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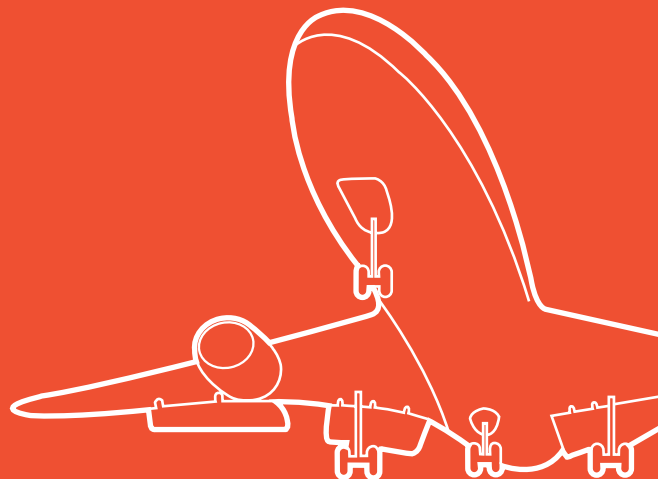
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Corus Engineering Steels

Pure specialisation

Steels for the Aerospace Industry



Introduction

Corus Engineering Steels Aerospace

We offer global metal supply chain management services.

The high integrity specialist steels produced in our mill, and held at our service centre, are used in major commercial and military aerospace projects around the world. A sincere commitment to quality and product excellence is underpinned by our continued investment in new technology and Total Quality Systems.

Working together, from project inception through to completion, we can advise and support our customers, helping keep their costs to a minimum and output maximised.

Efficient, reliable supply is just as important as the quality of the materials. In addition to the world class products we manufacture, we deliver flexible supply solutions that can be adapted to meet the needs of our customers.

We have been in the steel business for more than 150 years and have been actively producing specialist aerospace steels for over half a century. In supporting aerospace manufacturers no one is better equipped or more experienced than Corus.

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Quality approvals

The quality assurance procedures of Corus Engineering Steels have been assessed by over 100 component and equipment manufacturers, end users and national bodies. The relevant approvals include:

AS/EN9100	Lockheed Martin
Nadcap	Magnaghi
Agusta Westland	Messier – Bugatti
Airbus	Messier – Dowty
Alenia	Microturbo
APPH	Pratt & Whitney
Avio Propulsione Aerospaziale	Ratier Figeac
BAe Systems	Raytheon Aircraft
Bell Helicopter Textron	Rolls-Royce
Boeing Commercial Airplane	Safran Group
Bombardier	Sikorsky
Cessna Aircraft	Smiths Industries
EADS	SNECMA
FAG Aerospace	Turbomeca
Finmeccanica	
General Dynamics	
GE	
Goodrich	
Hamilton Sundstrand	
Hispano Suiza	
ITP	
Liebherr Aerospace	

Products and services

Corus Engineering Steels offers customers:

Global supply chain management services

- Customised material and service provisioning.
- Basic JIT delivery to total supply chain responsibility.
- Single or multi product programmes.
- Direct access to materials and technical expertise.

Supported by:

- A unique integrated mill/service centre facility.
- Specialist manufacturing capability for VAR and ESR remelted steels.
- 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

Rolled Squares	57 - 457 mm sq
Rolled Rounds	22 - 381 mm dia
	Maximum sizes subject to application

Rolled Rectangular Sections by request
(with minimum thickness of 50 mm)

Forged Products by request

Remelted Ingots

VAR	660, 760 & 915 mm dia
ESR	560 mm sq
	635 & 700 mm 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.

British specifications

'S' specs	VAR	ESR	Single melted	Related specifications	Nominal chemical analysis %								
					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 & 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	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, EZ2NKD18	0.01	0.05		5.00	18.00				8.0% Co +Al/Ti

British specifications

'Rolls Royce' specs	VAR	ESR	Single melted	Related specifications	Nominal chemical analysis %									
					C	Mn	Cr	Mo	Ni	V	Nb	Other elements		
MSRR 6001 to 6002 & 6003	-	-	✓	S106, MSRR 6020/34, MSRR 6907/8	0.25	0.50	3.25	0.60						
MSRR 6004	-	-	✓	S15	0.12	0.55				3.00				
MSRR 6005	-	-	✓		0.12	0.50								
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 6050	-	-	✓		0.30	0.75								
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	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

British specifications

'Rolls Royce' specs	VAR	ESR	Single melted	Related specifications	Nominal chemical analysis %							
					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	0.05		14.00	1.50	5.50		0.30	1.5% Cu
MSRR 6665	✓	-	-	MSRR 6502/3/4/5/6/8/9/10/44/58, 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	0.06% N
MSRR 6903	✓	-	-	MSRR 6519/20/21, 6542, 6920, SF 535	0.09		10.50	0.70	0.35	0.15	0.32	5.7% Co +N/B
MSRR 6906	✓	-	-	MSRR 6502/3/4/5/6/8/9/10/44/58, 6665, 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	-	-	✓	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		0.03% 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
'Other' specs												
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 5066	-	-	✓	MSRR 6502/3/4/5/6/8/9/10/44/58, 6665, MSRR 6906/16/18, S151, Jethete M152, AMS 5719, Z12CNDV12, W1.4939	0.11		11.50	1.60	2.60	0.30		0.03% N
DTD 5122	-	-	✓	RS 131/2/8	0.33	0.50	1.00	0.20				
DTD 5212	✓	-	-	S162, 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

British specifications

'Other' specs	VAR	ESR	Single melted	Related specifications	Nominal chemical analysis %								
					C	Mn	Cr	Mo	Ni	V	Nb	Other elements	
MAT 102	✓	-	-	S162, MSRR 6551, DTD 5212, AMS 6512, W1.6359, EZ2NKD18	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	0.37	0.45	1.80	0.45	4.00				
MAT 137 & 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	0.42	0.80	0.85	0.40	1.90	0.08			1.7% Si
RS 131 to 132 & 138	-	-	✓	DTD 5122	0.33	0.50	1.00	0.20					
RS 241	-	-	✓	W1.7734/6, 15CDV6	0.15	1.00	1.35	0.90		0.25			
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

USA specifications

'AMS' specs	VAR	ESR	Single melted	Related specifications	Nominal chemical analysis %								
					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	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	0.05		15.00		5.00		0.30		3.5% Cu
AMS 5719	✓	-	-	MSRR 6502/3/4/5/6/8/9/10/44/58, 6665, 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, IGQ 41-11, LAT 1.9042, ZFNL 9207	0.42	0.80	0.85	0.40	1.90	0.08			1.7% Si
AMS 6260	-	-	✓	AMS 6265/7, SAE 9310	0.11	0.55	1.20	0.10	3.25				
AMS 6263	-	-	✓		0.14	0.55	1.20	0.10	3.25				
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	-	-	✓		0.45	0.60	1.00	0.60		0.30			
AMS 6308	✓	-	-	CPW 245, PWA768, PWA733, PWA817	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	✓	-	-	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 6415	-	-	✓										
AMS 6417 & 6419	✓	-	-	S155, MAT 137, MTL 1201, AMS 6257, SAE 4340M, BMS 7-26, DMS 1935, AMS-S-8844, 300M, IGQ 41-11, LAT 1.9042, ZFNL 9207	0.42	0.80	0.85	0.40	1.90	0.08			1.7% Si
AMS 6418	-	-	✓	DMS 1841, HYTUUFF	0.26	1.30	0.30	0.40	1.85				1.5% Si
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 & 6471	✓	-	-	AMS 6709, AMS-S-6709, N135	0.40	0.65	1.70	0.35					1.10% Al
AMS 6481	✓	-	-	32CDV13	0.34	0.55	3.00	0.90		0.28			

USA specifications

'AMS' specs	VAR	ESR	Single melted	Related specifications	Nominal chemical analysis %								
					C	Mn	Cr	Mo	Ni	V	Nb	Other elements	
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 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													
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	0.40	0.75	0.85	0.25	1.80				
SAE 4330M	✓	-	-	AMS 6411, BMS 7-122	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	0.11	0.55	1.20	0.10	3.25				
'Other' specs													
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	0.42	0.80	0.85	0.40	1.90	0.08			1.7% Si
ASTM F1314	-	✓	-	22-13-5	0.02	4.80	21.5	2.25	12.00	0.15	0.15		0.35%N
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	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			
BMS 7-182	✓	-	-	AMS 6526, 9-4-30, W1.6974	0.30		1.00	1.00	7.70	0.10			4.5% Co
CPW 245	✓	-	-	AMS 6304-5	0.45	0.60	1.00	0.60		0.30			
DMS 1841	✓	-	-	AMS 6418, HYTUUFF	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	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	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			
HYTUUFF	✓	-	-	AMS 6418, 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

French specifications

'AIR 9160' specs	VAR	ESR	Single melted	Related specifications	Nominal chemical analysis %							
					C	Mn	Cr	Mo	Ni	V	Nb	Other elements
(E)15CDV6	-	(✓)	✓	W1.7734/6, RS 241	0.15	1.00	1.35	0.90		0.25		
(E)16NCD13	(✓)	(✓)	✓	S157, W1.6657, ZFNL 9203, LAT1.9028	0.17	0.45	1.00	0.25	3.25			
(E)16NCD17	(✓)	(✓)	✓	S82, S156, MSRR 6009/10/55, W1.6722/3, ZFNL 9206, LAT1.9043	0.16	0.40	1.20	0.22	4.10			
(E)30NCD16	-	(✓)	✓	W1.6747	0.30	0.50	1.40	0.45	4.00			
(E)35NCD16	(✓)	-	✓	MAT 135, MTL 1203, NCT10-123-11/19MD, IGQ 41-06	0.37	0.45	1.80	0.45	4.00			
25CD4S	-	-	✓	W1.7214	0.25	0.70	1.00	0.20				
30CD12	-	-	✓	W1.8564	0.30	0.50	3.00	0.40				
(E)32CDV13	(✓)	-	✓	AMS 6481	0.34	0.55	3.00	0.90		0.28		
35CD4	-	-	✓	W1.7220, NCT 10-122-09/12/14MD	0.34	0.70	1.00	0.20				
(E)40CDV12	-	(✓)	✓	MSRR 6011/2, 6097, 6100/4, 6910/1/2, S132/4, MAT 122, W1.8523	0.40	0.55	3.25	1.00		0.20		
(E)100C6	(✓)	-	✓	MSRR 6013/25, AMS 6440/4, S135, W1.3505/14	1.00	0.30	1.50					
(E)Z12CNDV12	(✓)	(✓)	✓	MSRR 6502/3/4/5/6/8/9/10/44/58, 6665, MSRR 6906/16/18, S151, DTD 5066, Jethete M152, AMS 5719, W1.4939	0.11		11.50	1.60	2.60	0.30		0.03% N
Z15CN17.03	-	-	✓	S80, W1.4044	0.16		16.50		2.40			
Z8CND17.04	-	-	✓	1.4418, SF16/5/1	0.05	0.75	16.00	1.00	5.00			0.03% N
EZ2NKD18	✓	-	-	S162, MSRR 6551, DTD 5212, MAT 102, AMS 6512, W1.6359	0.01	0.05		5.00	18.00			8.0% Co +Al/Ti
'Other' specs												
40CD4	-	-	✓	AMS 6382, SAE 4140	0.40	0.80	1.00	0.20				
EZ7CNU15.05	✓	✓	-	SF 15/5, AMS 5659, W1.4545, LAT 1.9037	0.05		15.00		5.00		0.30	3.5% Cu
(E)Z7CNU17.04	(✓)	(✓)	✓	SF 17/4, MSRR 6601, AMS 5622/43, W1.4548	0.05		17.00		4.00		0.30	4.0% Cu
IGQ 41-06	✓	-	-	MAT 135, MTL 1203, 35NCD16, NCT10-123-11/19MD	0.37	0.45	1.80	0.45	4.00			
IGQ 41-11	✓	-	-	S155, MAT 137, MTL 1201, AMS 6257, 6417/9, SAE 4340M, BMS 7-26, DMS 1935, AMS-S-8844, 300M, LAT 1.9042, ZFNL 9207	0.42	0.80	0.85	0.40	1.90	0.08		1.7% Si
MTL1101	-	-	✓	S149, AMS 6409/14/15/84, SAE 4340, AMS-S-5000, BMS 7-28, NCT10-123-21/22MD	0.40	0.75	0.85	0.25	1.80			
MTL1201	✓	-	-	S155, MAT 137, AMS 6257, 6417/9, IGQ 41-11 SAE 4340M, BMS 7-26, DMS 1935, AMS-S-8844, 300M, LAT 1.9042, ZFNL 9207	0.42	0.80	0.85	0.40	1.90	0.08		1.7% Si
MTL1203	✓	-	-	MAT 135, 35NCD16, IGQ 41-06 NCT10-123-11/19MD	0.37	0.45	1.80	0.45	4.00			
NCT 10-122-09MD & 10-122-12MD & 10-122-14MD	-	-	✓	W1.7220, 35CD4	0.34	0.70	1.00	0.20				
NCT 10-123-11MD & 10-123-19MD	-	-	✓	MAT 135, MTL 1203, 35NCD16, RGQ 41-06	0.37	0.45	1.80	0.45	4.00			
NCT 10-123-21MD & 10-123-22MD	-	-	✓	S149, AMS 6409/14/15, 6484, SAE 4340, AMS-S-5000, BMS 7-28, MTL 1101	0.40	0.75	0.85	0.25	1.80			

German specifications

Nominal chemical analysis %

'Werkstoff' specs	VAR	ESR	Single melted	Related specifications	C	Mn	Cr	Mo	Ni	V	Nb	Other elements
1.1144	-	-	✓	S14	0.13	0.50						
1.1157	-	-	✓	S93	0.40	0.85						
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 5622/43, 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, EZ2NKD18	0.01	0.05		5.00	18.00			8.0% Co +Al/Ti
1.6604	-	-	✓		0.30	0.50	2.00	0.35	2.00			
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			
1.6974	✓	-	-	AMS 6526, 9-4-30, BMS 7-182	0.30		1.00	1.00	7.70	0.10		4.5% Co
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, RS 241	0.15	1.00	1.35	0.90		0.25		
1.7736	-	-	✓	15CDV6, RS 241	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 1.9028	✓	-	-	S157, 16NCD13, W1.6657, ZFNL 9203	0.17	0.45	1.00	0.25	3.25			
LAT 1.9042	✓	-	-	S155, MAT 137, MTL 1201, AMS 6257, 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

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