# Alloy: COREWELD 625 | Class: ERNiCrMo-3

ERNiCrMo-3 (Alloy 625) • Weld Processes: GMAW, GTAW & SAW

CERTIFIED TO
**AWS A5.14**
**ASME SFA A5.14**

## AWS CHEMICAL COMPOSITION REQUIREMENTS | DEPOSITED CHEMICAL COMPOSITION % (TYPICAL)

| AWS REQUIREMENT (%) | | TYPICAL DEPOSIT (%) | |
|---|---|---|---|
| **C** | 0.10 max | **C** | 0.09 |
| **Cu** | 0.50 max | **Si** | 0.12 |
| **Mn** | 0.50 max | **Ni** | Balance |
| **Ni** | 58.0 min | **Mn** | 0.05 |
| **Fe** | 5.0 max | **Cr** | 21.9 |
| **Al** | 0.40 max | **Nb/Ta** | 3.65 |
| **P** | 0.02 max | **Fe** | 0.62 |
| **Ti** | 0.40 max | **Mo** | 8.70 |
| **S** | 0.015 max | | |
| **Cr** | 20.0 – 23.0 | | |
| **Si** | 0.50 max | | |
| **Nb + Ta** | 3.15 – 4.15 | | |
| **Mo** | 8.0 – 10.0 | | |
| **Other** | 0.50 max | | |

## DEPOSITED ALL WELD METAL PROPERTIES % (AW) | CHARPY-V-NOTCH IMPACT PROPERTIES %

| MECHANICAL PROPERTY | | CHARPY-V-NOTCH IMPACT |
|---|---|---|
| **Tensile Strength** | 114,000 psi | *Not applicable* |
| **Yield Strength** | 66,000 psi | |
| **Elongation** | 35% | |

## APPLICATION

COREWELD 625 ERNiCrMo-3 (625) is used primarily for gas tungsten and gas metal arc and matching composition base metals. It is also used for welding Inconel 601 and Incoloy 800. It can be used to weld dissimilar metal combinations such as steel, stainless steel, Inconel and Incoloy alloys.

## RECOMMENDED WELDING PARAMETERS FOR TIG, MIG & SAW WELDING OF NICKEL ALLOYS

| PROCESS | DIAMETER OF WIRE | DIAMETER OF WIRE (MM) | VOLTAGE (V) | AMPERAGE (A) | GAS |
|---|---|---|---|---|---|
| **TIG** | | | | | |
| | .035 in | 0.90 | 12–15 | 60–90 | 100% Argon |
| | .045 in | 1.20 | 13–16 | 80–110 | 100% Argon |
| | 1/16 in | 1.60 | 14–18 | 90–130 | 100% Argon |
| | 3/32 in | 2.40 | 15–20 | 120–175 | 100% Argon |
| | 1/8 in | 3.20 | 15–20 | 150–220 | 100% Argon |
| **MIG** | | | | | |
| | .035 in | 0.90 | 26–29 | 150–190 | 75% Argon + 25% Helium |
| | .045 in | 1.20 | 28–32 | 180–220 | 75% Argon + 25% Helium |
| | 1/16 in | 1.60 | 29–33 | 200–250 | 75% Argon + 25% Helium |
| **SAW** | | | | | |
| | 3/32 in | 2.40 | 28–30 | 275–350 | Suitable flux may be used |
| | 1/8 in | 3.20 | 29–32 | 350–450 | Suitable flux may be used |
| | 5/32 in | 4.00 | 30–33 | 400–550 | Suitable flux may be used |

Note: Other shielding gases may be used for MIG and TIG welding. Shielding gases are chosen taking quality, cost, and operability into consideration.
Note: Both agglomerated and fused fluxes can be used for submerged arc welding.
Note: The chemical composition of the flux mainly affects the chemistry of the weld metal and consequently its corrosion resistance and mechanical properties.

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