

Alloy 59 Welding Wire (UNS N06059 / W.Nr. 2.4605 / NiCr23Mo16Al) — Technical Data Sheet

ERNiCrMo-13 bare wire to AWS A5.14 (UNS N06059, ISO 18274 S Ni 6059, ASME IX F-No. 43) and ENiCrMo-13 covered electrodes to AWS A5.11 (UNS W86059) for joining UNS N06059 — the A5.11 class carries a real tensile floor at 690 MPa (100 ksi) with 25%% elongation, and the tungsten-free, niobium-free chemistry keeps a dissimilar joint clear of brittle phases.

Chemical Composition — Filler base-metal reference (the deposit is certified to AWS A5.14 / A5.11)

Element	Content
Nickel (Ni)	Balance
Chromium (Cr)	22.0–24.0%
Molybdenum (Mo)	15.0–16.5%
Iron (Fe)	1.5% max.
Aluminum (Al)	0.10–0.40%
Copper (Cu)	0.50% max.
Manganese (Mn)	0.50% max.
Cobalt (Co)	0.30% max.
Silicon (Si)	0.10% max.
Phosphorus (P)	0.015% max.
Sulfur (S)	0.010% max.
Carbon (C)	0.010% max.

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

Product (all-weld metal)	AWS Class	Tensile Strength	Elongation
ERNiCrMo-13 bare wire, GTAW deposit	AWS A5.14, UNS N06059	780 MPa (113 ksi), typical	42%, typical
ENiCrMo-13 covered electrode, SMAW deposit	AWS A5.11, UNS W86059	690 MPa (100 ksi), minimum	25%, minimum
ENiCrMo-13 covered electrode, published range	AWS A5.11, UNS W86059	730–770 MPa (106–112 ksi), typical	33–47%, typical

Filler Metal Classifications

Product	AWS Class	Chemistry Basis	Typical Strength	Best Suited For
Bare wire	ERNiCrMo-13 (A5.14), UNS N06059	Ni balance, Cr 22.0–24.0%, Mo 15.0–16.5%, Fe 1.5% max., C 0.010% max.	780 MPa (113 ksi) typical	GTAW primary, GMAW general
Covered electrode	ENiCrMo-13 (A5.11), UNS W86059	The same nickel-chromium-molybdenum analysis under a basic covering	690 MPa (100 ksi) minimum	SMAW repair and cladding

Filler Metal Identification (ERNiCrMo-13 / ENiCrMo-13)

Property	Value
Parent Metal	UNS N06059, 2.4605 / NiCr23Mo16Al
Bare Filler	ERNiCrMo-13 (AWS A5.14)
Covered Electrode	ENiCrMo-13 (AWS A5.11)
Covered Electrode UNS	W86059
Chromium	22.0–24.0% in the parent metal
Molybdenum	15.0–16.5% in the parent metal
Iron	1.5% max. in the parent metal
Carbon	0.010% max. in the parent metal
Tungsten and Niobium	Absent from the specification by design
Strengthening Route	Cold work only, because the grade takes nothing from aging

Standards and Designations

Standard	Product or Application
AWS A5.14	ERNiCrMo-13 bare nickel-chromium-molybdenum welding wire
AWS A5.11	ENiCrMo-13 covered electrode, UNS W86059
ASME SFA-5.14	ASME version of the bare filler specification

Surface Finishes (Welding Wire)

Surface Condition	Typical Use
Clean Bright	Bare ERNiCrMo-13 welding wire leaves in the clean bright condition, with no drawing lubricant on the surface.
Straight Rods	TIG lengths of this welding wire arrive cut and deburred.
Spooled	Layer-wound spools of this welding wire keep the feed steady on automatic equipment.

Typical Supply Dimensions — Welding Wire

Product Form	Typical Supply	Length
ERNiCrMo-13 Bare Wire	0.8–5.0 mm dia., UNS N06059	Spools, coils or cut lengths
Straight TIG Rods	1.6–5.0 mm dia.	1000 mm cut lengths
MIG Spools	0.8–1.6 mm dia.	Spooled
Submerged Arc Wire	2.0–5.0 mm dia.	Coils
ENiCrMo-13 Electrode	2.5–5.0 mm dia., UNS W86059	Sealed tins
Custom Packing	To your pack weight	Custom

ASTM B574 prints three mechanical columns for UNS N06059 and no hardness ceiling, so release rests on chemistry and tensile results. Values are for reference; the mill test certificate prevails for final acceptance.