructive Testing is also available.

PRODUCT RANGE

• Pipelines

We supply a full range of carbon, alloy and stainless Pipe, Fittings, Flanges and ancillary products including valves, gaskets, bolts etc. in a wide range of international specifications.

• Boilers

We supply a full range of Carbon, Alloy and Stainless Tubes for the Boiler and Power Generation industries in full or cut lengths with a variety of end finishes, straight or manipulated.

• Hydraulics

We supply a full range of metric and imperial, Carbon and Stainless Tube with various protective coatings for hydraulic and pneumatic applications.

• Mechanical & Structural

We supply a full range of hot and cold finished, Seamless & Welded tube in full or cut lengths for a variety of mechanical and structural applications.

CONTACT

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www.specoalloys.com



PRODUCT CATEGORIES

Qualification to International Standards

For supply of piping, valves and related products, it is important to ensure the quality of the material from steelmaking to finished products. SpA's Technical department is competent and experienced in qualifying steel mills, foundries and manufacturers according to the International standards and specification. Every product we supply are manufactured to meet ASTM, ASME, AMS, API, ISO and NACE codes and standards, only by major American, European, Korean, Indian, Chinese and Japanese specialty steel manufacturers. SpA is managed by highly qualified professionals and has excellent HSEQ standards. SpA's management has a cumulative experience of more than 80 years in METALS & MINERALS. SpA acquired two of the world's finest cold finishing tube and forging mills in order to fulfil customer needs that were unmet by standard mills and distributors.



TYPICAL PRODUCTS AND MATERIALS IN STOCK

PRODUCTS IN STOCK:

- » Pipe, Fittings and Flanges From 1/2" - 48".
- » Valves (Gate, Globe, Ball, Check, Butterfly)
- » Filters and Strainers.
- » Mechanical Joints.
- » Compact Flanges.
- » Special Items.

MATERIAL QUALITIES IN STOCK:

- » Carbon Steel
 - ASTM A106 Gr.B/A234 WPB/A 105
 - ASTM A333 Gr.6/A420 WPL6/A350 LF2
 - ISO 3183 L360~L555 (API 5L Gr. X52~X80)/ ASTM A860
 - WPHY52~80/A694 F52~F70
- » 304/304L~347/347H Stainless Steel
- » 6Mo (UNS S31254, UNS N08926)
- » 22 Cr Duplex (UNS S31803/S32205)
- » 25Cr Duplex (UNS S32750/760/550)
- » Superaustenite (UNS S34565)
- » Titanium Gr. 2.F
- » Inconel / Monel / Hastalloy / etc.

This is a very brief overview of our stocking program, as a complete list of Finished Products and Raw material Covers more than 6000 items.

More detailed information of Products and Materials of pipes, Fittings and Flanges can be seen at the next pages



Types of Pipes, Fittings & Flanges in stock

Sizes & Material Types:

The below listed products are typical available from our stock in size range from 0.5" to 48" larger size & other Materials may also be available on request, but can in all cases be offered based on new production at mills.

Material Properties | Certification:

Material purchased to our stock are manufactured, tested & certified in accordance to our internal specification which is based on ASTM, ASME, AMS, API, ISO and NACE codes and standards & internal additional requirements. Typical modified requirements are indicated tables below.

All products are to EN10204 Type 3.1 | EN10204 Type 3.2

Carbon Steel - High Temperature Service

Product	Standard	Grade	Class	Suppl. Requirement
Seamless Pipe	ASTM A106	B	PSL1 12, 22 for t> 19mm	S6, S9
Welded Pipe	ISO 3183 (API 5L)	L245 (B) SAWL		
	ASTM A672	C60, C70		
Wrought Fitting	ASTM A234	WPB		S3
Forging Flange	ASTM A105			S4,S1
Chemical :	C< 0.20 %, S< 0.025 %, P< 0.025%, CE = C + Mn/6 + (Cr + Mo + V)/5 + (Cu + Ni)/15 <0.43			
Hardness :	NACE MR - 0175/ ISO 15156 Complianc			

Carbon Steel - Low Temperature Service

Product	Standard	Grade	Class	Suppl. Requirement
Seamless Pipe	ASTM A333	6	12, 22 for t> 19mm	S2, S7, S14
Welded Pipe	ASTM A671	CC60, CC70		
Wrought Fitting	ASTM A420	WPL6		S51, S53, S59, S69
Forging Flange	ASTM A350	LF2	1	S6, S55
Chemical :	C< 0.20 %, S< 0.025 %, P< 0.025%, (+ additional limitations for A333 Gr.6) CE = C + Mn/6 + (Cr + Mo + V)/5 + (Cu + Ni)/15 <0.43			
Hardness :	NACE MR - 0175/ ISO 15156 Compliance			
Impact :	27J average/ 20J single at - 46 degree C, for thicknesses above 6mm			

Carbon Steel - High Strength

Product	Standard	Grade	Class	Suppl. Requirement
Seamless Pipe	ISO 3183 (API 5L)	L360N or Q (X52)	PSL2 Smls & welded	S53, S69 S55
Wrought Fitting	ASTM A860	WPHY52		
Forging Flange	ASTM A694	F52		
Chemical :	C< 0.20 %, (C<0.16% for X52), Mn = 0.90-1.60% Si = 0.10-0.50%, S<0.025%, P<0.035% Ti< 0.05%, Nb< 0.04%, Al< 0.06%, N< 0.015%, V+Nb+Ti< 0.10%, CE=C + Mn/6 + (Cr+Mo+V)/5 + (Cu+Ni)/15 <0.43			
Hardness :	NACE MR - 0175/ ISO 15156 Compliance			
Impact :	40J average/ 30J single at - 46 degree C, for thicknesses above 6mm			

Low Alloyed Steel - High Strength - Type 4130/4140

Product	Standard	Grade	Class	Suppl. Requirement
Seamless Pipe	ASTM A519	AISI 4130	Seamless	S2
Wrought Fitting	ASTM A234	AISI 4130		
Forging Flange	ASTM A788	AISI 4140		
Forging Flange	API 6A	60K (AISI 4130)	PSL 3	S18
Chemical :	Pipe and Fitting : S< 0.015%, P< 0.025%			
Tensile :	Pipe and Fitting : Yield (0.2%)> 415MPa, UTS> 620MPa, A5> 18% A788 Forging : Yield (0.2%)> 515MPa, UTS> 690MPa, A5> 15%			
Hardness :	Pipe, Fittings and API 6A Forgings: Maximum 250HV10, 237HB or 22HRC A788 Forgings: 328HB or 35HRC			
Impact :	42J average/ 30J single at - 30 degree C, for thicknesses above 6mm			

Austenitic Stainless Steel - Type 316/316L

Product	Standard	Grade	Class	Suppl. Requirement
Seamless pipe	ASTM A312	TP316 / TP316L	1, 3, 4 and 5 S, W, WX	
Welded pipe	ASTM A312	TP316 / TP316L		
	ASTM A358	316 / 316L		
Wrought fitting	ASTM A403	WP316 / WP316L		
Forging / flange	ASTM A182	F316 / F316L		
Tube	ASTM A269	316 / 316L		
Chemical:	C < 0.035%			
Tensile:	Yield (0.2%) > 205MPa, UTS > 515MPa, A > 35%			
Hardness:	NACE MR-0175/ ISO 15156 compliance			

Austenitic Stainless Steel - Type 6Mo

Product	Standard	Grade	Class	Suppl. Requirement
Seamless pipe	ASTM A312	UNS S31254*	1, 3 and 5 S, W, WX	S3
Welded pipe	ASTM A358	UNS S31254*		
Wrought fitting	ASTM A403	WP S31254*		S56
Forging / flange	ASTM A182	F44 (S31254)*		
Tube	ASTM A269	UNS S31254*		
Grades *:	UNS N08926 are acceptable in addition to the above grade			
Corrosion test:	ASTM G48 method A, 50 degree C / 24h, max 4g/m2 weight loss, no pitting			
Hardness:	NACE MR-0175/ ISO 15156 compliance			

Ferritic/Austenitic Stainless Steel - Type 22Cr duplex

Product	Standard	Grade	Class	Suppl. Requirement
Seamless pipe	ASTM A790	UNS S31803*	1, 3 and 5 S, W, WX	S3
Welded pipe	ASTM A928	UNS S31803*		
Wrought fitting	ASTM A815	UNS S31803*		S7
Forging / flange	ASTM A182	F51*		
Tube	ASTM A789	UNS S31803*		
Grades *:	UNS S32205/ F60 are acceptable in addition to the above grade			
Chemical:	N = 0.14-0.20%; PREN > 34%			
Impact:	45J average/ 35J single at -46 degree C, for thicknesses above 6mm			
Corrosion test:	ASTM G48 method A, 25 degree C / 24h, max 4g/m2 weight loss, no pitting			
Hardness:	Max 290 HV10 (or 28HRC or 271HB)			
Micro:	Ferrite level 35-55% for base, 35-65% for weld areas. No phases or precipitates.			

Ferritic/Austenitic Stainless Steel - Type 25Cr duplex

Product	Standard	Grade	Class	Suppl. Requirement
Seamless pipe	ASTM A790	UNS S32760*	1, 3 and 5 S, W, WX	S3
Welded pipe	ASTM A928	UNS S32760*		
Wrought fitting	ASTM A815	UNS S32760*		S7
Forging / flange	ASTM A182	F55 (S32760)*		
Tube	ASTM A789	UNS S32760*		
Grades*:	UNS S32750/F53 and UNS S32550 are acceptable in addition to the above grade			
Chemical:	PRE (Cr + 3.3xMo + 16xN) > 40.0			
Tensile:	Yield (0.2%) > 550MPa, UTS > 750MPa, A5 > 25%			
Impact:	45J average/ 35J single at -46 degree C, for thicknesses above 6mm			
Corrosion test:	ASTM G48 method A, 50 degree C / 24h, max 4g/m2 weight loss, no pitting			
Hardness:	Max 330 HV10 (or 32HRC or 301HB)			
Micro:	Ferrite level 35-55% for base, 35-65% for weld areas. No phases or precipitates.			

Alloy Steel - High Temperature Service

Product	Standard	Grade	Class	Suppl. Requirement
Seamless pipe	ASTM A335	P1 ~ P91		S1, S2, S3,S7
Welded pipe	ASTM A691	CM 65 ~ 9CR	10 ~ 53	S1, S2, S3, S4, S7, S9
Wrought fitting	ASTM A234	Wp1 ~ WP91	1, 2, 3	
Forging/ flange	ASTM A182	F2 ~ F9	1, 2, 3	S4, S6
Tube	ASTM A213	2		

Material purchased to our stock are modified to ASTM & ASME specification.
Dimensions: In accordance to respective ASTM, ASME Specification.
Hardness: NACE MR-0175/ ISO 15156 compliance

High Strength Austenitic Stainless Steel - Type Superaustenite

Product	Standard	Grade	Class	Suppl. Requirement
Welded pipe	ASTM A358	UNS S34565	1, 3	S3
Wrought fitting	ASTM A403	UNS S34566	S, WX	
Forging/ flange	ASTM A182	F49		S56

Tensile: Yield (0.2%) > 415MPa, UTS > 795MPa
Hardness: Max 34HRC
Corrosion test: ASTM G48 method A, 50 degree C / 24h, max 4g/m2 weight loss, no pitting

Titanium- Grade 2

Product	Standard	Grade	Class	Suppl. Requirement
Seamless pipe	ASTM B861	2		
Welded pipe	ASTM B862	2		
Wrought fitting	ASTM B363	WPT2/ WPT2W		
Forging/ flange	ASTM B381	F2		
Tube	ASTM B338	2		

Grades: Equivalent grades is acceptable if complying with above standard
Chemical: Pipes with OD < 10" shall have O < 0.17% and A5 > 25%
Hardness: NACE MR-0175/ ISO 15156 compliance

Copper alloy - Type CuNi 90/10

Product	Standard	Grade	Class	Suppl. Requirement
Seamless pipe	ASTM B466	UNS C70600		
Welded pipe	ASTM B467	UNS C70600		
Wrought fitting		UNS C70600		
Forging/ flange		UNS C70600		

Material purchased to our stock are modified to ASTM & ASME Specification
Dimensions: In accordance to respective EEMUA standards - No.144, 145, 146

Nickel alloy - Type Inconel 625

Product	Standard	Grade	Class	Suppl. Requirement
Seamless pipe	ASTM B444	UNS N06625		
Welded pipe	ASTM B705	UNS N06625	1	
Wrought fitting	ASTM B366	UNS N06625		S3
Forging/ flange	ASTM B564	UNS N06625		S5.3
Tube	ASTM B444	UNS N06625		

Material purchased to our stock are modified to ASTM & ASME specification
Heat treatment: All products shall be annealed



MANUFACTURERS NETWORK

PIPES (Seamless & Welded)

NSSMC – Japan | JFE – Japan | Kobe – Japan | Kuze – Japan | Seah – S Korea | Seah CSS – S Korea | Hyundai – S Korea | Husteel – S Korea | EEW – S Korea & Germany | TPS – Germany | EBK – Germany | Benteler – Germany | Thyssenkrupp – Germany | SMST – Italy, France & Germany | Vallourec – Germany, Brazil & France | Valinox Nucleaire – France | Inox Tech – Italy | Rivit – Italy | Tenaris – Dalmine – Italy | Tubacex – Spain | Productos Tubulares – Spain | Tubos Reunidos – Spain | Sandvik – Sweden | Outokumpu Stainless – Sweden | Schoeller Bleckmann – UK | Tenaris Siderca – Argentina | Arcelor Mittal – South Africa & Romania | MSL – India | ISMT – India | MAN – India | Jindal – India | Valconvy Turb – Czech | Nowa Hut – Czech | Centraviv – Ukraine | Bao Steel – China | TPCO – China | Chengdu – China | Juili Stainless – China | US Steel – USA | Michigan Seamless – USA | Bristol – USA | PCC Rollmet – USA | ATI Allegheny Ludlum – USA | Haynes– USA | Wyman Gordon – USA |

BUTTWELD FITTINGS (Seamless & Welded)

ASK - Japan | Benkan –Thailand & Japan | Awaji – Thailand | Interfit - France | Delcorte - France | Erne - Austria | W. Schulz - Germany | Promat BD - UK | Wilhelm Geldbach – Germany | Tubacex Taylor – Spain | Petrol Raccord – Italy | Piana – Italy | Bassi Luigi - Italy | Gam Raccordi - Italy | Tectubi – Italy | Vilmar – Romania | T.K. Corporation - S Korea | Sungkwang Bend – S Korea | SBC – S Korea | Roc Master - China | APCO - China | Bothwell - Taiwan | Ezeflow - Canada | Weldbend - USA | Flowline - USA |

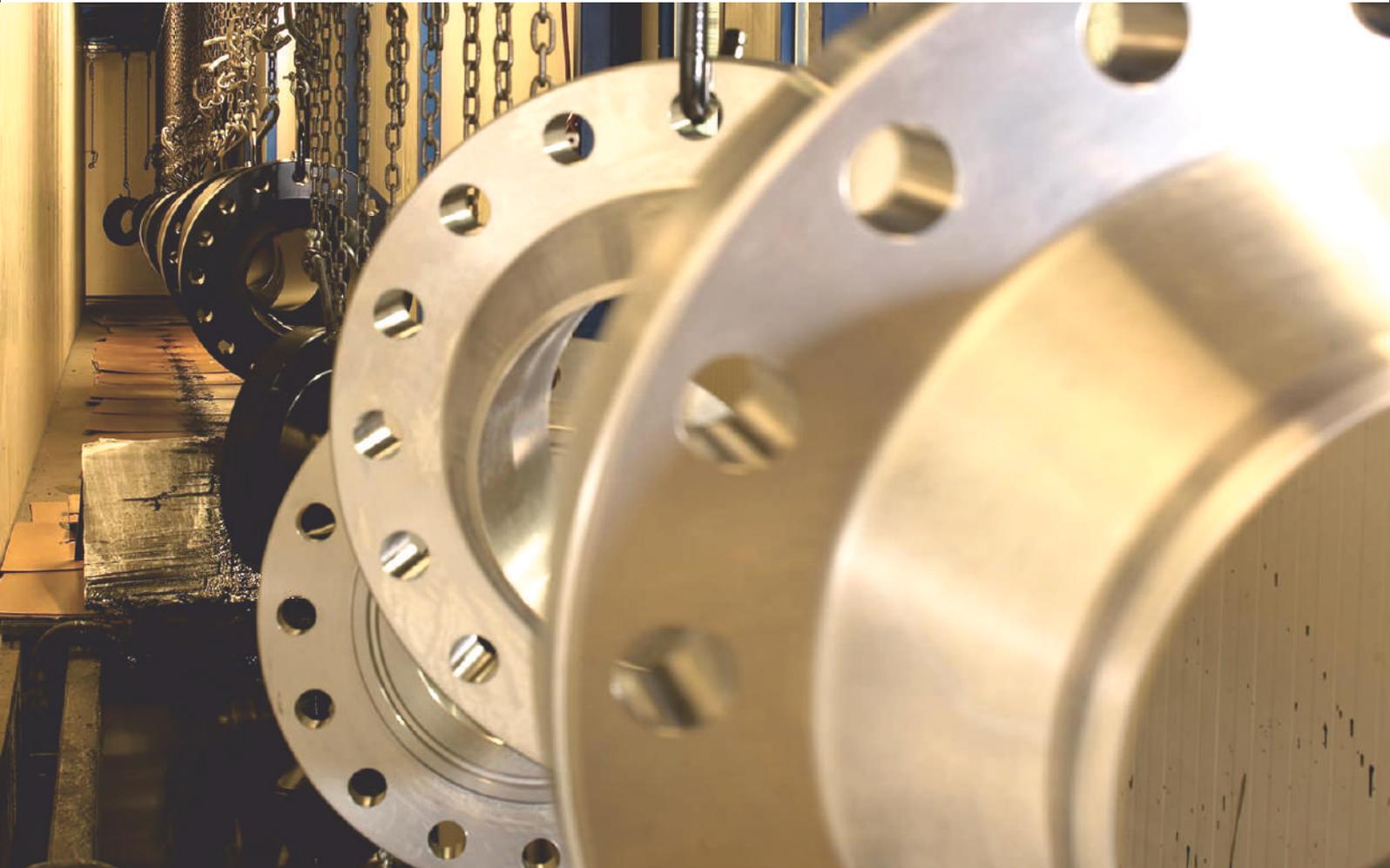


FORGED FITTINGS & FLANGES

Korea Flange – S Korea | T.K. Corporation - Korea | Bruck Gmbh – Germany | Technoforge – Italy | Ulma Forja – Italy | Officine Santafede – Italy | Melesi - Italy | Officine Nicola Galperti – Italy | Mega – Italy | Piana – Italy | Metalfar - Italy | IML Industria Meccanica Ligure – Italy | Ital - Italy | Lame - Italy | Technofit - Italy | Melesi - Italy | Sider forgerossi – Italy | W Maass – USA | Texas Flange - USA | W F I International – USA | Galperti Incorporated – USA | Viraj Profiles – India | Le Bronze – France | Interfit - France | Promat BD - UK | CHW – India | Shree Ganesh Forgings - India | Techno Forge - India | Roc Master - China | APCO Fittings - China |

GASKETS

Lamons Metal Gasket – USA | Sealing Devices – USA | Triplefast - UK & UAE | Flexitallic – Italy, UK, Saudi Arabia | Klingner – UK | Gulf Gasket – Saudi Arabia | MIP – India | Goodrich Gaskets - India



FASTENERS / STUD BOLTS

Triplefast Middle East Ltd – UAE | Asia Bolts Industries L.L.C – UAE | Roll Stud – UK | Lone Star Fasteners, Lp – USA | Seng Heng Engineering Pte Ltd – Singapore | Ningbo Zhongjiang – China | IML Industria Meccanica – Italy | Pacific Coast Bolt – USA |

VALVES

Cameron – Romania, Indonesia, Malaysia, Singapore, France, Ireland | FMC – USA, Singapore, Malaysia | Vetco Gray – Singapore | Velan – USA, Canada | PBV - USA | 3DV - USA | ASCO - USA | Bonney Forge – USA | Spx Flow – USA | Swagelok – USA | Parker – USA, UK | Weir Valves – UK | Koso Kent – UK | Oliver - UK | Petrolvalves – Italy | Kitz – Japan, Thailand, China | Valvosider – Italy | Nakamura Valve – Japan | Fevisa - Spain | Arflu - Spain | Autexier - France | J.C Fabrica - Italy | Audco Valves – India | Flowserve – India | Neway Valve (Suzhou) – China | Hawa Valves – India | Pk Valve – S Korea | Ace Valve – S Korea | National Oilwell Varco – USA | Master Flo Valve – Canada | Hy-Lok – S Korea |





VALUE ADDITIONS |
UNIQUE ENVIRONMENT REQUIREMENTS

We are also one of the premier choice with our clients when it comes to supplying materials with unique environments & additional |supplementary project requirements like:

UNIQUE ENVIRONMENTS REQUIREMENTS

Sometimes critical environments require materials with special qualities to meet specific project needs and standards. Some of them listed below but not limited to,

NACE MR01 75 | NACE MR01 03 | HYDROGEN SERVICES (H²S) | CRYOGENIC SERVICES (CRYO) | HYDROGEN INDUCE CRACKING (HIC) | SOUR SERVICE | SWEET SERVICE | SULPHIDE STRESS CRACKING (SSCC) |

VALUE ADDITION

SpA offers a number of special services & testings to accommodate specific needs and requirements.

PMI | BLASTING | COLOUR CODING & PAINTING | GALVANISING | THREADING & COUPLING | CUTTING & BEVELLING | TAPER ENDS PREPARATION | SURFACE COATING | 3LPE COATING | ENAMEL COATING | CEMENT LINING | EPOXY COATING | FLANGED ENDS | HONING | PIPE SPOOLS & FABRICATION | IMPACT TEST | DYE PENETRANT TEST | POST WELD HEAT TREATMENT | STIMULATED POST WELD HEAT TREATMENT | ULTRASONIC TEST | HYDROSTATIC TEST | MACRO STRUCTURE ANALYSIS | HYDROGEN INDUCE CRACKING TEST (HIC) | SULPHIDE STRESS CRACKING TEST (SSCC) | HELIUM LEAK TEST | MAGNETIC PARTICLE TEST





**CERTIFICATION | THIRD
PARTY INSP. AGENCIES**

MATERIAL CERTIFICATION

SpA SUPPLIES All material in accordance with EN10204 3.1 | DIN 50049 3.1 | ISO 10474 or EN10204 3.2 | DIN 50049 3.1.B.

Additionally materials can be upgraded from EN 10204 3.1 to 3.2 certification as well with testings and verifications carried out by renowned TPIA's

THIRD PARTY MATERIAL INSPECTION AGENCY

SpA can carry out Third Party Inspection and Verification by global services provider team, provides array of options like Technical Inspection, Verification, Testing and Conformity Assessment as an additional option for our customers.

Some highly acknowledged TPIA with whom we have regular inspections are as listed

ENGINEERS INDIA LTD. (EIL) | LLOYD'S REGISTER OF SHIPPING. (LRIS) |
 BUREAU VERITAS INDS. SERVICES (INDIA) PVT. LTD. (BVIL) | INTERTEK |
 DET NORSKE VERITAS GERMANISCHER LLOYD (DNV-GL) | SGS INDIA PVT. LTD |
 VELOSI INSPECTION SERVICES | TUV INDIA PVT. LTD. (TUV) | TUV RHEINLAND. (TUV) |
 ABS INDUSTRIAL VERIFICATION (I) PVT. LTD. (ABS) |
 INTERNATIONAL CERT. SERVICES (ASIA) PVT. LTD. (ICS) |
 TOYO ENGINEERING INDIA LTD. (TEIL) | TATA PROJECTS LTD. (TPL) |
 INDIAN REGISTER OF SHIPPING (IRS) | UHDE INDIA LTD.
 NUCLEAR POWER CORPORATION OF INDIA LTD. (NPCIL) |
 PROJECTS & DEVELOPMENT INDIA LTD. (PDIL) |
 INDUSTRIAL QUALITY CIRCLE PVT. LTD. (IQC) |
 CERTIFICATION ENGINEERS INTERNATIONAL LTD. (CEIL) |
 JACOBS HUMPHREY & GLASGOW CONSULTANTS LTD. (H&G) |





CERTIFICATE

This Certificate is awarded to
the Quality Management System of

SPECO ALLOYS INC.

17, Tambakata, Mumbai – 400003. Maharashtra, INDIA.

has been audited by the MSYSCERT and found to be
in compliance with the requirements of the standard

ISO 9001 : 2015

This certificate is valid for
the following scope

**Exporters, Importers, Stockists & Suppliers of Stainless Steel,
Carbon Steel, Alloy Steel; Nickel & Copper Alloys in form of Pipes,
Tubes, Plates, Sheets, Bars, Pipe Fittings & Flanges.**

CERTIFICATE NO. : MSYS/2073/17
DATE OF CERTIFICATE : 09/01/2017
DATE OF EXPIRY : 08/01/2020


CEO
MSYSCERT
www.msyscert.co.in



* This Certificate is Intellectual Property of MSYSCERT and can be maintained through surveillance and renewal Audits.
* If you cannot maintain the Certifications, this certificate shall be returned to MSYSCERT.
* You can verify the authenticity of this certificate in Certificate Confirmation: www.msyscert.co.in



**WEIGHT CHART |
CONVESRION TABLES**

PIPE DIMENSIONS AND WEIGHTS

Available in commercial and nuclear 

U.S./METRIC

NOMINAL PIPE SIZE	OD	SCHEDULE DESIGNATIONS			WALL THICKNESS		WEIGHT		ID	
					INCH	MM	LBS/FOOT	KG/METER	INCH	MM
INCH MM	INCH MM	ASME			INCH	MM	LBS/FOOT	KG/METER	INCH	MM
1/8 6	0.405 10.3	10 STD 80	40 40S 80S	10S	0.049	1.24	0.19	0.28	0.307	7.82
				40S	0.068	1.73	0.24	0.37	0.269	6.84
				80S	0.095	2.41	0.31	0.47	0.215	5.84
1/4 8	0.540 13.7	10 STD XS	40 40S 80S	10S	0.065	1.65	0.33	0.49	0.410	10.40
				40S	0.088	2.24	0.43	0.63	0.364	9.22
				80S	0.119	3.02	0.54	0.80	0.302	7.66
3/8 10	0.675 17.1	10 STD XS	40 40S 80S	10S	0.065	1.65	0.42	0.63	0.545	13.80
				40S	0.091	2.31	0.57	0.84	0.493	12.48
				80S	0.126	3.20	0.74	1.10	0.423	10.70
1/2 15	0.840 21.3	5 10 STD XS 160 XX	40 40S 80S	5S	0.065	1.65	0.54	0.80	0.710	18.00
				10S	0.083	2.11	0.67	1.00	0.674	17.08
				40S	0.109	2.77	0.85	1.27	0.622	15.76
				80S	0.147	3.73	1.09	1.62	0.546	13.84
				160	0.188	4.78	1.31	1.95	0.464	11.74
				XX	0.294	7.47	1.72	2.55	0.252	6.36
3/4 20	1.050 26.7	5 10 STD XS 160 XX	40 40S 80S	5S	0.065	1.65	0.69	1.03	0.920	23.40
				10S	0.083	2.11	0.86	1.28	0.884	22.48
				40S	0.113	2.87	1.13	1.69	0.824	20.96
				80S	0.154	3.91	1.48	2.20	0.742	18.88
				160	0.219	5.56	1.95	2.90	0.612	15.58
				XX	0.308	7.82	2.44	3.64	0.434	11.06
1 25	1.315 33.4	5 10 STD XS 160 XX	40 40S 80S	5S	0.065	1.65	0.87	1.29	1.185	30.10
				10S	0.109	2.77	1.41	2.09	1.097	27.86
				40S	0.133	3.38	1.68	2.50	1.049	26.64
				80S	0.179	4.55	2.17	3.24	0.957	24.30
				160	0.250	6.35	2.85	4.24	0.815	20.70
				XX	0.358	9.09	3.66	5.45	0.599	15.22
1-1/4 32	1.660 42.2	5 10 STD XS 160 XX	40 40S 80S	5S	0.065	1.65	1.11	1.65	1.530	38.90
				10S	0.109	2.77	1.81	2.69	1.442	36.66
				40S	0.140	3.56	2.27	3.39	1.380	35.08
				80S	0.191	4.85	3.00	4.47	1.278	32.50
				160	0.250	6.35	3.77	5.61	1.160	29.50
				XX	0.382	9.70	5.22	7.77	0.896	22.80
1-1/2 40	1.900 48.3	5 10 STD XS 160 XX	40 40S 80S	5S	0.065	1.65	1.28	1.90	1.770	45.00
				10S	0.109	2.77	2.09	3.11	1.682	42.76
				40S	0.145	3.68	2.72	4.05	1.610	40.94
				80S	0.200	5.08	3.63	5.41	1.500	38.14
				160	0.281	7.14	4.86	7.25	1.338	34.02
				XX	0.400	10.15	6.41	9.55	1.100	28.00
2 50	2.375 60.3	5 10 STD XS 160 XX	40 40S 80S	5S	0.065	1.65	1.61	2.39	2.245	57.00
				10S	0.109	2.77	2.64	3.93	2.157	54.76
				40S	0.154	3.91	3.66	5.44	2.067	52.48
				80S	0.218	5.54	5.03	7.48	1.939	49.22
				160	0.344	8.74	7.47	11.11	1.687	42.82
				XX	0.436	11.07	9.04	13.44	1.503	38.16
2-1/2 65	2.875 73.0	5 10 STD XS 160 XX	40 40S 80S	5S	0.083	2.11	2.48	3.69	2.709	68.78
				10S	0.120	3.05	3.53	5.26	2.635	66.90
				40S	0.203	5.16	5.80	8.63	2.469	62.68
				80S	0.276	7.01	7.67	11.41	2.323	58.98
				160	0.375	9.53	10.02	14.92	2.125	53.94
				XX	0.552	14.02	13.71	20.39	1.771	44.96
3 80	3.500 88.9	5 10 STD XS 160 XX	40 40S 80S	5S	0.083	2.11	3.03	4.52	3.334	84.68
				10S	0.120	3.05	4.34	6.46	3.260	82.80
				40S	0.216	5.49	7.58	11.29	3.068	77.92
				80S	0.300	7.62	10.26	15.27	2.900	73.66
				160	0.438	11.13	14.34	21.35	2.624	66.64
				XX	0.600	15.24	18.60	27.68	2.300	58.42
3-1/2 90	4.000 101.6	5 10 STD XS 160 XX	40 40S 80S	5S	0.083	2.11	3.48	5.18	3.834	97.38
				10S	0.120	3.05	4.98	7.41	3.760	95.50
				40S	0.226	5.74	9.12	13.57	3.548	90.12
				80S	0.318	8.08	12.52	18.64	3.364	85.44
				160	0.636	16.15	22.87	34.03	2.728	69.30
				XX						
4 100	4.500 114.3	5 10 STD XS 120 160 XX	40 40S 80S	5S	0.083	2.11	3.92	5.84	4.334	110.08
				10S	0.120	3.05	5.62	8.37	4.260	108.20
				40S	0.156	3.96	7.24	10.78	4.188	106.38
				80S	0.188	4.78	8.67	12.91	4.124	104.74
				120	0.237	6.02	10.80	16.08	4.026	102.26
				160	0.337	8.56	15.00	22.32	3.826	97.18
				XX	0.438	11.13	19.02	28.32	3.624	92.04
					0.531	13.49	22.53	33.54	3.438	87.32
					0.674	17.12	27.57	41.03	3.152	80.06
4-1/2 115	5.000 127.0	STD XS XX	40 40S 80S	40S	0.247	6.27	12.55	18.67	4.506	114.46
				80S	0.355	9.02	17.63	26.24	4.290	108.96
				80S	0.710	18.03	32.56	48.45	3.580	90.94

NOMINAL PIPE SIZE	OD	SCHEDULE DESIGNATIONS			WALL THICKNESS		WEIGHT		ID					
					INCH	MM	LBS/FOOT	KG/METER	INCH	MM				
INCH MM	INCH MM	ASME			INCH	MM	LBS/FOOT	KG/METER	INCH	MM				
5 125	5.563 141.3	5 10 STD XS 120 160 XX	40 40S 80S	5S	0.109	2.77	6.36	9.46	5.345	135.76				
				10S	0.134	3.40	7.78	11.56	5.295	134.50				
				40S	0.258	6.55	14.63	21.77	5.047	128.20				
				80S	0.375	9.53	20.80	30.97	4.813	122.24				
				120	0.500	12.70	27.06	40.28	4.563	115.90				
				160	0.625	15.88	32.99	49.12	4.313	109.54				
6 150	6.625 168.3	5 10 STD XS 120 160 XX	40 40S 80S	5S	0.109	2.77	7.59	11.31	6.407	162.76				
				10S	0.134	3.40	9.30	13.83	6.357	161.50				
				40S	0.188	4.78	12.94	19.28	6.249	158.74				
				80S	0.280	7.11	18.99	28.26	6.065	154.08				
				120	0.432	10.97	28.60	42.56	5.761	146.36				
				160	0.562	14.27	36.43	54.21	5.501	139.76				
7 175	7.625 193.7	STD XS XX	40 40S 80S	40S	0.301	7.65	23.57	35.10	7.023	178.40				
				80S	0.500	12.70	38.08	56.69	6.625	168.30				
				80S	0.875	22.23	63.14	94.00	5.875	149.24				
				8 200	8.625 219.1	10 20 30 STD 60 XS 100 120 140 XX 160	40 40S 80S	5S	0.109	2.77	9.92	14.78	8.407	213.56
								10S	0.148	3.76	13.41	19.97	8.329	211.58
								40S	0.250	6.35	22.38	33.32	8.125	206.40
80S	0.322	8.18	28.58					42.55	7.981	202.74				
160	0.406	10.31	35.67					53.09	7.813	198.48				
XX	0.500	12.70	43.43					64.64	7.625	193.70				
9 225	9.625 244.5	STD XS XX	40 40S 80S	40S	0.594	15.09	51.00	75.92	7.437	188.92				
				80S	0.719	18.26	60.77	90.44	7.187	182.58				
				80S	0.812	20.62	67.82	100.93	7.001	177.86				
				160	0.875	22.23	72.49	107.93	6.875	174.64				
				160	0.906	23.01	74.76	111.27	6.813	173.08				
				XX										
10 250	10.750 273.0	20 30 STD XS 100 120 140 160	40 40S 80S	5S	0.134	3.40	15.21	22.61	10.482	266.20				
				10S	0.165	4.19	18.67	27.78	10.420	264.62				
				40S	0.188	4.78	21.23	31.62	10.374	263.44				
				80S	0.250	6.35	28.06	41.76	10.250	260.30				
				160	0.307	7.80	34.27	51.01	10.136	257.40				
				XX	0.365	9.27	40.52	60.29	10.020	254.46				
11 275	11.750 298.5	STD XS XX	40 40S 80S	40S	0.500	12.70	54.79	81.53	9.750	247.60				
				80S	0.594	15.09	64.49	95.98	9.562	242.82				
				80S	0.719	18.26	77.10	114.71	9.312	236.48				
				160	0.844	21.44	89.38	133.01	9.062	230.12				
				160	1.000	25.40	104.23	155.10	8.750	222.20				
				XX	1.125	28.58	115.75	172.27	8.500	215.84				
12 300	12.750 323.8	20 30 STD XS 140 160	40 40S 80S	5S	0.156	3.96	21.00	31.24	12.438	315.88				
				10S	0.180	4.57	24.19	35.98	12.390	314.66				
				40S	0.188	4.78	25.25	37.61	12.374	314.24				
				80S	0.250	6.35	33.41	49.71	12.250	311.10				
				160	0.330	8.38	43.81	65.19	12.090	307.04				
				XX	0.375	9.53	49.61	73.86	12.000	304.74				
14 350	14.000 355.6	STD XS 120 140 16												

NOMINAL PIPE SIZE	OD	SCHEDULE DESIGNATIONS	WALL THICKNESS		WEIGHT		ID			
			INCH	MM	LBS/FOOT	KG/METER	INCH	MM		
16 400	16.000 406.4	10S	0.188	4.78	31.78	47.34	15.624	396.84		
		10	0.250	6.35	42.09	62.65	15.500	393.70		
		20	0.312	7.92	52.32	77.83	15.376	390.56		
		STD 30	0.375	9.53	62.64	93.27	15.250	387.34		
		XS 40	0.500	12.70	82.85	123.31	15.000	381.00		
		80	0.656	16.66	107.60	160.13	14.688	373.08		
		60	0.844	21.44	136.74	203.54	14.312	363.52		
		80	1.031	26.19	164.98	245.57	13.938	354.02		
		100	1.219	30.96	192.61	286.66	13.562	344.48		
		120	1.438	36.53	223.85	333.21	13.124	333.34		
		140	1.594	40.49	245.48	365.38	12.812	325.42		
		18 450	18.000 457	10S	0.188	4.78	35.80	53.31	17.624	447.44
				10	0.250	6.35	47.44	70.57	17.500	444.30
				20	0.312	7.92	58.99	87.71	17.376	441.16
STD 40S	0.375			9.53	70.65	105.17	17.250	437.94		
30	0.438			11.13	82.23	122.38	17.124	434.74		
XS 80S	0.500			12.70	93.54	139.16	17.000	431.60		
40	0.562			14.27	104.76	155.81	16.876	428.46		
60	0.750			19.05	138.30	205.75	16.500	418.90		
80	0.938			23.83	171.08	254.57	16.124	409.34		
100	1.156			29.36	208.15	309.64	15.688	398.28		
120	1.375			34.93	244.37	363.58	15.250	387.14		
140	1.562			39.67	274.48	408.28	14.876	377.66		
160	1.781			45.24	308.79	459.39	14.438	366.52		
20 500	20.000 508			10S	0.218	5.54	46.10	68.61	19.564	496.92
		10	0.250	6.35	52.78	78.56	19.500	495.30		
		STD 20	0.375	9.53	78.67	117.15	19.250	488.94		
		XS 30	0.500	12.70	104.23	155.13	19.000	482.60		
		40	0.594	15.09	123.23	183.43	18.812	477.82		
		60	0.812	20.62	166.56	247.84	18.376	466.76		
		80	1.031	26.19	209.06	311.19	17.938	455.62		
		100	1.281	32.54	256.34	381.55	17.438	442.92		
		120	1.500	38.10	296.65	441.52	17.000	431.80		
		140	1.750	44.45	341.41	508.15	16.500	419.10		
		160	1.969	50.01	379.53	564.85	16.062	407.98		
		22 550	22.000 559	10S	0.218	5.54	50.76	75.55	21.564	547.92
				10	0.250	6.35	58.13	86.55	21.500	546.30
				STD 20	0.375	9.53	86.69	129.14	21.250	539.94
XS 30	0.500			12.70	114.92	171.10	21.000	533.60		
60	0.875			22.23	197.60	294.27	20.250	514.54		
80	1.125			28.58	251.05	373.85	19.750	501.84		
100	1.375			34.93	303.16	451.45	19.250	489.14		
120	1.625			41.28	353.94	527.05	18.750	476.44		
140	1.875			47.63	403.38	600.67	18.250	463.74		
160	2.125			53.98	451.49	672.30	17.750	451.04		

NOMINAL PIPE SIZE	OD	SCHEDULE DESIGNATIONS	WALL THICKNESS		WEIGHT		ID			
			INCH	MM	LBS/FOOT	KG/METER	INCH	MM		
24 600	24.000 610	10	0.250	6.35	63.47	94.53	23.500	597.30		
		STD 20	0.375	9.53	94.71	141.12	23.250	590.94		
		XS 80S	0.500	12.70	125.61	187.07	23.000	584.60		
		30	0.562	14.27	140.81	209.65	22.876	581.46		
		40	0.688	17.48	171.45	255.43	22.624	575.04		
		60	0.969	24.61	238.57	355.28	22.062	560.78		
		80	1.219	30.96	296.86	442.11	21.562	548.08		
		100	1.531	38.89	367.74	547.74	20.938	532.22		
		120	1.812	46.02	429.79	640.07	20.376	517.96		
		140	2.062	52.37	483.57	720.19	19.876	505.26		
		160	2.344	59.54	542.64	808.27	19.312	490.92		
		26 650	26.000 660	10	0.312	7.92	85.68	127.36	25.376	644.16
				STD 40S	0.375	9.53	102.72	152.88	25.250	640.94
				XS 80S	0.500	12.70	136.30	202.74	25.000	634.60
28 700	28.000 711	10	0.312	7.92	92.35	137.32	27.376	695.16		
		STD 40S	0.375	9.53	110.74	164.86	27.250	691.94		
		XS 20	0.500	12.70	146.99	218.71	27.000	685.60		
		80S	0.625	15.88	182.90	272.23	26.750	679.24		
30 750	30.000 762	10	0.312	7.92	99.02	147.29	29.376	746.16		
		STD 40S	0.375	9.53	118.76	176.85	29.250	742.94		
		XS 20	0.500	12.70	157.68	234.68	29.000	736.60		
30	0.625	15.88	196.26	292.20	28.750	730.24				
32 800	32.000 813	10	0.312	7.92	105.69	157.25	31.376	797.16		
		STD 20	0.375	9.53	126.78	188.83	31.250	793.94		
		XS 30	0.500	12.70	168.37	250.65	31.000	787.60		
		40	0.625	15.88	209.62	312.17	30.750	781.24		
34 850	34.000 864	10	0.312	7.92	112.36	167.21	33.376	848.16		
STD 20		0.375	9.53	134.79	200.82	33.250	844.94			
XS 30		0.500	12.70	179.06	266.63	33.000	838.60			
40		0.625	15.88	222.99	332.14	32.750	832.24			
36 900	36.000 914	10	0.312	7.92	119.03	176.97	35.376	898.16		
STD 20		0.375	9.53	142.81	212.57	35.250	894.94			
36	0.500	12.70	189.75	282.29	35.000	888.60				
42 1050	42.000 1067	10	0.375	9.53	166.86	248.53	41.250	1047.94		
		STD 20	0.500	12.70	221.82	330.21	41.000	1041.60		
		XS 30	0.625	15.88	276.44	411.64	40.750	1035.24		
42	0.750	19.05	330.72	492.33	40.500	1028.90				
48 1200	48.000 1219	10	0.375	9.53	190.92	284.25	47.250	1199.94		
		STD 20	0.500	12.70	253.89	377.81	47.000	1193.60		

SPECIALTY ALLOYS

Type	Seamless & Welded
Commodity	Nickel • Duplex & Titanium
Specifications & Grades	Alloy 800 • Alloy 825 • Alloy 600 • Alloy 625 • Alloy 400 • 6% Moly Grades • Duplex A790 UNS 31803 • 316LN
Sizes (O.D.)	1/8" (3.175mm) - 8" (203.2mm)
Wall Dimensions	0.035" (.889mm) - 0.875" (22.23mm)

SpA SPECIALTIES

- Project Management
- 24/7 Emergency Service
- Just-In-Time Programs
- Inventory in Stock
- All Schedule Walls
- Special Heavy Walls to 4" (101.6mm)
- Header Pipe to 4" Wall (101.6mm)
- Special Intermediate Walls
- Average & Minimum Walls
- Saw Cut up to 40" (1016mm)
- Cutting: Square & Miter
- Custom Lengths and OD's
- End Preps-Variouis
- Hard to Find Metals & Sizes
- Exceptional Mill/Sourcing Relations
- Dedicated Project Solution Teams
- Vendor Managed Inventory Programs
- Quick Response Programs
- Low Total Cost Solutions
- International Export & Packaging
- ISO 9001-2008
- In-House Testing
- Destructive Examination
- Non-Destructive Examination
- Full EDI Capabilities
- Customized e-business Solutions
- Emergency Forged and Buttweld Fittings

**PIPING • TUBING • FITTINGS
FLANGES • RELATED PRODUCTS**

Type	Seamless & Welded
Commodity	Chrome • Stainless • Carbon • Low Temperature
Specifications	A/SA335 • A/SA312 • A/SA213 • A/SA106 • A/SA53/API5L • A/SA333
Sizes (O.D.)	1/8" (3.175mm) - 60" (1524mm) (Larger ODs Available)
Grades	Chrome: P1 • P5 • P9 • P11 • P22 • P91 Stainless: 304 • 304H • 304L • 316 • 316H • 316L • 316LN • 321 • 321H • 347 • 347H • 310 • 310s • 309 • Alloy 20 Low Temp: Grade 1/6 • Grade 3 Carbon: Grade B • Grade C • Galvanized

NUCLEAR MATERIALS

Program	ASME Section III - ASME QSC 467
Specifications	10CFR50 Appendix B • N45.2 • NQA-1 • U.S. Navy Nuclear Specifications
Products	Pipe • Tubing • Fittings • Flanges • Structural • Fasteners • Forgings • Castings • Weld Rod • Plate
Grades	Carbon • Stainless • Chrome Moly • Nickel Alloys • Duplex • 6 Moly Alloys • Low Temperature • Special Melts • Copper & Titanium

Note: Actual dimensions can vary from the figures based on specifications/manufacturing tolerances. The Data for weight is based on the following calculation for wrought steel pipe:
 LB/Foot = (Outside diameter [in.] - Wall Thickness [in.]) x (Wall Thickness [in.]) x (10.69)
 KG/Meter = (Outside diameter [mm] - Wall Thickness [mm]) x (Wall Thickness [mm]) x (0.0246615)

MATERIAL SPECIFICATION TITLE INDEX FERROUS

SPEC	PIPE	SA	A	MATERIAL
53	PIPE, STEEL, BLACK AND HOT-DIPPED, ZINC-COATED, WELDED AND SEAMLESS	X	X	CARBON STEEL
106	SEAMLESS CARBON STEEL PIPE FOR HIGH TEMPERATURE SERVICE	X	X	CARBON STEEL
312	SEAMLESS AND WELDED AUSTENITIC STAINLESS STEEL PIPE	X	X	STAINLESS STEEL
333	SEAMLESS AND WELDED STEEL PIPE FOR LOW-TEMPERATURE SERVICE	X	X	LOW TEMP
335	SEAMLESS FERRITIC ALLOY-STEEL PIPE FOR HIGH TEMPERATURE SERVICE	X	X	CHROME ALLOY
376	SEAMLESS AUSTENITIC STEEL PIPE FOR HIGH-TEMPERATURE CENTRAL-STATION SERVICE	X	X	STAINLESS STEEL
671	ELECTRIC-FUSION-WELDED STEEL PIPE FOR ATMOSPHERIC AND LOWER TEMPERATURES	X	X	LOW TEMP
672	ELECTRIC-FUSION-WELDED STEEL PIPE FOR HIGH -PRESSURE SERVICE AT MODERATE TEMPERATURES	X	X	CARBON STEEL
691	CARBON AND ALLOY STEEL PIPE ELECTRIC-FUSION-WELDED FOR HIGH-PRESSURE SERVICE AT HIGH TEMPERATURES	X	X	CHROME ALLOY
790	SEAMLESS AND WELDED FERRITIC/AUSTENITIC STAINLESS STEEL PIPE	X	X	DUPLEX
TUBE				
178	ELECTRIC-RESISTANCE-WELDED CARBON STEEL AND CARBON-MANGANESE STEEL BOILER AND SUPERHEATER TUBES	X	X	CARBON STEEL
179	SEAMLESS COLD-DRAWN LOW-CARBON STEEL HEAT-EXCHANGER AND CONDENSER TUBES	X	X	CARBON STEEL
192	SEAMLESS CARBON STEEL BOILER TUBES FOR HIGH-PRESSURE SERVICE	X	X	CARBON STEEL
210	SEAMLESS MEDIUM-CARBON STEEL BOILER AND SUPERHEATER TUBES	X	X	CARBON STEEL
213	SEAMLESS FERRITIC AND AUSTENITIC ALLOY-STEEL BOILER, SUPERHEATER AND HEAT-EXCHANGER TUBE	X	X	STAINLESS/ALLOY
249	WELDED AUSTENITIC STEEL BOILER, SUPERHEATER, HEAT-EXCHANGER AND CONDENSER TUBES	X	X	STAINLESS/ALLOY
268	SEAMLESS AND WELDED FERRITIC AND MARTENSITIC STAINLESS STEEL TUBING FOR GENERAL SERVICE	X	X	MARTENSITIC
269	SEAMLESS AND WELDED AUSTENITIC STAINLESS STEEL TUBING FOR GENERAL SERVICE		X	STAINLESS STEEL
334	SEAMLESS AND WELDED CARBON AND ALLOY-STEEL TUBES FOR LOW-TEMPERATURE SERVICE	X	X	LOW TEMP
500	COLD-FORMED WELDED AND SEAMLESS CARBON STEEL STRUCTURAL TUBING IN ROUNDS AND SHAPES		X	CARBON STEEL
511	SEAMLESS STAINLESS STEEL MECHANICAL TUBING		X	STAINLESS STEEL
519	SEAMLESS CARBON AND ALLOY STEEL MECHANICAL TUBING		X	CARBON STEEL
554	WELDED STAINLESS STEEL MECHANICAL TUBING		X	STAINLESS STEEL
789	SEAMLESS AND WELDED FERRITIC/AUSTENITIC STAINLESS STEEL TUBING FOR GENERAL SERVICE	X	X	DUPLEX
FITTINGS				
234	PIPE FITTINGS OF WROUGHT CARBON STEEL AND ALLOY STEEL FOR MODERATE AND HIGH TEMPERATURE SERVICE	X	X	
403	WROUGHT AUSTENITIC STAINLESS STEEL PIPE FITTINGS	X	X	
420	PIPE FITTINGS OF WROUGHT CARBON STEEL AND ALLOY STEEL FOR LOW TEMPERATURE SERVICE	X	X	
815	WROUGHT FERRITIC, FERRITIC/AUSTENITIC AND MARTENSITIC STAINLESS STEEL PIPE FITTINGS	X	X	
FLANGES AND FORGINGS				
105	CARBON STEEL FORGINGS FOR PIPING APPLICATIONS	X	X	CARBON STEEL
182	FORGED OR ROLLED ALLOY AND STAINLESS STEEL PIPE FLANGES, FORGED FITTINGS FOR HIGH TEMPERATURE SERVICE	X	X	STAINLESS/ALLOY
350	CARBON AND LOW ALLOY STEEL FORGINGS REQUIRING NOTCH TOUGHNESS TESTING FOR PIPING COMPONENTS	X	X	LOW TEMP
PLATE				
36	CARBON STRUCTURAL STEEL	X	X	LOW TEMP
167	STAINLESS AND HEAT RESISTING CHROMIUM NICKEL STEEL PLATE SHEET AND STRIP		X	309/310
240	CHROMIUM AND CHROMIUM NICKEL STAINLESS STEEL PLATE SHEET AND STRIP FOR PRESSURE VESSELS	X	X	STAINLESS STEEL
285	PRESSURE VESSEL PLATES CARBON STEEL LOW AND INTERMEDIATE TENSILE STRENGTH	X	X	CARBON STEEL
387	PRESSURE VESSEL PLATES ALLOY STEEL CHROMIUM-MOLYBDENUM	X	X	CHROME ALLOY
BAR				
29	STEEL BARS CARBON AND ALLOY HOT WROUGHT GENERAL REQUIREMENTS	X	X	CARBON STEEL
108	STEEL BARS CARBON AND ALLOY COLD FINISHED		X	CARBON STEEL
276	STAINLESS STEEL BARS AND SHAPES	X	X	STAINLESS STEEL
336	ALLOY STEEL FORGINGS FOR PRESSURE AND HIGH TEMPERATURE PARTS	X	X	CHROME ALLOY
479	STAINLESS STEEL BARS AND SHAPES FOR USE IN BOILERS AND PRESSURE VESSELS	X	X	STAINLESS STEEL

MATERIAL SPECIFICATION TITLE INDEX NON-FERROUS

SPEC	PIPE	SB	B	MATERIAL
165	NICKEL-COPPER ALLOY SEAMLESS PIPE AND TUBE	X	X	MONEL
167	NICKEL-CHROMIUM-IRON SEAMLESS PIPE AND TUBE	X	X	INCONEL, INCOLOY
407	NICKEL-IRON-CHROMIUM ALLOY SEAMLESS PIPE AND TUBE	X	X	INCOLOY
444	NICKEL-CHROME-MOLY-COLUMBIUM ALLOY PIPE AND TUBE	X	X	INCONEL
619	WELDED NICKEL AND NICKEL-COBALT ALLOY PIPE	X	X	MONEL
622	SEAMLESS NICKEL AND NICKEL-COBALT ALLOY PIPE	X	X	MONEL
675	WELDED TUBE N08367	X	X	AL-6XN
690	NICKEL-CHROME-MOLY SEAMLESS PIPE AND TUBE	X	X	AL-6XN
861	TITANIUM AND TITANIUM ALLOY SEAMLESS PIPE	X	X	TITANIUM
862	TITANIUM AND TITANIUM ALLOY WELDED PIPE	X	X	TITANIUM
TUBE				
163	SEAMLESS NICKEL AND NICKEL ALLOY HEAT EXCHANGER AND CONDENSER TUBE	X	X	NICKEL ALLOY
165	NICKEL-COPPER ALLOY SEAMLESS PIPE AND TUBE	X	X	MONEL
167	NICKEL-CHROMIUM-IRON SEAMLESS PIPE AND TUBE	X	X	INCONEL, INCOLOY
338	SEAMLESS AND WELDED TITANIUM AND TITANIUM ALLOY TUBES FOR HEAT EXCHANGERS/CONDENSERS	X	X	TITANIUM
407	NICKEL-IRON-CHROMIUM ALLOY SEAMLESS PIPE AND TUBE	X	X	INCOLOY
444	NICKEL-CHROME-MOLY-COLUMBIUM ALLOY PIPE AND TUBE	X	X	INCONEL
622	SEAMLESS NICKEL AND NICKEL-COBALT ALLOY PIPE	X	X	HASTELLOY
626	WELDED NICKEL AND NICKEL-COBALT ALLOY TUBE	X	X	MONEL
676	WELDED TUBE N08367	X	X	AL-6XN
690	NICKEL-CHROME-MOLY SEAMLESS PIPE AND TUBE	X	X	AL-6XN
705	NICKEL-CHROME-MOLY-COLUMBIUM ALLOY WELDED TUBE	X	X	INCONEL
FITTINGS				
363	SEAMLESS AND WELDED TITANIUM AND TITANIUM ALLOY WELDED FITTINGS	X	X	INCOLOY
366	FACTORY-MADE WROUGHT NICKEL AND NICKEL ALLOY FITTINGS	X	X	NICKEL ALLOY
462	ALLOY PIPE FLANGES, FORGED FITTING FOR CORROSIVE HIGH TEMPERATURE SERVICE	X	X	NICKEL ALLOY
FLANGES AND FORGINGS				
381	TITANIUM AND TITANIUM ALLOY FORGINGS	X	X	TITANIUM
462	ALLOY PIPE FLANGES, FORGED FITTING FOR CORROSIVE HIGH TEMPERATURE SERVICE	X	X	AL-6XN
564	NICKEL ALLOY FORGINGS	X	X	NICKEL ALLOY
PLATE				
127	NICKEL-CHROME-COPPER ALLOY PLATE, SHEET, STRIP	X	X	MONEL
168	NICKEL-CHROME-IRON ALLOY PLATE, SHEET, STRIP	X	X	INCONEL, INCOLOY
265	TITANIUM AND TITANIUM ALLOY STRIP, PLATE, SHEET	X	X	TITANIUM
409	NICKEL-IRON-CHROMIUM-COPPER ALLOY PLATE, SHEET, STRIP	X	X	INCOLOY
575	LOW CARBON NICKEL-CHROMIUM-MOLYBDENUM ALLOY PLATE, SHEET, STRIP	X	X	HASTELLOY
688	CHROME-NICKEL-MOLY-IRON PLATE, SHEET, STRIP	X	X	INCOLOY
BAR				
166	NICKEL-CHROME-IRON ALLOY ROD, BAR AND WIRE	X	X	INCONEL, INCOLOY
348	TITANIUM AND TITANIUM ALLOY BARS AND BILLETS	X	X	TITANIUM
446	NICKEL-CHROME-MOLY-COLUMBIUM ALLOY ROD AND BAR	X	X	INCONEL
574	LOW CARBON NICKEL-CHROMIUM-MOLYBDENUM ALLOY ROD	X	X	HASTELLOY

STAINLESS, CARBON, ALLOY & SPECIALTY METALS MATERIAL COMPATIBILITY CHART

MATERIAL	UNS	GRADE	CONFIGURATIONS						
			PIPE	TUBE	FITTINGS	FLANGES FORGINGS	PLATE	BAR	
Chrome Alloy	K11522	P1/WP1/F1	A/SA 335						
	K41545	P5/T5/WP5/F5/GR 5							
	S50400 K90941	P9/T9/WP9/F9/GR 9							
	K11597	P11/T11/WP11/GR 11	A/SA 335 691	A/SA 213	A/SA 234	A/SA 182	A/SA 387	A/SA 336	
	K21590	P22/T22/WP22/F22/GR 22							
	K91560 K90901	P91/T91/WP91/F91/GR 91							
Stainless High Temp	S30900 S30908 S30909	TP309S/H,WP309,F309H	A/SA 312	A/SA 213/249				A/SA 240 A167	
	S31000 S31008 S31009	TP309S/H,WP310H,F310/H							
	S31254	S31254/WP31254/F44							
Stainless Austenitic	S30400	TP304/WP304/F304/TYPE304							
	S30403	TP304L/WP304L/F304L							
	S31600	TP316,WP316,F316,TYPE316							
	S31603	TP316L,WP316L,F316L,TYPE316L							
	S31700	TP317,WP317,F317,TYPE317							
	S31703	TP317L,WP317L,F317L,TYPE317L							
	S32100	TP321,WP321,F321,TYPE321	A/SA 312/376						
	S34700	TP347,WP347,F347,TYPE347							
	S30409	TP304H,WP304H,F304H,TYPE304H							
	S31609	TP316H,WP316H,F316H,TYPE316H							
	S31725	S31725,WP31725,TYPE317LM							
	S32109	TP321H,WP321H,F321H,TYPE321H							
	S34709	TP347H,WP347H,F347H,TYPE347H							
	S31254	S31254/WP31254/F44							
Duplex	S32205	TP32205,WP32205,F60,TYPE 2205	A/SA 790	A/SA 789	A/SA 815				
Stainless Martensitic	S41000	TP410,WP410,F6a		A/SA 268					
Alloy Carpenter 20	N08020		B/SB 464/729	B/SB 468/729	B/SB 462	B/SB 462	A/SA240 B/ SB 463	B/SB 473	
Carbon Steel		GRADE A		A/SA 178 A500					
		GRADE B	A/SA 53/106/672	A 500		A/SA 105	A/SA 36/285	A/SA 29 A108	
		GRADE C		A/SA 178/210 A 500	A/SA 234				
Low Temp		GRADE 1,WPL6,LF1							
		GRADE 3,WP9,LF3	A/SA 333/671	A/SA 192/334	A/SA 420	A/SA 350	A/SA 36	A/SA 29 A108	
		GRADE 6,WPL3,LF6							
AL6XN N08367	N08367		B/SB 675/690	B/SB 676	B/SB 462	B/SB 462	B/SB 688	B/SB 691	
Monel 400 N04400	N04400		B/SB 165	B/SB 163/165			B/SB 127	B/SB 164	
Inconel 600 N06600	N06600		B/SB 167	B/SB 163/165/167		B/SB 564	B/SB 168	B/SB 166	
Inconel 625 N06625	N06625		B/SB 444/704	B/SB 444/705			B/SB 443	B/SB 446	
Incoloy	N08800	Alloy 800							
	N08810	Alloy 800H	B/SB 407	B/SB 163/165	B/SB 366	B/SB 564	B/SB 168	A/SA 276/479	
	N08811	Alloy 800HT					B/SB 409		
Hastelloy	N10276	C276	B/SB 619/622	B/SB 622/626		B/SB 564	B/SB 575	B/SB 574	
Titanium			B/SB 861/862	B/SB 338			B/SB 265	B/SB 348	
Boiler/Heat Exchanger Tubes				A/SA 179/182/192 A519 (LOW) CARBON STEEL					
A1				A/SA 210 GRADE A-1					
Mechanical Stainless Tubing				A 511/554					

14. CONVERSION FACTORS

LINEAR, SQUARE AND CUBIC MEASUREMENTS						
FROM	TO	MULTIPLY BY		FROM	TO	MULTIPLY BY
in	mm	25.4		mm	in	0.03937
ft	m	0.3048		m	ft	3.28084
miles	km	1.609344		km	miles	0.62137
in	mm ²	645.16		mm ²	in ²	0.00155
ft ²	m ²	0.092903		m ²	ft ²	10.7639
in ²	cm ³	16.3871		cm ³	in ²	0.06102
ft ³	m ³	0.02832		m ³	ft ³	35.3147
ft ³	litres	28.375		litres	ft ³	0.0352
ft ³	Imp. gallons	6.23		Imp. gallons	ft ³	0.16
ft ³	U.S. gallons	7.4805		U.S. gallons	ft ³	0.1337
Imp. gallons	litres	4.5461		litres	Imp. gallons	0.22
MASS, MASS/UNIT LENGTH AND DENSITY (MASS/ VOLUME)						
FROM	TO	MULTIPLY BY		FROM	TO	MULTIPLY BY
lb	kg	0.45359		kg	lb	2.2046
tons	tonnes	1.01605		tonnes	tons	0.9842
in ³ of water	lb (15°C)	0.0361		lb (15°C)	in ³ of water	27.70083
ft ³ of water	lb (15°C)	62.4		lb (15°C)	ft ³ of water	0.01603
Imp. gallons of water	lb (15°C)	10		lb (15°C)	Imp. gallons of water	0.1
U.S. gallons of water	lb (15°C)	8.33		lb (15°C)	U.S. gallons of water	0.12
litre of water	lb (15°C)	2.2		lb (15°C)	litre of water	0.45
in ³ of water	in ³ of mercury	0.735		in ³ of mercury	in ³ of water	13.6
in ³ of mercury	lb	0.491		lb	in ³ of mercury	2.037
lb/ft	kg/m	1.4882		kg/m	lb/ft	0.672
lb/ft	tons/miles	2.3571		tons/miles	lb/ft	0.4242
lb ³ /ft	kg/m ³	16.0185		kg/m ³	lb ³ /ft	0.06243
PRESSURE						
FROM	TO	MULTIPLY BY		FROM	TO	MULTIPLY BY
in of water	lb/in ² (psi)	0.0361		lb/in ² (psi)	in of water	27.7
in of water	in of mercury	0.0735		in of mercury	in of water	13.6
ft of water	lb/in ² (psi)	0.4332		lb/in ² (psi)	ft of water	2.308
ft of water	in of mercury	0.8824		in of mercury	ft of water	1.133
in of mercury	lb/in ² (psi)	0.4912		lb/in ² (psi)	in of mercury	2.04
cm of mercury	lb/in ² (psi)	0.1934		lb/in ² (psi)	cm of mercury	5.1706
atmosphere	lb/in ² (psi)	14.696		lb/in ² (psi)	atmosphere	0.06805
atmosphere	ft of water	34		ft of water	atmosphere	0.0294
atmosphere	mm of mercury	760		mm of mercury	atmosphere	0.00132
kg/cm ²	lb/in ² (psi)	14.225		lb/in ² (psi)	kg/cm ²	0.0703
kg/m ²	lb/in ² (psi)	0.00142		lb/in ² (psi)	kg/cm ²	703.08
FORCE						
FROM	TO	MULTIPLY BY		FROM	TO	MULTIPLY BY
lbf	N	4.4482		N	lbf	0.2248
kgf	N	9.80665		N	kgf	0.102
lb/in ² (psi)	kPa	6.895		kPa	lb/in ² (psi)	0.14503
lb/in ² (psi)	MPa	0.006895		MPa	lb/in ² (psi)	145.03263
ft-lb	joules(J)	1.3558		joules(J)	ft-lb	0.73757
PRESSURE (stress)						
FROM	TO	MULTIPLY BY		FROM	TO	MULTIPLY BY
lbf/in ²	Kgf/cm ²	0.07031		Kgf/cm ²	lbf/in ²	14.2233
lbf/in ²	bar	0.06895		bar	lbf/in ²	14.5038
lbf/in ²	N/m ²	6894.76		N/m ²	lbf/in ²	0.000145
kgf/cm ²	bar	0.980665		bar	Kgf/cm ²	1.0197
tonf/in ²	kgf/mm ²	1.5749		kgf/mm ²	tonf/in ²	0.635
tonf/in ²	N/mm ²	15.4443		N/mm ²	tonf/in ²	0.06475
kgf/mm ²	N/mm ²	9.80665		N/mm ²	kgf/mm ²	0.102
TEMPERATURE						
FROM	TO	MULTIPLY BY		FROM	TO	MULTIPLY BY
Fahrenheit °F	Celsius °C	°C= (°F-32)0.555		Celsius °C	Fahrenheit °F	°F=(°C x 1.8)+32

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