



SLOVENSKI STANDARD
oSIST prEN 4877-002:2022
01-januar-2022

Aeronavtika - Dodajni materiali za varilne kable - 002. del: Dovoljeni dodajni materiali

Aerospace series - Filler metals for welding - Part 002: Authorized filler metals

Luft- und Raumfahrt - Schweißzusätze - Teil 002: Zugelassene Schweißzusätze

Série aérospatiale - Métaux d'apport de soudage - Partie 002: Métaux d'apport autorisés

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ICS:

25.160.20 Potrošni material pri varjenju Welding consumables

49.025.05 Železove zlitine na splošno Ferrous alloys in general

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EUROPEAN STANDARD
NORME EUROPÉENNE
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ICS

English Version

Aerospace series - Filler metals for welding - Part 002: Authorized filler metals

Série aérospatiale - Métaux d'apport de soudage -
Partie 002: Métaux d'apport autorisés

Luft- und Raumfahrt - Schweißzusätze - Teil 002:
Zugelassene Schweißzusätze

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee ASD-STAN.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (prEN 4877-002:2021) has been prepared by the Aerospace and Defence Industries Association of Europe — Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this document has received the approval of the National Associations and the Official Services of the member countries of ASD-STAN, prior to its presentation to CEN.

This document is currently submitted to the CEN Enquiry.

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1 Scope

This document defines a list of procurement specifications and standards for welding products authorized for the welding of parts.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 3883, *Aerospace series - Heat resisting alloy NI-WH2301 (NiCr22Fe19Mo9Co2) - Filler metal for welding*

EN 3884, *Aerospace series - Heat resisting alloy NI-WH2601 (NiCr19Nb5Mo3Ti) - Filler metal for welding*

EN 3885, *Aerospace series - Heat resisting alloy NI-WH3601 (NiCr22Mo9Nb4) - Filler metal for welding*

EN 3887, *Aerospace series - Heat resisting alloy CO-WH4101 (CoCr20W15Ni) - Filler metal for welding*

EN 3888, *Aerospace series - Heat resisting alloy CO-WH1402 (CoCr22Ni22W15) - Filler metal for welding*

EN 3889, *Aerospace series - Steel FE-WM3801 (X5CrNiCu17-4) - Filler metal for welding*

EN 3892, *Aerospace series - Titanium alloy TI-W64001 - Filler metal for welding*

EN 3894, *Aerospace series - Heat resisting alloy NI-WD3201 (NiMo25Fe6Cr5) - Filler metal for welding*

EN 4329, *Aerospace series - Heat resisting alloy NI-WH0001 (NiCr20) - Filler metal for welding - Wire and rod*

EN 4331, *Aerospace series - Steel FE-WL1804 (25CrMnMo4-2-2) - Filler metal for welding - Wire and rod*

EN 4332, *Aerospace series - Steel FE-WL1805 (8CrMnMo12-4-9) - Filler metal for welding - Wire and rod*

EN 4340, *Aerospace series - Magnesium alloy MG-W68001 - Filler metal for welding - Wire and rod*

EN 4683, *Aerospace series - Steel FE-WM 3504 (X4CrNiMo16-5-1) - Air melted - Filler metal for welding - Wire and rod*

prEN 4877-001:20211, *Aerospace series — Filler metals for welding — Part 001: Technical specification*

ISO 14343, *Welding consumables — Wire electrodes, strip electrodes, wires and rods for arc welding of stainless and heat resisting steels — Classification*

ISO 18273, *Welding consumables — Wire electrodes, wires and rods for welding of aluminium and aluminium alloys — Classification*

ISO 18274, *Welding consumables — Solid wire electrodes, solid strip electrodes, solid wires and solid rods for fusion welding of nickel and nickel alloys — Classification*

ISO 21952, *Welding consumables — Wire electrodes, wires, rods and deposits for gas shielded arc welding of creep-resisting steels — Classification*

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AMS 4189¹, *Aluminum Alloy Welding Wire 4.1 Si -0.20 Mg (4643)*

AMS 4190², *Aluminum Alloy, Welding Wire 5.2Si (4043)*

AMS 4222², *Aluminum Alloy Castings, Sand, Moderate Heat Resistance, 4.0Cu — 2.0Ni — 1.5Mg — 0.12Ti (242.0P), Solution Heat Treated and Stabilized*

AMS 4245², *Aluminum Alloy, Welding Wire, 5.0Si — 1.2Cu — 0.50Mg (C355.0)*

AMS 4246², *Aluminum Alloy, Welding Wire, 7.0Si — 0.52Mg (357)*

AMS 4391², *Magnesium Alloy Welding Wire 2.8Nd 1.4Gd 0.4Zn 0.6Zr (EV31A)*

AMS 4393², *Magnesium Alloy Welding Wire 4.0Y 2.3Nd 0.7Zr (WE43B)*

AMS 4398², *Magnesium Alloy Welding Wire 8.7Al 0.70Zn 0.26Mn (AZ91E)*

AMS 4439², *Magnesium Alloy Castings, 4.2Zn — 1.2 Rare Earths — 0.7Zr (ZE41A-T5), Precipitation Heat Treated*

AMS 4952², *Titanium Alloy Welding Wire 6Al - 2Sn - 4Zr - 2Mo*

AMS 4953², *Titanium Alloy Welding Wire 5Al - 2.5Sn*

AMS 4954², *Titanium Alloy Welding Wire 6Al - 4V*

AMS 4956², *Titanium Alloy Welding Wire 6Al - 4V, Extra Low Interstitial Environment Controlled*

AMS 5675², *Nickel Alloy, Corrosion and Heat Resistant, Welding Wire, 70Ni — 2.4Mn — 15.5Cr — 3.0Ti — 7.0Fe*

AMS 5676², *Nickel Alloy, Corrosion and Heat-Resistant, Welding Wire 80Ni — 20Cr*

AMS 5680², *Steel, Corrosion and Heat-Resistant, Welding Wire 18.5Cr — 11Ni — 0.40Cb (Nb) (SAE 30347)*

AMS 5692², *Steel, Corrosion and Heat-Resistant, Welding Wire 19Cr — 12.5Ni — 2.5Mo*

AMS 5694², *Steel, Corrosion and Heat-Resistant, Welding Wire, 27Cr — 21.5Ni*

AMS 5776², *Steel, Corrosion and Heat-Resistant, Welding Wire 12.5Cr (SAE 51410)*

AMS 5784², *Steel, Corrosion and Heat-Resistant, Welding Wire 29Cr — 9.5Ni*

AMS 5786², *Nickel Alloy, Corrosion and Heat-Resistant, Welding Wire 62.5Ni — 5.0Cr — 24.5Mo — 5.5Fe*

AMS 5789², *Cobalt Alloy, Corrosion and Heat-Resistant, Welding Wire, 54Co — 25.5Cr — 10.5Ni — 7.5W*

AMS 5794², *Iron Alloy, Corrosion and Heat-Resistant, Welding Wire, 31Fe — 21Cr — 20Ni — 20Co — 3.0Mo — 2.5W — 1.0Cb — 0.15N, Annealed*

AMS 5796², *Cobalt Alloy, Corrosion and Heat-Resistant, Welding Wire 52Co — 20Cr — 10Ni -15W*

¹ Published by Society of Automotive Engineers (SAE), available at: <https://www.sae.org/>

AMS 5798², *Nickel Alloy, Corrosion and Heat-Resistant, Welding Wire 47.5Ni — 22Cr — 1.5Co — 9.0Mo — 0.60W — 18Fe*

AMS 5800², *Nickel Alloy, Corrosion and Heat-Resistant, Welding Wire, 54Ni — 19Cr — 11Co — 10Mo — 3.2Ti — 1.5Al — 0.006B, Vacuum Induction Melted*

AMS 5801², *Cobalt Alloy, Corrosion and Heat-Resistant, Welding Wire, 39Co — 22Cr — 22Ni — 14.5W — 0.07La*

AMS 5802², *Iron-Nickel Alloy, Corrosion and Heat-Resistant, Welding Wire 41Fe — 37.5Ni — 14Co — 4.8Cb (Nb) — 1.5Ti Vacuum Melted, Low Expansion*

AMS 5805², *Steel, Corrosion and Heat Resistant, Welding Wire 15Cr — 25.5Ni — 1.2Mo — 2.1Ti — 0.004B — 0.30V Vacuum Induction Melted, Environment Controlled Packaging*

AMS 5812², *Steel, Corrosion and Heat Resistant, Welding Wire 15Cr — 7.1Ni — 2.4Mo — 1.0Al Vacuum Induction Melted*

AMS 5821², *Steel, Corrosion-Resistant, Welding Wire 12Cr (SAE 51410 Modified) Ferrite Control Grade*

AMS 5825², *Steel, Corrosion-Resistant, Welding Wire 16.4Cr — 4.8Ni — 0.22Cb(Nb) — 3.6Cu*

AMS 5828², *Nickel Alloy, Corrosion and Heat Resistant, Welding Wire 57Ni — 19.5Cr — 13.5Co — 4.2Mo — 3.1Ti — 1.4Al — 0.006B Vacuum Induction Melted, Solution Heat Treated*

AMS 5829², *Nickel Alloy, Corrosion and Heat-Resistant, Welding Wire 56Ni — 19.5Cr — 16.5Co — 2.5Ti — 1.5Al Vacuum Induction Melted*

AMS 5832², *Nickel Alloy, Corrosion and Heat Resistant, Welding Wire 52.5Ni — 19Cr — 3.0Mo — 5.1Cb(Nb) — 0.90Ti — 0.50Al — 18Fe Consumable Electrode or Vacuum Induction Melted*

AMS 5836², *Nickel Alloy, Corrosion and Heat-Resistant, Welding Wire 72Ni — 3.0Mn — 20Cr — 2.5Cb(Nb)*

AMS 5837², *Nickel Alloy, Corrosion and Heat-Resistant, Welding Wire 62Ni — 21.5Cr — 9.0Mo — 3.7Cb(Nb)*

AMS 5838², *Nickel Alloy, Corrosion and Heat-Resistant, Welding Wire, 65Ni — 16Cr — 15Mo — 0.30Al — 0.06La*

AMS 4951², *Titanium Welding Wire Commercially Pure Environment Controlled Packaging*

AMS 5966, *Nickel Alloy, Corrosion and Heat Resistant, Welding Wire, 50Ni — 20Cr — 20Co — 5.9Mo — 2.2Ti — 0.45Al, Consumable Electrode or Vacuum Induction Melted*

AMS 6458², *Steel, Welding Wire 0.65Si — 1.25Cr — 0.50Mo — 0.30V (0.28 — 0.33C) Vacuum Melted, Environment Controlled Packaging*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

4 List of filler metals

Table 1

Designation	Specifications or standards for procurement
Aluminium base alloys	
AU6MT	AMS 4191 ISO 18273 — S Al 2319
AlSi5	AMS 4190 ISO 18273 — S Al 4043
AlSi4	AMS 4189 ISO 18273 — S Al 4643
AG5MC	ISO 18273 — S Al 5356
5083 (AG4,5MC)	Specifications are given in Table A.32.
5086 (AG4MC)	Specifications are given in Table A.33.
AU4NGT (242.0P)	AMS 4222
AS7G06 (357)	AMS 4246
AlSi7Cu1Mg	Specifications are given in Table A.14.
AlSi7Cu1.5Mg	Specifications are given in Table A.15.
AS5U1G (C355.0)	AMS 4245
AlCu5NiCoZr (AU5NKZr)	Specifications are given in Table A.16.
AlCu5NiTi (AU5NT)	Specifications are given in Table A.19.
AG3	ISO 18273 — S Al 5754
AlCu5MgTi (AU5GT)	Specifications are given in Table A.29.
AlSi7Mg0.3 (AS7G03)	Specifications are given in Table A.30.
AlSi2CuNi (AS2UN)	Specifications are given in Table A.31.
Magnesium base alloys	
MgRE3Zn2 (ZRE1, GTr3Z2)	EN 4340 Specifications are given in Table A.11.
GNd2.8Gd1.4 (EV31A)	AMS 4391

Designation	Specifications or standards for procurement
GA9 (AZ91E)	AMS 4398
MgZn4RE (GZ4TR — RZ5)	Specifications are given in Table A.22.
	AMS 4439 only for chemical composition, completed by requirements given in Table A.22.
MgAg2,5RE (GAg2.5TR — Elektron MSR)	Specifications are given in Table A.23.
GY4TR3ZR (WE43)	AMS 4393
GTh3Z2 (ZT1)	Specifications are given in Table A.28.
Cobalt base alloys	
CoCr28WNi (Coast Metal 64, KC28WN)	Specifications are given in Table A.7.
CoMo28CrSi (T800, KD28CS)	Specifications are given in Table A.8.
KC25NW (HS 31)	AMS 5789
KCN22W (HA 188)	AMS 5801 EN 3888
KC20WN (HS 25)	AMS 5796 for welding classes Bx and Cx EN 3887 for welding classes Ax, Bx and Cx
CoCr30W12Fe (KC30W12Fe)	Specifications are given in Table A.21.
Nickel base alloys	
NC20K14 (Waspaloy)	AMS 5828
NCK20D (C263)	AMS 5966
NCK20TA (Nimonic 90)	AMS 5829
NC19KDTA (Rene 41)	AMS 5800
NC16Fe7TM (Inconel 92)	AMS 5675
NiCr15Fe (Inconel 600, NC15Fe)	Specifications are given in Table A.2.
NiCr19CoNb (René 220, NC19KNb)	Specifications are given in Table A.3.
NiCr14CoTiWMo (René 80, NC14KTWD)	Specifications are given in Table A.9.
NiCo12CrTaAlW (René 142, NK12CTaAW)	Specifications are given in Table A.10.
NC19FeNb (Inconel 718)	AMS 5832 EN 3884
NC22DNb (Inconel 625)	AMS 5837 EN 3885

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Designation	Specifications or standards for procurement
NC22FeD (Hastelloy X)	AMS 5798 for welding classes Bx and Cx EN 3883 for welding classes Ax, Bx and Cx
ND24FeC (Hastelloy W)	AMS 5786 EN 3894
NiCr16CoAlTi (NC16KAT – Inconel 738)	Specifications are given in Table A.24.
NC20	AMS 5676 EN 4329
NC21MnNb (Inconel 82)	AMS 5836 ISO 18274 — S Ni 6082
NC22KDA (Inconel 617)	ISO 18274 — S Ni 6617
NC22W14 (HS230)	ISO 18274 – S Ni 6231
NCD15 (Hastelloy S)	AMS 5838
NC25D	ISO 18274 — S Ni 6205
Low-alloy steels	
15CrMoV6 (15CDV6)	Specifications are given in Table A.1.
30CDV6 (0.28–0.33C)	AMS 6458
8CD12	EN 4332
25CD4	EN 4331
8Mn5Si3 (8M5S3)	Specifications are given in Table A.25.
12Mn4Si (12M4S)	Specifications are given in Table A.26.
E-35CrMoV20 (E-35CDV20)	Specifications are given in Table A.27.
11CD1S (14CD4–04)	ISO 21952 code CrMo1Si
High-alloy steels	
Z10CNM29–9 (29.9)	AMS 5784
Z10CNNb18 (AISI 347)	AMS 5680
Z12CN25 (AISI 310)	AMS 5694
Z12CNKDW20 (N155)	AMS 5794
Z6CND17 (AISI 316)	AMS 5692
Z2CND17 – Z3CND18–12–2 – Z2CND18–12 – Z2CND18–10 (AISI 316L)	ISO 14343-B – SS316L
E-Z3NCT25 (A286 mod.)	AMS 5805
X12CrNiMoV12 (Jethete M152, Z12CNDV12)	Specifications are given in Table A.4.

Designation	Specifications or standards for procurement
X6CrNiNb20-10 (Z6CNNb20-10)	Specifications are given in Table A.6.
X2CrNi18-10 (AISI 304L/Z2CN18-10)	Specifications are given in Table A.13.
X2CrNi20-10 (AISI 308L/Z2CN20-10)	Specifications are given in Table A.17.
X6CrNiTi18 (AISI 321/Z6CNT18 or Z10CNT18)	Specifications are given in Table A.18.
Z5CNU17-04 (17-4PH)	AMS 5825 EN 3889
Z12C13 (AISI 410)	AMS 5821 AMS 5776
Z6C13 (AISI 403)	AMS 5776
Z8CND 17-04 (APX4)	EN 4683
Z8CND15	AMS 5812
Z4NK38Nb (Incoloy 909)	AMS 5802
X15CrNiWSi22-13 (Z15CNWS22-13)	Specifications are given in Table A.20.
Titanium base alloys	
T40 (IMI 125)	AMS 4951
Ti15Mo3Al3Nb0.2Si (β 21S)	Specifications are given in Table A.5.
TiCu2 (TU2)	Specifications are given in Table A.12.
TA6V (Ti6.4)	AMS 4954 EN 3892
TA6V ELI (Ti6.4 ELI)	AMS 4956
TA5E (IMI 317)	AMS 4953
TA6Zr4DE (Ti6.2.4.2)	AMS 4952