



SLOVENSKI STANDARD SIST EN 4877-002:2023

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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

Ta slovenski standard je istoveten z: **EN 4877-002:2023**

ICS:

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49.025.05 Železove zlitine na splošno Ferrous alloys in general

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Zugelassene Schweißzusätze

This European Standard was approved by CEN on 18 December 2022.

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EN 4877-002:2023 (E)**European foreword**

This document (EN 4877-002:2023) 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, prior to its presentation to CEN.

This document shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2023, and conflicting national standards shall be withdrawn at the latest by September 2023.

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1 Scope

This document specifies 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*

<https://standards.iteh.ai/catalog/standards/sist/5c15ddf7-5dd4-4ac5-9fdd-bcc23bdeb6bf/sist-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*

EN 4877-001, *Aerospace series — Filler metals for welding — Part 001: Technical specification* ¹⁾

ISO 14343, *Welding consumables — Wire electrodes, strip electrodes, wires and rods for arc welding of stainless and heat resisting steels — Classification* ²⁾

ISO 18273, *Welding consumables — Wire electrodes, wires and rods for welding of aluminium and aluminium alloys — Classification* ²⁾

¹⁾ In preparation at the date of publication of this document.

²⁾ Published by: ISO International Organization for Standardization <http://www.iso.ch/>.

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ISO 18274, *Welding consumables — Solid wire electrodes, solid strip electrodes, solid wires and solid rods for fusion welding of nickel and nickel alloys — Classification* ²⁾

ISO 21952, *Welding consumables — Wire electrodes, wires, rods and deposits for gas-shielded arc welding of creep-resisting steels — Classification* ²⁾

SAE AMS 4189, *Aluminium Alloy Welding Wire 4.1 Si — 0.20 Mg (4643)* ³⁾

SAE AMS 4190, *Aluminium Alloy, Welding Wire 5.2Si (4043)* ³⁾

SAE AMS 4222, *Aluminium Alloy Castings, Sand, Moderate Heat Resistance, 4.0Cu — 2.0Ni — 1.5Mg — 0.12Ti (242.0P), Solution Heat Treated and Stabilized* ³⁾

SAE AMS 4245, *Aluminium Alloy, Welding Wire, 5.0Si — 1.2Cu — 0.50Mg (C355.0)* ³⁾

SAE AMS 4246, *Aluminium Alloy, Welding Wire, 7.0Si — 0.52Mg (357)* ³⁾

SAE AMS 4391, *Magnesium Alloy Welding Wire 2.8Nd — 1.4Gd — 0.4Zn — 0.6Zr (EV31A)* ³⁾

SAE AMS 4393, *Magnesium Alloy Welding Wire 4.0Y — 2.3Nd — 0.7Zr (WE43B)* ³⁾

SAE AMS 4398, *Magnesium Alloy Welding Wire 8.7Al — 0.70Zn — 0.26Mn (AZ91E)* ³⁾

SAE AMS 4439, *Magnesium Alloy Castings, 4.2Zn — 1.2 Rare Earths — 0.7Zr (ZE41A-T5), Precipitation Heat Treated* ³⁾

SAE AMS 4951, *Titanium Welding Wire Commercially Pure Environment Controlled Packaging* ³⁾

SAE AMS 5675, *Nickel Alloy, Corrosion and Heat Resistant, Welding Wire 70Ni — 2.5Mn — 15.5Cr — 3.0Ti — 7.0Fe* ³⁾

SAE AMS 5676, *Nickel Alloy, Corrosion and Heat-Resistant, Welding Wire 80Ni — 20Cr* ³⁾

SAE AMS 5680, *Steel, Corrosion and Heat-Resistant, Welding Wire 18.5Cr — 11Ni — 0.40Cb (Nb) (SAE 30347)* ³⁾

SAE AMS 5692, *Steel, Corrosion and Heat-Resistant, Welding Wire 19Cr — 12.5Ni — 2.5Mo* ³⁾

SAE AMS 5694, *Steel, Corrosion and Heat-Resistant, Welding Wire, 27Cr — 21.5Ni* ³⁾

SAE AMS 5776, *Steel, Corrosion and Heat-Resistant, Welding Wire 12.5Cr (SAE 51410)* ³⁾

SAE AMS 5784, *Steel, Corrosion and Heat-Resistant, Welding Wire 29Cr — 9.5Ni* ³⁾

SAE AMS 5786, *Nickel Alloy, Corrosion and Heat-Resistant, Welding Wire 62.5Ni — 5.0Cr — 24.5Mo — 5.5Fe* ³⁾

SAE AMS 5789, *Cobalt Alloy, Corrosion and Heat-Resistant, Welding Wire 54Co — 25.5Cr — 10.5Ni — 7.5W* ³⁾

SAE AMS 5794, *Iron Alloy, Corrosion and Heat-Resistant, Welding Wire, 31Fe — 21Cr — 20Ni — 20Co — 3.0Mo — 2.5W — 1.0Cb — 0.15N, Annealed* ³⁾

³⁾ Published by: Society of Automotive Engineers (SAE), available at: <https://www.sae.org/>.

- SAE AMS 5796, *Cobalt Alloy, Corrosion and Heat-Resistant, Welding Wire* 52Co — 20Cr — 10Ni — 15W³⁾
- SAE AMS 5798, *Nickel Alloy, Corrosion and Heat-Resistant, Welding Wire* 47.5Ni — 22Cr — 1.5Co — 9.0Mo — 0.60W — 18Fe³⁾
- SAE AMS 5800, *Nickel Alloy, Corrosion and Heat-Resistant, Welding Wire* 54Ni — 19Cr — 11Co — 10Mo — 3.2Ti — 1.5Al — 0.006B, Vacuum Induction Melted³⁾
- SAE AMS 5801, *Cobalt Alloy, Corrosion and Heat-Resistant, Welding Wire* 39Co — 22Cr — 22Ni — 14.5W — 0.07La³⁾
- SAE AMS 5802, *Iron-Nickel Alloy, Corrosion and Heat-Resistant, Welding Wire* 41Fe — 37.5Ni — 14Co — 4.8Cb (Nb) — 1.5Ti Vacuum Melted, Low Expansion³⁾
- SAE AMS 5805, *Steel, Corrosion and Heat Resistant, Welding Wire* 15Cr — 25.5Ni — 1.2Mo — 2.1Ti — 0.004B — 0.30V Vacuum Induction Melted, Environment Controlled Packaging³⁾
- SAE AMS 5812, *Steel, Corrosion and Heat Resistant, Welding Wire* 15Cr — 7.1Ni — 2.4Mo — 1.0Al Vacuum Induction Melted³⁾
- SAE AMS 5821, *Steel, Corrosion-Resistant, Welding Wire* 12Cr (SAE 51410 Modified) Ferrite Control Grade³⁾
- SAE AMS 5825, *Steel, Corrosion-Resistant, Welding Wire* 16.4Cr — 4.8Ni — 0.22Cb(Nb) — 3.6Cu³⁾
- SAE AMS 5828, *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 Treated³⁾
- SAE AMS 5829, *Nickel Alloy, Corrosion and Heat-Resistant, Welding Wire* 56Ni — 19.5Cr — 16.5Co — 2.5Ti — 1.5Al Vacuum Induction Melted³⁾
- SAE AMS 5832, *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 Melted³⁾
- SAE AMS 5836, *Nickel Alloy, Corrosion and Heat-Resistant, Welding Wire* 72Ni — 3.0Mn — 20Cr — 2.5Cb(Nb)³⁾
- SAE AMS 5837, *Nickel Alloy, Corrosion and Heat-Resistant, Welding Wire* 62Ni — 21.5Cr — 9.0Mo — 3.7Cb(Nb)³⁾
- SAE AMS 5838, *Nickel Alloy, Corrosion and Heat-Resistant, Welding Wire*, 65Ni — 16Cr — 15Mo — 0.30Al — 0.06La³⁾
- SAE AMS 5966, *Nickel Alloy, Corrosion and Heat Resistant, Welding Wire*, 50Ni — 20Cr — 20Co — 5.9Mo — 2.2Ti — 0.45Al, Consumable Electrode or Vacuum Induction Melted³⁾
- SAE AMS 6458, *Steel, Welding Wire* 0.65Si — 1.25Cr — 0.50Mo — 0.30V (0.28 - 0.33C) Vacuum Melted, Environment Controlled Packaging³⁾

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3 Terms and definitions

No terms and definitions are listed in this document.

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

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

4 List of filler metals

The list of filler metals is given in Table 1. Where applicable, products procurement specifications are given in Annex A.

Table 1 (1 of 4)

Designation	Specifications or standards for procurement
Aluminium base alloys	
AU6MT	SAE AMS 4191 ISO 18273 — S Al 2319
AlSi5	SAE AMS 4190 ISO 18273 — S Al 4043
AlSi4	SAE 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)	SAE AMS 4222
AS7G06 (357)	SAE AMS 4246
AlSi7Cu1Mg	Specifications are given in Table A.14.
AlSi7Cu1.5Mg	Specifications are given in Table A.15.
AS5U1G (C355.0)	SAE 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.

Table 1 (2 of 4)

Designation	Specifications or standards for procurement
Magnesium base alloys	
MgRE3Zn2 (ZRE1, GTr3Z2)	EN 4340 Specifications are given in Table A.11.
GNd2.8Gd1.4 (EV31A)	SAE AMS 4391
GA9 (AZ91E)	SAE AMS 4398
MgZn4RE (GZ4TR — RZ5)	Specifications are given in Table A.22.
	SAE 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)	SAE 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)	SAE AMS 5789
KCN22W (HA 188)	SAE AMS 5801 EN 3888
KC20WN (HS 25)	SAE 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)	SAE AMS 5828
NCK20D (C263)	SAE AMS 5966
NCK20TA (Nimonic 90)	SAE AMS 5829
NC19KDTA (René 41)	SAE AMS 5800
NC16Fe7TM (Inconel 92)	SAE 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.

Table 1 (3 of 4)

Designation	Specifications or standards for procurement
NiCo12CrTaAlW (René 142, NK12CTaAW)	Specifications are given in Table A.10.
NC19FeNb (Inconel 718)	SAE AMS 5832 EN 3884
NC22DNb (Inconel 625)	SAE AMS 5837 EN 3885
NC22FeD (Hastelloy X)	SAE AMS 5798 for welding classes Bx and Cx EN 3883 for welding classes Ax, Bx and Cx
ND24FeC (Hastelloy W)	SAE AMS 5786 EN 3894
NiCr16CoAlTi (NC16KAT – Inconel 738)	Specifications are given in Table A.24.
NC20	SAE AMS 5676 EN 4329
NC21MnNb (Inconel 82)	SAE 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)	SAE 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)	SAE 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)	SAE AMS 5784
Z10CNNb18 (AISI 347)	SAE AMS 5680
Z12CN25 (AISI 310)	SAE AMS 5694

Table 1 (4 of 4)

Designation	Specifications or standards for procurement
Z12CNKDW20 (N155)	SAE AMS 5794
Z6CND17 (AISI 316)	SAE AMS 5692
Z2CND17 – Z3CND18-12-2 – Z2CND18-12 – Z2CND18-10 (AISI 316L)	ISO 14343-B – SS316L
E-Z3NCT25 (A286 mod.)	SAE AMS 5805
X12CrNiMoV12 (Jethete M152, Z12CNDV12)	Specifications are given in Table A.4.
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)	SAE AMS 5825 EN 3889
Z12C13 (AISI 410)	SAE AMS 5821 SAE AMS 5776
Z6C13 (AISI 403)	SAE AMS 5776
Z8CND 17-04 (APX4)	EN 4683
Z8CND15	SAE AMS 5812
Z4NK38Nb (Incoloy 909)	SAE AMS 5802
X15CrNiWSi22-13 (Z15CNWS22-13)	Specifications are given in Table A.20.
Titanium base alloys	
T40 (IMI 125)	SAE 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)	SAE AMS 4954 EN 3892
TA6V ELI (Ti6.4 ELI)	SAE AMS 4956
TA5E (IMI 317)	SAE AMS 4953
TA6Zr4DE (Ti6.2.4.2)	SAE AMS 4952