



**LIBERTY**

# Liberty Speciality Steels

Speciality Alloys for the  
Aerospace Industry



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## LIBERTY SPECIALITY STEELS


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## Alloys for the Aerospace Industry

Producing high integrity alloys

For more than 60 years, Liberty Speciality Steels has developed an outstanding reputation as a manufacturer of aerospace steels with systems and products approved by over 100 OEMs, primes and third party accreditations.

Our high integrity specialist steels are used in major commercial and military aerospace projects around the world, using tailored supply chain solutions.

A sincere commitment to quality and product excellence is underpinned by our philosophy of 'right first time' and continued investment in new technology.

Our products, delivered as ingot, bar and cut pieces in quantities from as little as 1kg, are used in the production of engine components, landing gear, controls, aerostructures and helicopter rotor components.

Our intent is to provide our customers with a truly bespoke offering, either direct from the mill or from one of our service centres.

### Quality Approvals

Our quality management systems have been assessed by over 100 component and equipment manufacturers, end users, third parties and national bodies. Some of the relevant approvals include:

#### Customer Approvals

Airbus, GE Aviation,  
BAe Systems, Bell  
Helicopter, Boeing,  
Bombardier, Collins  
Aerospace, IHI, Israel  
Aerospace Industries,  
Leonardo, Liebherr,  
Lockheed Martin, Mettis  
Aerospace, NAVSEA,  
Pratt & Whitney,  
Rolls-Royce, Safran,  
Schaeffler, Siemens,  
SKF, Spirit Aerosystems,  
Thyssenkrupp, Triumph,  
Voestalpine BÖHLER,  
Wyman Gordon

#### Accreditations

ISO 9001:2008  
AS9100 Rev C/BS EN  
9100:2009  
AS9120 Rev A/BS EN  
9120:2010  
BS EN ISO 17025 (testing)  
Nadcap:  
Heat treatment  
NDT  
Material testing

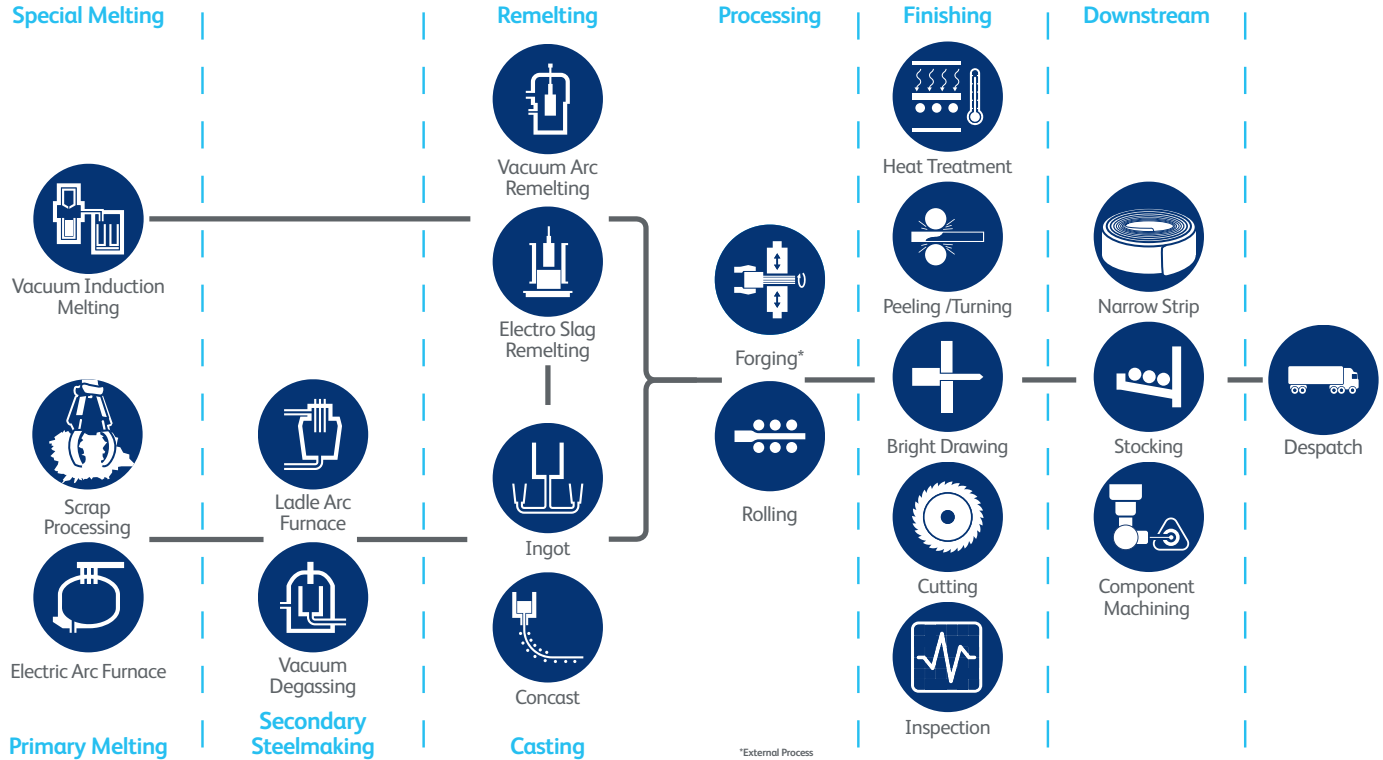
#### Environmental Approval

ISO 14001: 2001V



## Aerospace process route

Our modern integrated production facilities with in-house finishing and testing capability help us to meet the specific requirement of our customer's supply chain.



## Products and services

Liberty Speciality Steels has the capability to meet individuals and OEM global requirements, from basic JIT delivery to total supply chain management responsibility.

This is supported by:

- A unique integrated mill and service centre facility
- Specialist manufacturing capability for VAR and ESR remelted steels
- Manufacture and supply of VIM products
- Worldwide representation
- Continuous improvement programmes
- Application of lean manufacturing practices.

## Service centre

Alloy Steels  
 Stainless Steels  
 Maraging Steels  
 Precipitation Hardening Steels  
 Nickel Alloys  
 Aluminium Alloys  
 Titanium Alloys  
 Yellow Metals  
 Rounds  
 Squares  
 Rectangles  
 Plate  
 Sheet  
 Tube  
 Bored Bar (sizes on application)

## Mill product capability

Ingots Square – 5.4T, 6.6T

Round (multi-fluted) – 6.1T, 8.3T, 12.8T

VAR – 4.3T, 5.9T, 8.2T

ESR – 4.3T

Round Cornered Squares  
 70 – 457mm sq

Rounds  
 76 – 381mm dia  
 (larger forged sizes on request)

Slabs

Width 100 – 500mm

Thickness 50 – 330mm

Turned Bar  
 70 – 450mm dia

Secondary Rolled Bright Bar  
 19 – 70mm dia

## Specifications

The following specifications are only an indication of the comprehensive range we can supply or manufacture.

In addition, we produce and stock steels to customer specifications.

Specifications are related by nominal analysis only. The reference group may include both single and remelted grades to various mechanical property specifications achieved through differing heat treatments.

## Nominal chemical analysis %

## British specifications

'S' specs	VIM	VAR	ESR	Single Melted	Related specifications	C	Mn	Cr	Mo	Ni	V	Nb	Other elements
S1	-	-	-	✓	S21	0.20	0.70						
S14	-	-	-	✓	W1.1144	0.13	0.50						
S15	-	-	-	✓	MSRR 6004	0.12	0.55			3.00			
S21	-	-	-	✓	S1	0.20	0.70						
S28	-	-	-	✓		0.30	0.50	1.20	0.30	4.00			
S62	-	-	-	✓	W1.4014	0.20		13.00					
S80	-	-	-	✓	Z15CN17.03, W1.4044	0.16		16.50		2.40			
S82	-	✓	✓	✓	S156, MSRR 6009/10/55, 16NCD17, W1.6722/3, ZFNL 9206, LAT1.9043	0.16	0.40	1.20	0.22	4.10			
S92	-	-	-	✓	W1.1169	0.22	1.50						
S93	-	-	-	✓	W1.1157	0.40	0.85						
S95	-	-	-	✓	S119, S139, MSRR 6017/36	0.40	0.60	1.25	0.30	1.40			
S97	-	-	-	✓	S140, S153, S154, MSRR 6043	0.32	0.55	0.70	0.50	2.50			
S98 to S99	-	-	-	✓	W1.6745	0.40	0.60	0.70	0.50	2.50			
S106	-	-	-	✓	MSRR 6001/2/3, 6020/34, 6907/8	0.25	0.50	3.25	0.60				
S114	-	-	-	✓		0.36	1.50		0.27				
S119	-	-	-	✓	S95, S139, MSRR 6017/36	0.40	0.60	1.25	0.30	1.40			
S129	-	-	-	✓	AMS 5645	0.05		18.00		9.50			0.45% Ti
S130	-	-	-	✓	MSRR 6522/3/4/5, AMS 5646, W1.4546	0.05		17.50		9.60		0.55	
S132 to S134	-	-	-	✓	MSRR 6011/2, 6097, 6100/4, 6910/1/2, MAT 122, 40CDV12, W1.8523	0.40	0.55	3.25	1.00		0.20		
S135	-	-	-	✓	MSRR 6013/25, AMS 6440/4, 100C6, W1.3505/14	1.00	0.30	1.50					
S139	-	-	-	✓	S95, S119, MSRR 6017/36	0.40	0.60	1.25	0.30	1.40			
S140	-	-	-	✓	S97, S153, S154, MSRR 6043	0.32	0.55	0.70	0.50	2.50			
S143 to S145	-	-	-	✓	MSRR 6647, BACM 85E, SF 520B	0.05		14.00	1.50	5.50		0.30	1.5% Cu
S147	-	-	-	✓	SAE 8740	0.40	0.90	0.50	0.25	0.60			
S149	-	-	-	✓	AMS 6409/14/15/84, SAE 4340, AMS-S-5000, BMS 7-28, NCT 10-123-21/2MD, MTL 1101	0.40	0.75	0.85	0.25	1.80			
S150	-	-	-	✓	MSRR 6591/2/5/6/7, 6603/31, 6902/19, W1.4914, Jethete M160, SF 448	0.13		10.50	0.60	1.00	0.20	0.35	0.06% N
S151	-	-	-	✓	MSRR 6502/3/4/5/6/8/9/10/44/58, 6665, MSRR 6906/16/18, DTD 5066, Jethete M152, AMS 5719, Z12CNDV12, W1.4939	0.11		11.50	1.60	2.60	0.30		0.03% N
S153 to S154	-	-	-	✓	S97, S140, MSRR 6043	0.32	0.55	0.70	0.50	2.50			
S155	-	✓	-	-	MAT 137, MTL 1201, AMS 6257, 6417/9, SAE 4340M, BMS 7-26, DMS 1935, AMS-S-8844, 300M, IGQ 41-11, LAT 1.9042, ZFNL 9207, MTL 1202	0.42	0.80	0.85	0.40	1.90	0.08		1.7% Si
S156	-	✓	-	-	S82, MSRR 6009/10/55, 16NCD17, W1.6722/3, LAT1.9043, ZFNL 9206	0.16	0.40	1.20	0.22	4.10			
S157	-	-	-	✓	16NCD13, W1.6657, ZFNL 9203, LAT1.9028	0.17	0.45	1.00	0.25	3.25			
S162	✓	✓	-	-	MSRR 6551, DTD 5212, MAT 102, AMS 6512, W1.6359, E22NKD18, Maraging 250	0.01	0.05		5.00	18.00			8.0% Co+Al/Ti

## Nominal chemical analysis %

## British specifications

'Rolls-Royce' specs	VIM	VAR	ESR	Single Melted	Related specifications	C	Mn	Cr	Mo	Ni	V	Nb	Other elements
MSRR 6001 to 6002	-	-	-	✓	S106, MSRR 6020/34, MSRR 6907/8	0.25	0.50	3.25	0.60				
& 6003	-	✓	-	-									
MSRR 6004	-	-	-	✓	S15	0.12	0.55			3.00			
MSRR 6009 & 6010	-	-	-	✓	S82, S156, MSRR 6055, 16NCD17, W1.6722/3, ZFNL 9206, LAT1.9043	0.16	0.40	1.20	0.22	4.10			
MSRR 6011 & 6012	-	-	-	✓	S132/4, MSRR 6097, 6100/4, 6910/1/2, MAT 122, 40CDV12, W1.8523	0.40	0.55	3.25	1.00		0.20		
MSRR 6013	-	-	-	✓	S135, MSRR 6025, AMS 6440/4, 100C6, W1.3505/14	1.00	0.30	1.50					
MSRR 6017	-	-	-	✓	S95, S119, S139, MSRR 6036	0.40	0.60	1.25	0.30	1.40			
MSRR 6020	-	✓	-	-	S106, MSRR 6001/2/3, 6034, 6907/8	0.25	0.50	3.25	0.60				
MSRR 6025	-	✓	-	-	S135, MSRR 6013, AMS 6440/4, 100C6, W1.3505/14	1.00	0.30	1.50					
MSRR 6034	-	-	-	✓	S106, MSRR 6001/2/3, 6020, 6907/8	0.25	0.50	3.25	0.60				
MSRR 6036	-	-	-	✓	S95, S119, S139, MSRR 6017	0.40	0.60	1.25	0.30	1.40			
MSRR 6043	-	-	-	✓	S97, S140, S153, S154	0.32	0.55	0.70	0.50	2.50			
MSRR 6046 to 6047	-	-	-	✓		0.12		0.60		0.50			0.003% B
MSRR 6055	-	-	-	✓	S82, S156, MSRR 6009/10, 16NCD17, W1.6722/3, ZFNL 9206, LAT1.9043	0.16	0.40	1.20	0.22	4.10			
MSRR 6097, 6100 & 6104	-	-	✓	-	S132/4, MSRR 6011/2, 6910/1/2, MAT 122, 40CDV12, W1.8523	0.40	0.55	3.25	1.00		0.20		
MSRR 6119	-	✓	✓	-	S132/4, MSRR 6011/2, 6910/1/2, MAT 122, 40CDV12, W1.8523, PWA 36280, CPW 758	0.40	0.55	3.25	1.00		0.20		
MSRR 6502 to 6506 & 6508 to 6510	-	-	-	✓	MSRR 6544/58, 6665, 6906/16/18, S151, DTD 5066, Jethete M152, AMS 5719, Z12CNDV12, W1.4939	0.11		11.50	1.60	2.60	0.30		0.03% N
MSRR 6519 to 6521	-	✓	-	-	MSRR 6542, 6903, 6920, SF 535	0.09		10.50	0.70	0.35	0.15	0.32	5.7% Co +N/B
MSRR 6522 to 6525	-	-	-	✓	S130, AMS 5646, W1.4546	0.05		17.50		9.60		0.55	
MSRR 6542	-	✓	-	-	MSRR 6519/20/21, 6903, 6920, SF 535	0.09		10.50	0.70	0.35	0.15	0.32	5.7% Co +N/B
MSRR 6544	-	-	✓	-	MSRR 6502/3/4/5/6/8/9/10/58, 6665, MSRR 6906/16/18, S151, DTD 5066, Jethete M152, AMS 5719, Z12CNDV12, W1.4939	0.11		11.50	1.60	2.60	0.30		0.03% N
MSRR 6551	✓	✓	-	-	S162, DTD 5212, MAT 102, AMS 6512, W1.6359, EZ2NKD18	0.01	0.05		5.00	18.00			8.0% Co +Al/Ti
MSRR 6558	-	✓	-	-	MSRR 6502/3/4/5/6/8/9/10/44, 6665, MSRR 6906/16/18, S151, DTD 5066, Jethete M152, AMS 5719, Z12CNDV12, W1.4939	0.11		11.50	1.60	2.60	0.30		0.03% N
MSRR 6591 to 6592 & 6595 to 6597	-	-	-	✓	S150, MSRR 6603/31, 6902/19, W1.4914, Jethete M160, SF 448	0.13		10.50	0.60	1.00	0.20	0.35	0.06% N
MSRR 6601	-	-	-	✓	SF 17/4, AMS 5622/43, Z7CNU17.04, W1.4548	0.05		17.00		4.00		0.30	4.0% Cu

## Nominal chemical analysis %

## British specifications

'Rolls-Royce' specs	VIM	VAR	ESR	Single Melted	Related specifications	C	Mn	Cr	Mo	Ni	V	Nb	Other elements
MSRR 6603	-	-	-	✓	S150, MSRR 6591/2/5/6/7, 6631, 6902/19, W1.4914, Jethete M160, SF 448	0.13		10.50	0.60	1.00	0.20	0.35	0.06% N
MSRR 6621	-	-	✓	-	MSRR 6674	0.05	13.00	18.00		3.00			0.35% N
MSRR 6631	-	-	-	✓	S150, MSRR 6591/2/5/6/7, 6603, 6902/19, W1.4914, Jethete M160, SF 448	0.13		10.50	0.60	1.00	0.20	0.35	0.06% N
MSRR 6647	-	-	-	✓	S143/4/5, BACM 85E, SF 520B MSRR 6502/3/4/5/6/8/9/10/44/58,	0.05		14.00	1.50	5.50		0.30	1.5% Cu
MSRR 6665	✓	✓	-	-	MSRR 6906/16/18, S151, DTD 5066, Jethete M152, AMS 5719, Z12CNDV12, W1.4939	0.11		11.50	1.60	2.60	0.30		0.03% N
MSRR 6674	-	-	✓	-	MSRR 6621	0.05	13.00	18.00		3.00			0.35% N
MSRR 6902	-	-	-	✓	S150, MSRR 6591/2/5/6/7, 6603/31, 6919, W1.4914, Jethete M160, SF 448	0.13		10.50	0.60	1.00	0.20	0.35	0.006% N
MSRR 6903	-	✓	-	-	MSRR 6519/20/21, 6542, 6920, SF 535 MSRR 6502/3/4/5/6/8/9/10/44/58, 6665,	0.09		10.50	0.70	0.35	0.15	0.32	5.7% Co +N/B
MSRR 6906	✓	✓	-	-	MSRR 6916/18, S151, DTD 5066, Jethete M152, AMS 5719, Z12CNDV12, W1.4939	0.11		11.50	1.60	2.60	0.30		0.03% N
MSRR 6907 & 6908	-	-	-	✓	S106, MSRR 6001/2/3, 6020/34	0.25	0.50	3.25	0.60				
MSRR 6910 & 6911 to 6912	-	-	✓	-	S132/4, MSRR 6011/2, 6097, 6100/4, MAT 122, 40CDV12, W1.8523	0.40	0.55	3.25	1.00		0.20		
MSRR 6916 & 6918	-	-	-	✓	MSRR 6502/3/4/5/6/8/9/10/44/58, 6665, MSRR 6906, S151, DTD 5066, Jethete M152, AMS 5719, Z12CNDV12, W1.4939	0.11		11.50	1.60	2.60	0.30		0.3% N
MSRR 6919	-	-	-	✓	S150, MSRR 6591/2/5/6/7, 6603/31, 6902, W1.4914, Jethete M160, SF 448	0.13		10.50	0.60	1.00	0.20	0.35	0.06% N
MSRR 6920	-	✓	-	-	MSRR 6519/20/21, 6542, 6903, SF 535	0.09		10.50	0.70	0.35	0.15	0.32	5.7% Co +N/B



## Nominal chemical analysis %

## British specifications

'Other' specs	VIM	VAR	ESR	Single Melted	Related specifications	C	Mn	Cr	Mo	Ni	V	Nb	Other elements
BACM 85E	-	-	✓	-	S143/4/5, MSRR 6647, SF 520B	0.05		14.00	1.50	5.50		0.30	1.5% Cu
DMS 127	-	-	-	✓	AMS 6302	0.30	0.55	1.25	0.50		0.25		0.65% Si
Jethete M152	-	✓	✓	✓	MSRR 6502/3/4/5/6/8/9/10/44/58, 6665, MSRR 6906/16/18, S151, DTD 5066, AMS 5719, Z12CNDV12, W1.4939	0.11		11.50	1.60	2.60	0.30		0.03% N
Jethete M160	-	-	-	✓	MSRR 6591/2/5/6/7, 6603/31, 6902/19, S150, W1.4914, SF 448	0.13		10.50	0.60	1.00	0.20	0.35	0.06% N
DTD 5192	-	-	✓	-	Maraging 250	0.42	0.55	1.25	1.00	1.75	0.20		0.65% Si
DTD 5212	✓	✓	-	-	S162, S163, MSRR 6551, MAT 102, AMS 6512, W1.6359, EZ2NKD18	0.01	0.05		5.00	18.00			8.0% Co +Al/Ti
H 46	-	-	✓	-	PWA1091	0.15	0.75	11.00	0.70	0.60	0.25	0.30	0.06% N 0.005% B
MAT 102	✓	✓	-	-	S162, MSRR 6551, DTD 5212, AMS 6512, W1.6359, EZ2NKD18, Maraging 250	0.01	0.05		5.00	18.00			8.0% Co +Al/Ti
MAT 122	-	-	✓	-	MSRR 6011/2, 6097, 6100/4, 6910/1/2, S132/4, 40CDV12, W1.8523	0.40	0.55	3.25	1.00		0.20		
MAT 135 & MTL 1203	-	✓	-	-	35NCD16, NCT10-123-11/19MD, IGQ 41-06, LAT 1.9022	0.37	0.45	1.80	0.45	4.00			
MTL 1201	-	✓	-	-	S155, AMS 6257, 6417/9, SAE 4340M, BMS 7-26, DMS 1935, AMS-S-8844, 300M, IGQ 41-11, LAT 1.9042, ZFNL 9207, MTL 1202	0.42	0.80	0.85	0.40	1.90	0.08		1.7% Si
SF 15/5	-	✓	✓	-	AMS 5659, Z7CNU15.05, W1.4545, LAT 1.9037	0.05		15.00		5.00		0.30	3.5% Cu
SF 16/5/1	-	-	-	✓	Z8CND1704, 1.4418	0.05	0.75	16.00	1.00	5.00			0.03% N
SF 17/4	-	✓	✓	✓	MSRR 6601, AMS 5622/43, Z7CNU17.04, W1.4548	0.05		17.00		4.00		0.30	4.0% Cu
SF 448	-	-	-	✓	MSRR 6591/2/5/6/7, 6603/31, 6902/19, W1.4914, Jethete M160, S150	0.13		10.50	0.60	1.00	0.20	0.35	0.06% N
SF 450	-	-	✓	✓	AMS 5763/73	0.03	0.50	14.75	0.75	6.50		0.60	1.5% Cu
SF 520B	-	-	✓	✓	S143/4/5, MSRR 6647, BACM 85E	0.05		14.00	1.50	5.50		0.30	1.5% Cu
SF 535	-	✓	-	-	MSRR 6519/20/21/42, 6903/20	0.09		10.50	0.70	0.35	0.15	0.32	5.7% Co +N/B

## Nominal chemical analysis %

## US specifications

'AMS' specs	VIM	VAR	ESR	Single Melted	Related specifications	C	Mn	Cr	Mo	Ni	V	Nb	Other elements
AMS 5612	-	-	-	✓		0.14		12.00					
AMS 5613	-	-	-	✓		0.12		12.00					
AMS 5616	-	-	✓	✓		0.18		13.00		2.00			3.0% W
AMS 5622	-	✓	✓	-	MSRR 6601, AMS 5643, Z7CNU17.04, W1.4548, SF 17/4	0.05		17.00		4.00		0.30	4.0% Cu
AMS 5629	✓	✓	-	-	W1.4534, 13/8 Mo	0.04		12.50	2.00	8.45			1.2% Al
AMS 5643	-	-	-	✓	MSRR 6601, AMS 5622, Z7CNU17.04, W1.4548, SF 17/4, DMD 0229-20	0.05		17.00		4.00		0.30	4.0% Cu
AMS 5645	-	-	-	✓	S129	0.05		18.00		9.50			0.45% Ti
AMS 5646	-	-	-	✓	S130, MSRR 6522/3/4/5, W1.4546	0.05		17.50		9.60		0.55	
AMS 5659	-	✓	✓	-	SF 15/5, Z7CNU15.05, W1.4545, LAT 1.9037 MSRR 6502/3/4/5/6/8/9/10/44/58, 6665,	0.05		15.00		5.00		0.30	3.5% Cu
AMS 5719	-	✓	-	-	MSRR 6906/16/18, S151, DTD 5066, Jethete M152, Z12CNDV12, W1.4939	0.11		11.50	1.60	2.60	0.30		0.03% N
AMS 5763 & 5773	-	-	-	✓	SF 450	0.03	0.50	14.75	0.75	6.50		0.60	1.5% Cu
AMS 6257	-	✓	-	-	S155, MAT 137, MTL 1201, AMS 6417/9, SAE 4340M, BMS 7-26, DMS 1935, AMS-S-8844, 300M, IGG 41-11, LAT 1.9042, ZFNL 9207, MTL 1202	0.42	0.80	0.85	0.40	1.90	0.08		1.7% Si
AMS 6265 & 6267	✓	✓	-	-	AMS 6260, SAE 9310	0.11	0.55	1.20	0.10	3.25			
AMS 6302	-	-	-	✓	DMS 127	0.30	0.55	1.25	0.50		0.25		0.65% Si
AMS 6304 & 6305	-	✓	-	✓	PWA 733, PWA-S-6304	0.45	0.60	1.00	0.60		0.30		
AMS 6308	✓	✓	-	-	CPW 245, PWA768, PWAB17	0.10	0.40	1.00	3.25	2.00	0.10		0.90% Si/2.00% Cu
AMS 6348 & 6370	-	✓	✓	✓	SAE 4130	0.30	0.50	1.00	0.20				
AMS 6382	-	-	-	✓	SAE 4140, 40CD4	0.40	0.80	1.00	0.20				
AMS 6409	-	-	-	✓	AMS 6414/15/84, SAE 4340, BMS 7-28, S149, AMS-S-5000, NCT 10-123-21/2MD, MTL 1101	0.40	0.75	0.85	0.25	1.80			
AMS 6411	-	✓	-	-	SAE 4330M, BMS 7-122	0.32	0.90	0.90	0.45	1.90	0.08		
AMS 6414 & 6415	✓	✓	-	-	AMS 6409/84, SAE 4340, BMS 7-28, S149, AMS-S-5000, NCT 10-123-21/2MD, MTL 1101	0.40	0.75	0.85	0.25	1.80			
AMS 6417 & 6419	-	✓	-	-	S155, MAT 137, MTL 1201, AMS 6257, SAE 4340M, BMS 7-26, DMS 1935, AMS-S-8844, 300M, IGG 41-11, LAT 1.9042, ZFNL 9207, MTL 1202	0.42	0.80	0.85	0.40	1.90	0.08		1.7% Si
AMS 6418	-	-	-	✓	DMS 1841, HYTUFF	0.26	1.30	0.30	0.40	1.85			1.5% Si
AMS 6425	-	✓	-	-	DMS 1841, HYTUFF	0.26	1.40	0.30	0.40	1.80			1.5% Si
AMS 6427	-	-	-	✓	E4330M	0.30	0.80	0.85	0.40	1.80	0.08		
AMS 6431	-	✓	-	-	D6AC	0.47	0.75	1.10	1.00	0.50	0.10		
AMS 6440 & 6444	-	-	-	✓	S135, MSRR 6013/25, W1.3505/14, 100C6	1.00	0.30	1.50					
AMS 6470 & 6472	-	-	-	✓		0.40	0.65	1.70	0.35				1.10% Al
AMS 6471	-	✓	-	-									
AMS 6475	✓	-	-	-	Nitralloy™ N, 299-947-042	0.25	0.65	1.10	0.25	3.50			0.25 Al

## Nominal chemical analysis %

## US specifications

'AMS' specs	VIM	VAR	ESR	Single Melted	Related specifications	C	Mn	Cr	Mo	Ni	V	Nb	Other elements
AMS 6481	-	✓	-	-	32CDV13	0.34	0.55	3.00	0.90		0.28		
AMS 6484	-	-	-	✓	AMS 6409/14/15, SAE 4340, BMS 7-28, S149, AMS-S-5000, NCT 10-123-21/2MD, MTL 1101	0.40	0.75	0.85	0.25	1.80			
AMS 6499	✓	-	-	-	NC310YW	0.40	0.80	0.85	0.40	1.90	0.20		2.75 Si
AMS 6512	✓	✓	-	-	S162, DTD 5212, MAT 102, W1.6359, EZ2NKD18	0.01	0.05		5.00	18.00			8.0% Co+Al/Ti
AMS 6526	-	✓	-	-	W1.6974, 9-4-30, BMS 7-182	0.30		1.00	1.00	7.70	0.10		4.5% Co
AMS 6709	-	-	-	✓	AMS 6470/1/2, AMS-S-6709, N135	0.40	0.65	1.70	0.35				1.10% Al
'SAE' specs	VIM	VAR	ESR	Single Melted	Related specifications	C	Mn	Cr	Mo	Ni	V	Nb	Other elements
SAE 4130	-	✓	✓	✓	AMS 6348/70	0.30	0.50	1.00	0.20				
SAE 4140	-	-	-	✓	AMS 6382, 40CD4	0.40	0.80	1.00	0.20				
SAE 4340	✓	✓	✓	✓	S149, AMS 6409/14/15/84, AMS-S-5000, BMS 7-28, NCT 10-123-21/2MD, MTL 1101, 299-947-055, MTL 1202	0.40	0.75	0.85	0.25	1.80			
SAE 4330M	-	✓	-	-	AMS 6411, BMS 7-122, BMS 5-7-27	0.32	0.90	0.90	0.45	1.90	0.08		
SAE 4340M	-	✓	-	-	S155, MAT 137, MTL 1201, AMS 6257, 6417/9, BMS 7-26, DMS 1935, 300M, AMS-S-8844, IGQ 41-11, LAT 1.9042, ZFNL 9207	0.42	0.80	0.85	0.40	1.90	0.08		1.7% Si
SAE 8740	-	-	-	✓	S147	0.40	0.90	0.50	0.25	0.60			
SAE 9310	✓	✓	-	✓	AMS 6260/5/7, 299-947-302	0.11	0.55	1.20	0.10	3.25			
'Other' specs	VIM	VAR	ESR	Single Melted	Related specifications	C	Mn	Cr	Mo	Ni	V	Nb	Other elements
AMS-S-5000	-	-	-	✓	S149, AMS 6409/14/15/84, SAE 4340, BMS 7-28, NCT 10-123-21/2MD, MTL 1101	0.40	0.75	0.85	0.25	1.80			
AMS-S-6709	-	-	-	✓	AMS 6470/1/2, 6709, N135	0.40	0.65	1.70	0.35				1.10% Al
AMS-S-8844	-	✓	-	-	S155, MAT 137, MTL 1201, AMS 6257, 6417/9, SAE 4340M, BMS 7-26, DMS 1935, 300M, IGQ 41-11, LAT 1.9042, ZFNL 9207, MTL 1202	0.42	0.80	0.85	0.40	1.90	0.08		1.7% Si
BMS 7-26	-	✓	-	-	S155, MAT 137, MTL 1201, AMS 6257, 6417/9, SAE 4340M, DMS 1935, AMS-S-8844, 300M, IGQ 41-11, LAT 1.9042, ZFNL 9207, MTL 1202	0.42	0.80	0.85	0.40	1.90	0.08		1.7% Si
BMS 7-28	-	-	-	✓	S149, AMS 6409/14/15/84, SAE 4340, AMS-S-5000, NCT 10-123-21/2MD, MTL 1101	0.40	0.75	0.85	0.25	1.80			
BMS 7-122	-	✓	-	-	AMS 6411, SAE 4330M	0.32	0.90	0.90	0.45	1.90	0.08		
CPW 245	-	✓	-	-	AMS 6304-5	0.45	0.60	1.00	0.60		0.30		
DMS 1841	-	✓	-	-	AMS 6418, HYTUFF	0.26	1.30	0.30	0.40	1.85			1.5% Si
DMS 1935	-	✓	-	-	S155, MAT 137, MTL 1201, AMS 6257, 6417/9, BMS 7-26, SAE 4340M, AMS-S-8844, 300M, IGQ 41-11, LAT 1.9042, ZFNL 9207, MTL 1202	0.42	0.80	0.85	0.40	1.90	0.08		1.7% Si
13/8Mo	✓	✓	-	-	AMS 5629, W1.4534	0.04		12.50	2.00	8.45			1.2% Al
300M	-	✓	-	-	S155, MAT 137, MTL 1201, AMS 6257, 6417/9, BMS 7-26, SAE 4340M, DMS 1935, AMS-S-8844, IGQ 41-11, LAT 1.9042, ZFNL 9207, MTL 1202	0.42	0.80	0.85	0.40	1.90	0.08		1.7% Si
D6AC	-	✓	-	-	AMS 6431	0.47	0.75	1.10	1.00	0.50	0.10		
HYTUFF	-	✓	-	-	AMS 6418, AMS 6425, DMS 1841	0.26	1.30	0.30	0.40	1.85			1.5% Si
N135	-	✓	-	✓	AMS 6470/1/2, 6709, AMS-S-6709	0.40	0.65	1.70	0.35				1.10% Al
PWA 36280	-	✓	✓	-	MSRR 6119, CPW 758	0.40	0.55	3.25	0.40	1.00	0.20		
E4343	✓	-	-	-	299-947-363	0.43	0.70	0.85	0.25	1.90			0.3 Si

## Nominal chemical analysis %

## French specifications

'AIR 9160/C' specs	VIM	VAR	ESR	Single Melted	Related specifications	C	Mn	Cr	Mo	Ni	V	Nb	Other elements
(E)100C6	-	✓	-	✓	MSRR 6013/25, AMS 6440/44, S135, W1.3505/14, NCT 15-163-03	1.00	0.30	1.50					
(E)15CDV6	-	-	✓	✓	W1.7734/6, BLFF 151101, CCT LA 285, DMD 0172-20, NCT 15-124-01, CCT LA 303 S157, W1.6657, ZFNL 9203, LAT 1.9028,	0.15	1.00	1.35	0.90		0.25		
(E)16NCD13	-	✓	-	✓	CCT LA 304, NCT 15-152-01, BLFF 125101, CCT LA 140, DMD 0180-20	0.17	0.45	1.00	0.25	3.25			
(E)16NCD17	-	✓	✓	✓	S82, S156, MSRR 6009/10/15, W1.6722/3, ZFNL 9206, LAT 1.9043	0.16	0.40	1.20	0.20	4.00			
25CD45	-	-	-	✓	W1.7214	0.25	0.70	1.00	0.20				
30CD12	-	-	-	✓	W1.8564, CCT 00209, NCT 15-122-13/14/15	0.30	0.50	3.00	0.40				
30NCD16	-	-	-	✓	W1.6747, BLFF 128101, CCT 00306, DMD 0108-20, NCT 15-131-13/16	0.30	0.50	1.40	0.45	4.00			
(E)32CDV13	✓	✓	-	✓	AMS6481, NCT 15-124-13, BLFF 192101, CCT 00310	0.32	0.55	3.00	0.90		0.28		
35CD4	-	-	-	✓	W1.7720, CCT LA 308, NCT 10-122-09/12/14, NCT 15-122-07/08/52/53 MAT135, MTL1203, CCT LA 309, DMD 0112-20,	0.34	0.70	1.00	0.20				
(E)35CND16	-	✓	-	✓	NCT 10-123-11/19, NCT 15-131-03/07, CCT LA 236, LAT 1.9022	0.35	0.45	1.80	0.45	4.00			
(E)40NCD7	✓	✓	-	✓	AMS 56409/14/15/84, SAE 4340, BMS 7-28, MT 1101, NCT 10-123-22, NCT 17-136-02 MSRR 6011/12, 6097, 6100/04,	0.40	0.75	0.85	0.25	1.80			
(E)40CDV12	-	✓	-	✓	6910/11/12, MAT122, W1.8523, S132, DMD 0114-20, BLFF 169102, DMD 0113-20 MSRR 6502/03/04/05/06/08/09/10/44/58,	0.40	0.55	3.25	1.00		0.20		
(E) Z12CDNV12	-	✓	-	✓	6665, 6906/16/18, DTD 5066, Jethete M152, AMS 5719, Z12CNDV12, W1.4939, CCT LA 232 DMD 0242-20, DMD 0237-20	0.10		11.50	1.60	2.70	0.30		0.03%N
Z15CN1703	-	-	-	✓	S80, W1.4044	0.16		16.50		2.50			
(E)Z5CNU1704	-	✓	✓	✓	17/4PH, MSRR 6601, AMS 5622/43, LAT 1.9037, CCT LA 196, DMD 0229-20	0.05		17.00		4.00		0.30	3.5%Cu
Z8CND1704	-	-	-	✓	W1.4418, CCT LA 244	0.05		16.00	1.00	5.00			0.03%N
Z10CNT1811	-	-	-	✓	MSRR 6522/3/4/5, AMS 5645, W1.4546, S130, CCT LA 297	0.05		18.00	9.50			0.50	
EZ2NKD18	✓	✓	-	-	MSRR 6551, DTD 5212, MAT 102, AMS 6512, 1.6359, S162, Maraging 250	0.01			5.00	18.00			8.0%Co+Al+Ti

## Nominal chemical analysis %

## French specifications

'SAFRAN' specs	VIM	VAR	ESR	Single Melted	Related specifications	C	Mn	Cr	Mo	Ni	V	Nb	Other elements
BLFF 125101	-	✓	-	-	S157, E16CD13, W1.6657, ZFNL 9203, LAT 1.9028, CCT LA 140, DMD 0180-20	0.17	0.45	1.00	0.25	3.25			
BLFF 128101	-	-	-	✓	W1.6747, 30NCD16, CCT 00306, DMD 0108-20, NCT 15-131-13, NCT 15-131-16	0.30	0.50	1.40	0.45	4.00			
(E)15CDV6	-	-	-	✓	W1.7734/6, CCT LA 285, DMD 0172-20, NCT 15-124-01, 15CDV6	0.15	1.00	1.35	0.90			0.25	
BLFF 169102	-	✓	-	-	MSRR 6910/11/12, E40CDV12, MAT122, W1.8523, S132, DMD 0113-20	0.40	0.55	3.25	1.00		0.20		
BLFF 192101	-	✓	-	-	AMS6481, E32CDV13, NCT 15-124-13, CCT 00310	0.32	0.55	3.00	0.90			0.28	
CCT 00137	-	-	-	✓	MSRR 6502/03/04/05/06, 6906/16, Jethete M152, AMS 5719, Z12CNDV12, W1.4939	0.10		11.50	1.60	2.70	0.30		0.03%N
CCT 00209	-	-	-	✓	W1.8564, 30CD12, NCT 15-122-13/14/15	0.30	0.50	3.00	0.40				
CCT 00306	-	-	-	✓	W1.6747, 30NCD16, BLFF 128101, DMD 0108-20, NCT 15-131-13, NCT 15-131-16	0.30	0.50	1.40	0.45	4.00			
CCT 00310	-	✓	-	-	AMS6481, E32CDV13, NCT 15-124-13, BLFF 192101	0.32	0.55	3.00	0.90			0.28	
CCT LA 131	-	✓	-	-	MSRR 6013/25, AMS 6444, S135, W1.3505/14, NCT 15-163-03	1.00	0.30	1.50					
CCT LA 140	-	✓	-	-	S157, E16CD13, W1.6657, ZFNL 9203, LAT 1.9028, BLFF 125101, DMD 0180-20	0.17	0.45	1.00	0.25	3.25			
CCT LA 196	-	-	-	✓	MSRR 6502/03/04/05/06, 6906/16, Jethete M152, AMS 5719, Z12CNDV12, W1.4939, DMD 0237-20	0.05		17.00		4.00		0.30	3.5%Cu
CCT LA 232	-	-	-	✓	MSRR 6508/090/10/6918, Jethete M152, AMS 5719, EZ12CNDV12, W1.4939, DMD0242-20	0.10		11.50	1.60	2.70	0.30		0.03%N
CCT LA 236	-	✓	-	-	MAT 135, MTL1203, LAT 1.9022	0.35	0.45	1.80	0.45	4.00			
CCT LA 244	-	-	-	✓	W1.4418, Z8CND1704	0.05		16.00	1.00	5.00			0.03%N
CCT LA 285	-	-	-	✓	W1.7734/6, BLFF 151101, DMD 0172-20, NCT 15-124-01, 15CDV6	0.15	1.00	1.35	0.90		0.25		
CCT LA 297	-	-	-	✓	Z10CNT181, MSRR 6522/3/4/5, AMS 5645, W1.4546, S130	0.05		18.00	9.50			0.50	
CCT LA 303	-	-	✓	-	W1.7734/6, E15CDV6, BLFF 151101, CCT LA 285, DMD 0172-20, NCT 15-124-01	0.15	1.00	1.35	0.90		0.25		
CCT LA 304	-	-	-	✓	S157, W1.6657, ZFNL 9203, LAT 1.9028, NCT 15-152-01, 16NCD13	0.17	0.45	1.00	0.25	3.25			
CCT LA 308	-	-	-	✓	W1.7720, 35CD4, NCT 10-122-09/12/14, NCT 15-122-07/08/52/53	0.34	0.70	1.00	0.20				
CCT LA 309	-	-	-	✓	MAT135, 35NCD16, DMD 0112-20, NCT 10-123-11/19, NCT 15-131-03/07	0.35	0.45	1.80	0.45	4.00			
DMD 0108-20	-	-	-	✓	W1.6747, 30NCD16, BLFF 128101, CCT 00306, NCT 15-131-13, NCT 15-131-16	0.30	0.50	1.40	0.45	4.00			
DMD 0112-20	-	✓	-	-	MAT 135, MTL1203, CCT LA 309, NCT 10-123-11/19, NCT 15-131-03/07, LAT 1.9022	0.35	0.45	1.80	0.45	4.00			
DMD 0113-20	-	✓	-	-	MSRR 6910/11/12, E40CDV12, MAT122, BLFF 169102	0.40	0.55	3.25	1.00		0.20		
DMD 0114-20	-	-	-	✓	MSRR 6011/12, 6097, 6100/04, MAT122, W1.8523, S132	0.40	0.55	3.25	1.00		0.20		
DMD 0172-20	-	-	-	✓	W1.7734/6, BLFF 151101, CCT LA 285, NCT 15-124-01, 15CDV6	0.15	1.00	1.35	0.90		0.25		

## Nominal chemical analysis %

## French specifications

'SAFRAN' specs	VIM	VAR	ESR	Single Melted	Related specifications	C	Mn	Cr	Mo	Ni	V	Nb	Other elements
DMD 0180-20	-	✓	-	-	S157, E16CD13, W1.6657, ZFNL 9203, LAT 1.9028, BLFF 125101, CCT LA 140	0.17	0.45	1.00	0.25	3.25			
DMD 0229-20	-	-	-	✓	17/4PH, Z5CNU1704, MSRR 6601, AMS 5622/43, LAT 1.9037, CCT LA 196 WMSRR 6502/03/04/05/06, 6906/16,	0.05		17.00		4.00		0.30	3.5%Cu
DMD 0237-20	-	-	-	✓	Jethete M152, AMS 5719, Z12CNDV12, W1.4939, CCT LA 196	0.10		11.50	1.60	2.70	0.30		0.03%N
DMD 0242-20	-	✓	-	-	MSRR 6508/090/10/6918, Jethete M152, AMS 5719, EZ12CNDV12, W1.4939, CCT LA 232	0.10		11.50	1.60	2.70	0.30		0.03%N
MTL1101	-	-	-	✓	AMS 56409/14/15/84, SAE 4340, BMS 7-28, 40NCD7, NCT 10-123-22, NCT 17-136-02	0.40	0.75	0.85	0.25	1.80			
MTL1201	-	✓	-	-	MAT 137, S155, AMS 6257/6417/6419, SAE 4340M, BMS7-26, DMS 1938, AMS-S-8844, 300M, LAT 1.9042, ZFNL 9207, MTL1202	0.10	0.80	0.85	0.40	1.90	0.08		1.7%Si
MTL1203	-	✓	-	-	MAT135, CCT LA 236, LAT1.9022	0.35	0.45	1.80	0.45	4.00			
NCT 10-122-09/12	-	-	-	✓	W1.7720, 35CD4, CCT LA 308, NCT 10-122-12/14, NCT 15-122-07/08/52/53	0.34	0.70	1.00	0.20				
NCT 10-123-19	-	✓	-	✓	AMS 56409/14/15/84, SAE 4340, BMS 7-28, MT 1101, 40NCD7, NCT 17-136-02	0.40	0.75	0.85	0.25	1.80			
NCT 15-122-07/08/52/53	-	-	-	✓	W1.7720, 35CD4, CCT LA 308, NCT 10-122-09/12, NCT 15-122-08/52/53	0.34	0.70	1.00	0.20				
NCT 15-122-13/14/15	-	-	-	✓	W1.8564, 30CD12, CCT 00209, NCT 15-122-14/15	0.30	0.50	3.00	0.40				
NCT 15-124-01	-	-	-	✓	W1.7734/6, BLFF 151101, CCT LA 285, DMD 0172-20, 15CDV6	0.15	1.00	1.35	0.90		0.25		
NCT 15-124-13	-	-	-	✓	32CDV13	0.32	0.55	3.00	0.90			0.28	
NCT 15-131-03/07	-	✓	-	-	MAT135, MTL1203, CCT LA 309, DMD 0112-20, NCT 10-123-11/19, NCT 15-131-07, LAT 1.9022	0.35	0.45	1.80	0.45	4.00			
NCT 15-131-13/16	-	-	-	✓	W1.6747, 30NCD16, BLFF 128101, CCT 00306, DMD 0108-20, NCT 15-131-16	0.30	0.50	1.40	0.45	4.00			
NCT 15-134-01	-	✓	-	-	MAT 137, S155, MTL 1201, AMS 6257/6417/6419, SAE 4340M, BMS7-26, DMS 1938, AMS-S-8844, 300M, LAT 1.9042, ZFNL 9207, MTL1202	0.40	0.80	0.85	0.40	1.90	0.08		1.7%Si
NCT 15-144-03	-	✓	-	-	15/5PH, AMS 5659, W1.4545, LAT 1.9037								
NCT 15-152-01	-	-	-	✓	S157, W1.6657, ZFNL 9203, LAT 1.9028, CCT LA 304, 16NCD13	0.17	0.45	1.00	0.25	3.25			
NCT 15-163-03	-	-	-	✓	MSRR 6013/25, AMS 6440/44, S135, W1.3505/14, 100C6	1.00	0.30	1.50					
NCT 17-136-02	-	-	-	✓	AMS 56409/14/15/84, SAE 4340, BMS 7-28, MT 1101, NCT 10-123-22, 40NCD7	0.40	0.75	0.85	0.25	1.80			

## Nominal chemical analysis %

## German specifications

'Werkstoff' specs	VIM	VAR	ESR	Single Melted	Related specifications	C	Mn	Cr	Mo	Ni	V	Nb	Other elements
1.1169	-	-	-	✓	S92	0.22	1.50						
1.3505 & 1.3514	-	-	-	✓	S135, MSRR 6013/25, AMS 6440/4, 100C6	1.00	0.30	1.50					
1.4014	-	-	-	✓	S62	0.20		13.00					
1.4044	-	-	-	✓	S80, Z15CN17.03	0.16		16.50		2.40			
1.4418	-	-	-	✓	Z8CND17.04, SF16/5/1	0.05	0.75	16.00	1.00	5.00			0.03% N
1.4534	✓	✓	-	-	AMS 5629, 13/8 Mo	0.04		12.50	2.00	8.45			1.2% Al
1.4545	-	✓	✓	-	SF 15/5, AMS 5659, Z7CNU15.05, LAT 1.9037	0.05		15.00		5.00		0.30	3.5% Cu
1.4546	-	-	-	✓	S130, MSRR 6522/3/4/5, AMS 5646	0.05		17.50		9.60		0.55	
1.4548	-	✓	✓	-	MSRR 6601, AMS 5622/4/3, Z7CNU17.04, SF 17/4	0.05		17.00		4.00		0.30	4.0% Cu
1.4914	-	-	-	✓	MSRR 6591/2/5/6/7, 6603/31, 6902/19, S150, Jethete M160, SF 448	0.13		10.50	0.60	1.00	0.20	0.35	0.06% N
(WL)1.4939	(✓)	(✓)	(✓)	✓	MSRR 6502/3/4/5/6/8/9/10/44/58, 6665, MSRR 6906/16/18, S151, DTD 5066, Jethete M152, AMS 5719, Z12CNDV12	0.11		11.50	1.60	2.60	0.30		0.03% N
1.6359	✓	✓	-	-	S162, MSRR 6551, DTD 5212, MAT 102, AMS 6512, E22NKD18	0.01	0.05		5.00	18.00			8.0% Co +Al/Ti
1.6657	-	-	-	✓	S157, 16NCD13, ZFNL 9203, LAT 1.9028	0.17	0.45	1.00	0.25	3.25			
1.6722 & 1.6723	-	✓	✓	-	S82, S156, MSRR 6009/10/55, 16NCD17, ZFNL 9206, LAT 1.9043	0.16	0.40	1.20	0.22	4.10			
1.6745	-	-	-	✓	S98, S99	0.40	0.60	0.70	0.50	2.50			
1.6747	-	-	-	✓	30NCD16	0.30	0.50	1.40	0.45	4.00			
1.7214	-	-	-	✓	25CD4S	0.25	0.70	1.00	0.20				
1.7220	-	-	-	✓	35CD4, NCT 10-122-09/12/14MD	0.34	0.70	1.00	0.20				
1.7734	-	-	-	✓	15CDV6	0.15	1.00	1.35	0.90		0.25		
1.7736	-	-	✓	-	15CDV6	0.15	1.00	1.35	0.90		0.25		
1.8523	-	-	-	✓	MSRR 6011/2, 6097, 6100/4, 6910/1/2, S132/4, MAT 122, 40CDV12	0.40	0.55	3.25	1.00		0.20		
1.8564	-	-	-	✓	30CD12	0.30	0.50	3.00	0.40				
'Other' specs													
LAT 1.9022	-	✓	-	-	MTTL 1203, MAT135, CCT LA 236	0.35	0.45	1.80	0.45	4.00			
LAT 1.9028	-	✓	-	-	S157, 16NCD13, W1.6657, ZFNL 9203, S155, MAT 137, MTL 1201, AMS 6257,	0.17	0.45	1.00	0.25	3.25			
LAT 1.9042	-	✓	-	-	6417/9, BMS 7-26, SAE 4340M, DMS 1935, AMS-S-8844, 300M, IGQ 41-11, ZFNL 9207	0.42	0.80	0.85	0.40	1.90	0.08		1.7% Si
LAT 1.9043	-	✓	✓	-	S82, S156, MSRR 6009/10/55, 16NCD17, W1.6722/3, ZFNL 9206	0.16	0.40	1.20	0.22	4.10			
LAT 1.9037	-	✓	-	-	AMS 5659, Z7CNU15.05, W1.4545	0.05		15.00		5.00		0.30	3.5% Cu
ZFNL 9201	-	-	✓	-		0.17	0.50	1.50		1.50			
ZFNL 9203	-	✓	-	-	S157, 16NCD13, W1.6657, LAT 1.9028	0.17	0.45	1.00	0.25	3.25			
ZFNL 9206	-	✓	-	-	S82, S156, MSRR 6009/10/55, 16NCD17, W1.6722/3, LAT 1.9043	0.16	0.40	1.20	0.22	4.10			
ZFNL 9207	-	✓	-	-	S155, MAT 137, MTL 1201, AMS 6257, 6417/9, BMS 7-26, SAE 4340M, DMS 1935, AMS-S-8844, 300M, IGQ 41-11, LAT 1.9042	0.42	0.80	0.85	0.40	1.90	0.08		1.7% Si

## Ingot material

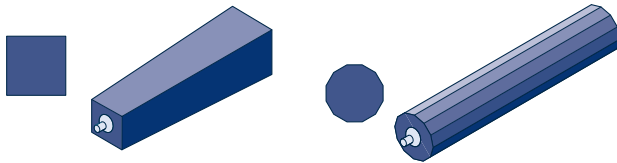
All Speciality Steels ingot material is produced via the Electric Arc steelmaking route using 100% high quality scrap.

The molten steel is ladle refined and vacuum degassed before being cast in Wide End Up bottom-poured ingot moulds. Ingots can be supplied Airmelted, Electro Slag Refined (ESR) or Vacuum Arc Remelted (VAR).

### Generic steel types

- Alloy through-hardening, case-hardening and nitriding steels
- Carbon and carbon manganese steels
- Stainless steels – austenitic, martensitic, duplex
- Ultra clean bearing steels
- High quality aerospace and maraging steels
- High temperature and creep resistant steels
- High strength low alloy steels.

Black as cast (nominal sizes)				
Airmelt (Un-discarded)	Nominal as cast ingot dimensions			Weight (Tonnes)
	Top (mm)	Bottom (mm)	Length (mm)	
To ladle analysis				
Square	653	490	2310	5.4
Square	721	550	2285	6.6
Round (Multi fluted)	619	598	3000	6.1
Round (Multi fluted)	722	700	3000	8.3
Round (Multi fluted)	860	845	3220	12.8



### Quality assurance

- Meeting the highest quality assurance standards, such as EN ISO9001, EN/AS9100 and other third party approvals
- Airmelt ingots are supplied undiscarded (uncropped) and can be annealed and fully surface ground as required
- Remelt ingots are supplied discarded (cropped), fully surface ground and annealed as required
- Sawn ingot blocks are available on request.

Cast (nominal sizes)				
Remelt (Discarded)	Nominal as cast ingot dimensions			Weight (Tonnes)
	Top (mm)	Bottom (mm)	Length (mm)	
To individual ingot analysis				
VAR Round	660	660	1750	4.3
VAR Round	760	760	1900	5.9
VAR Round	915	915	2200	8.2
ESR Round	635	635	1950	4.3
ESR Round	700	700	1850	4.3
ESR Square	555	555	2100	4.3

