

Alloy 20 Welding Wire (UNS N08020 / W.Nr. 2.4660 / NiCr20CuMo) — Technical Data Sheet

ER320LR bare wire to AWS A5.9 (UNS N08022, ASME SFA-5.9) and E320LR covered electrodes to AWS A5.4 (UNS W88022, ASME SFA-5.4) for joining UNS N08020 — the A5.4 class carries a real tensile floor at 520 MPa (75 ksi) with 30% elongation, the A5.9 class is classified on chemistry rather than on strength, and the low-residual limits cut carbon, silicon, phosphorus and sulphur back and drop the niobium ceiling from 1.00% to 0.40%.

Chemical Composition — Filler base-metal reference (the deposit is certified to AWS A5.9 / A5.4)

Element	Content
Nickel (Ni)	32.0–38.0%
Chromium (Cr)	19.0–21.0%
Copper (Cu)	3.0–4.0%
Molybdenum (Mo)	2.0–3.0%
Niobium + Tantalum (Nb+Ta)	8 × C min., 1.00% max.
Manganese (Mn)	2.00% max.
Silicon (Si)	1.00% max.
Carbon (C)	0.07% max.
Phosphorus (P)	0.045% max.
Sulfur (S)	0.035% max.
Iron (Fe)	Balance

All-Weld Metal Mechanical Results (typical, AWS classifications)

Product (all-weld metal)	AWS Class	Tensile Strength	Elongation
ER320LR bare wire, GTAW deposit	AWS A5.9, UNS N08022	590 MPa (86 ksi), typical	35%, typical
E320LR covered electrode, SMAW deposit	AWS A5.4, UNS W88022	520 MPa (75 ksi), minimum	30%, minimum
E320LR covered electrode, published range	AWS A5.4, UNS W88022	590 MPa (86 ksi), typical	34%, typical

Filler Metal Classifications

Product	AWS Class	Chemistry Basis	Typical Strength	Best Suited For
Bare wire	ER320LR (A5.9), UNS N08022	Ni balance, Cr 19.0–21.0%, Mo 2.0–3.0%, Cu 3.0–4.0%, C 0.025% max., Si 0.15% max.	590 MPa (86 ksi) typical	GTAW primary, GMAW general
Covered electrode	E320LR (A5.4), UNS W88022	The same nickel-iron-chromium analysis under a basic covering	520 MPa (75 ksi) minimum	SMAW repair and cladding

Filler Metal Identification (ER320LR / E320LR)

Property	Value
Parent Metal	UNS N08020, 2.4660 / NiCr20CuMo
Bare Filler	ER320LR (AWS A5.9)
Bare Filler UNS	N08022
Covered Electrode	E320LR (AWS A5.4)
Covered Electrode UNS	W88022
Copper	3.0–4.0% in the parent metal
Niobium plus Tantalum	Eight times carbon, minimum, in the parent metal
Carbon Ceiling	0.025% max. in the bare filler, against 0.07% in the parent metal
Silicon Ceiling	0.15% max. in the bare filler, against 1.00% in the parent metal
Niobium Ceiling	0.40% max. in the bare filler, against 1.00% in the parent metal
Ferrite Content	Essentially zero in the deposit, which is why the residual limits matter
Strengthening Route	Cold work only, because the grade takes nothing from aging

Standards and Designations

Standard	Product or Application
AWS A5.9 / ASME SFA-5.9	ER320LR bare wire, UNS N08022, for this base metal
AWS A5.4 / ASME SFA-5.4	E320LR covered electrode, UNS W88022
ASME Section IX	F-Number 4 and A-Number 8 for weld procedure work

Surface Finishes (Welding Wire)

Surface Condition	Typical Use
Clean Bright Rod	Bare ER320LR of this welding wire leaves the draw bench clean and free of lubricant.
Straight Cut Lengths	TIG lengths of this welding wire arrive cut and deburred for the root pass.
Sealed Spools	Layer-wound spools of this welding wire stay sealed against moisture until the arc starts.

Typical Supply Dimensions — Welding Wire

Product Form	Typical Supply	Length
ER320LR Bare Wire	0.8-4.0 mm dia., UNS N08022	Spools, coils or cut lengths
Straight TIG Rods	1.6-4.0 mm dia.	1000 mm cut lengths
MIG Spools	0.8-1.6 mm dia.	Spooled
Submerged Arc Wire	2.4-4.0 mm dia.	Coils
E320LR Covered Electrode	2.4-4.0 mm dia., UNS W88022	Sealed tins
Custom Filler Packing	To your pack weight	Custom

AWS classifies the A5.9 bare wire on chemistry rather than on strength, while the A5.4 electrode class sets a 520 MPa (75 ksi) tensile floor with 30% elongation and no yield requirement. Values are for reference; the mill test certificate prevails for final acceptance.

Southerly Alloy — nickel alloy bar, rod, pipe, tube, plate and fittings · [www.southerly-alloy.com](#) · Values are for reference; the mill test certificate prevails for final acceptance.

Document Control · Alloy 20 Welding Wire Data Sheet · Rev. 1.0 · Issued 6 October 2026