STEEL IMPEX INDIA
231/235 Chouhan House, 2nd Kumbharwada Lane, Sant Sena Maharaj Marg, Mumbai, Maharashtra 400004, India | +91 95946 66986 | sanjay@steelimp.com | steelimp.com

Welding filler metal chart for stainless steel and nickel alloys

Filler classifications by base metal with the AWS specification, shielding gas guidance and the sources used.

Filler metal by base metal, with AWS classification and specification

Base metal	GTAW / GMAW wire (AWS spec)	SMAW electrode (AWS spec)	FCAW wire (AWS spec)	Source for the pairing
304 / 304L	ER308L (A5.9)	E308L-16 (A5.4)	E308LT0-1/-4, E308LT1-1/-4 (A5.22)	Kobe Steel (KOBELCO), Special stainless steel welding consumables brochure: selection keynotes and Table 1
316 / 316L	ER316L (A5.9)	E316L-16 (A5.4)	E316LT0-x / E316LT1-x (A5.22)	Kobe Steel (KOBELCO), Special stainless steel welding consumables brochure: selection keynotes and Table 1
321 and 347	ER347 (A5.9)	E347-16 (A5.4)	E347T0-x / E347T1-x (A5.22)	Kobe Steel (KOBELCO), Special stainless steel welding consumables brochure: selection keynotes and Table 1
310 / 310S	ER310 (A5.9)	E310-16 (A5.4)	E310T0-x / E310T1-x (A5.22)	Kobe Steel (KOBELCO), Special stainless steel welding consumables brochure: selection keynotes and Table 1
304 or 304L to carbon steel (dissimilar joint, buffer layer)	ER309L (A5.9)	E309L-16 (A5.4)	E309LT0-x / E309LT1-x (A5.22)	Kobe Steel (KOBELCO), Special stainless steel welding consumables brochure: selection keynotes and Table 1; Wisconsin Division of Facilities Development, Weld filler metal selection guideline for various metal combinations (rev. 6 January 2014)
Duplex 2205 (UNS S31803 / S32205)	ER2209 (A5.9)	E2209-16 (A5.4)	E2209T1-x (A5.22)	Kobe Steel (KOBELCO), Special stainless steel welding consumables brochure: selection keynotes and Table 1; Wisconsin Division of Facilities Development, Weld filler metal selection guideline for various metal combinations (rev. 6 January 2014)
Inconel 625 (UNS N06625)	ERNiCrMo-3 (A5.14)	ENiCrMo-3 (A5.11)	Not covered in this chart	Special Metals Welding Products, product catalogue (INCONEL Filler Metal 625 / Welding Electrode 112, INCO-WELD C-276, MONEL Filler Metal 60 / Welding Electrode 190); Kobe Steel (KOBELCO), Special stainless steel welding consumables brochure: selection keynotes and Table 1
Alloy C-276 (UNS N10276, e.g. Hastelloy C-276)	ERNiCrMo-4 (A5.14)	ENiCrMo-4 (A5.11)	Not covered in this chart	Special Metals Welding Products, product catalogue (INCONEL Filler Metal 625 / Welding Electrode 112, INCO-WELD C-276, MONEL Filler Metal 60 / Welding Electrode 190); Kobe Steel (KOBELCO), Special stainless steel welding consumables brochure: selection keynotes and Table 1
Monel 400 (UNS N04400)	ERNiCu-7 (A5.14)	ENiCu-7 (A5.11)	Not covered in this chart	Special Metals Welding Products, product catalogue (INCONEL Filler Metal 625 / Welding Electrode 112, INCO-WELD C-276, MONEL Filler Metal 60 / Welding Electrode 190)

Density: Not applicable
Unit: AWS classification (specification number)
Last verified: 21 November 2026
Source: Kobe Steel (KOBELCO), Special stainless steel welding consumables brochure: selection keynotes and Table 1 (https://www.kobelco.co.jp/english/welding/files/kwt_special_stainless_steel_single.pdf); Special Metals Welding Products, product catalogue (INCONEL Filler Metal 625 / Welding Electrode 112, INCO-WELD C-276, MONEL Filler Metal 60 / Welding Electrode 190) (https://www.specialmetals.com/assets/local/documents/smw/prodcat.pdf); Wisconsin Division of Facilities Development, Weld filler metal selection guideline for various metal combinations (rev. 6 January 2014) (https://doa.wi.gov/DFDM_Documents/MasterSpecs/Utilities/WeldFillerMetalSelection.pdf)
Covered-electrode suffix -16 is the rutile coating type named in the sources; -15 and -17 versions exist for some classes. FCAW -x = shielding-gas designator (-1 or -4) on the wire maker's data sheet. The welding procedure specification (WPS) decides the filler: the base-metal grade name alone is not enough.

Steel Impex India Commercial Reference Chart (steelimp.com) — Indicative values for preliminary estimation only. Not an official standard publication. Verify against the latest governing standard before fabrication or ordering.
For preliminary estimation and commercial reference only. Not for safety-critical design, pressure vessel certification, or legal inspection. Verify against the latest official standard and a qualified engineer.

Shielding gas guidance by process

Process	Guidance	Source
GTAW (TIG), stainless	100 % argon is the usual shielding gas for root passes in stainless pipe. Back-purge the root (purging gas) to limit oxidation.	Kobe Steel (KOBELCO), Special stainless steel welding consumables brochure: selection keynotes and Table 1; Avesta Welding (Outokumpu), The Avesta Welding Manual (2004)
GTAW (TIG), duplex	Adding about 2 % nitrogen to the argon shielding gas is recommended with solid duplex fillers.	Kobe Steel (KOBELCO), Special stainless steel welding consumables brochure: selection keynotes and Table 1
GMAW (MIG), stainless	Argon + 2 % oxygen is the example mixture given for 1.2 mm stainless MIG wire. Use the gas on the wire maker's data sheet.	Kobe Steel (KOBELCO), Special stainless steel welding consumables brochure: selection keynotes and Table 1
FCAW, stainless	Argon + 20–25 % CO2, or 100 % CO2 where the wire maker allows it.	Kobe Steel (KOBELCO), Special stainless steel welding consumables brochure: selection keynotes and Table 1; Avesta Welding (Outokumpu), The Avesta Welding Manual (2004)
GTAW / GMAW, nickel alloys	Use the gas on the filler data sheet. The Special Metals catalogue lists argon, helium or argon–helium mixtures for its nickel-alloy wires; its 625 flux-cored wire uses 75 % argon / 25 % CO2.	Special Metals Welding Products, product catalogue (INCONEL Filler Metal 625 / Welding Electrode 112, INCO-WELD C-276, MONEL Filler Metal 60 / Welding Electrode 190)

Density: Not applicable
Unit: gas composition in volume %
Last verified: 21 November 2026
Source: Kobe Steel (KOBELCO), Special stainless steel welding consumables brochure: selection keynotes and Table 1 (https://www.kobelco.co.jp/english/welding/files/kwt_special_stainless_steel_single.pdf); Avesta Welding (Outokumpu), The Avesta Welding Manual (2004) (https://www-eng.lbl.gov/~shuman/NEXT/MATERIALS&COMPONENTS/ss-weld_manual_avesta.pdf); Special Metals Welding Products, product catalogue (INCONEL Filler Metal 625 / Welding Electrode 112, INCO-WELD C-276, MONEL Filler Metal 60 / Welding Electrode 190) (https://www.specialmetals.com/assets/local/documents/smw/prodcat.pdf)

AWS filler metal specifications cited

Spec	Title
A5.4	AWS A5.4/A5.4M, Stainless steel electrodes for shielded metal arc welding
A5.9	AWS A5.9/A5.9M, Welding consumables: wire electrodes, strip electrodes, wires and rods for arc welding of stainless and heat-resisting steels
A5.11	AWS A5.11/A5.11M, Nickel and nickel-alloy welding electrodes for shielded metal arc welding
A5.14	AWS A5.14/A5.14M, Nickel and nickel-alloy bare welding electrodes and rods
A5.22	AWS A5.22/A5.22M, Stainless steel flux cored and metal cored welding electrodes and rods

Density: Not applicable
Unit: specification
Last verified: 21 November 2026
Source: American Welding Society, standards catalogue (https://www.aws.org/standards)
Specifications are cited by number and title; buy the current edition from AWS for the requirements.