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Dissimilar metal weldability chart

Find one metal's row, read across to the other metal's column, and check the letter against the key.

	Ag	Al	Au	Be	Cd	Co	Cr	Cu	Fe	Mg	Mn	Mo	Nb	Ni	Pb	Pt	Re	Sn	Ta	Ti	V	W	Zr
Ag	·	C	S	X	C	D	C	C	D	X	C	D	N	C	C	S	D	C	X	C	D	D	X
Al	C	·	X	C	X	X	X	C	X	C	X	X	X	X	C	X	N	C	X	X	X	X	X
Au	S	X	·	X	X	C	D	S	C	X	X	C	N	S	X	S	N	X	N	X	D	N	X
Be	X	C	X	·	N	X	X	X	X	X	X	X	X	X	N	X	X	D	D	X	X	X	X
Cd	C	X	X	N	·	D	D	X	D	S	D	N	N	D	C	X	N	C	N	X	N	N	D
Co	D	X	C	X	D	·	C	C	C	X	C	X	X	S	C	S	S	X	X	X	X	X	X
Cr	C	X	D	X	D	C	·	C	C	X	C	S	X	C	C	C	S	C	X	S	D	S	X
Cu	C	C	S	X	X	C	C	·	C	X	S	D	C	S	C	S	D	C	D	X	D	D	X
Fe	D	X	C	X	D	C	C	C	·	D	C	C	X	C	C	S	X	X	X	X	S	X	X
Mg	X	C	X	X	S	X	X	X	D	·	X	D	N	X	X	X	N	X	N	D	N	D	D
Mn	C	X	X	X	D	C	C	S	C	X	·	D	X	–	C	X	N	X	X	X	X	D	X
Mo	D	X	C	X	N	X	S	D	C	D	D	·	S	X	D	C	X	D	S	S	S	S	X
Nb	N	X	N	X	N	X	X	C	X	N	X	S	·	X	N	X	X	X	S	S	S	S	S
Ni	C	X	S	X	D	S	C	S	C	X	–	X	X	·	C	S	D	X	X	X	X	X	X
Pb	C	C	X	N	C	C	C	C	C	X	C	D	N	C	·	X	N	C	N	X	N	D	X
Pt	S	X	S	X	X	S	C	S	S	X	X	C	X	S	X	·	C	X	X	X	X	S	X
Re	D	N	N	X	N	S	S	D	X	N	N	X	X	D	N	C	·	D	X	X	D	X	X
Sn	C	C	X	D	C	X	C	C	X	X	X	D	X	X	C	X	D	·	X	X	X	D	X
Ta	X	X	N	D	N	X	X	D	X	N	X	S	S	X	N	X	X	X	·	S	X	S	C
Ti	C	X	X	X	X	X	S	X	X	D	X	S	S	X	X	X	X	X	S	·	S	C	S
V	D	X	D	X	N	X	D	D	S	N	X	S	S	X	N	X	D	X	X	S	·	S	X
W	D	X	N	X	N	X	S	D	X	D	D	S	S	X	D	S	X	D	S	C	S	·	X
Zr	X	X	X	X	D	X	X	X	X	D	X	X	S	X	X	X	X	X	C	S	X	X	·

KEY

- **S** — **Solid solubility.** Solid solubility exists in all alloy combinations. Very desirable combination.
- **C** — **Complex structures.** Complex structures may exist. Probably acceptable combination.
- **X** — **Intermetallics.** Intermetallic compounds formed. Undesirable combination.
- **D** — **Insufficient data.** Insufficient data for proper evaluation. Use with caution.
- **N** — **No data.** No data available. Use with extreme caution.

ELEMENTS

Ag	Silver	**Al**	Aluminum	**Au**	Gold
Be	Beryllium	**Cd**	Cadmium	**Co**	Cobalt
Cr	Chromium	**Cu**	Copper	**Fe**	Iron
Mg	Magnesium	**Mn**	Manganese	**Mo**	Molybdenum
Nb	Niobium (Columbium)	**Ni**	Nickel	**Pb**	Lead
Pt	Platinum	**Re**	Rhenium	**Sn**	Tin
Ta	Tantalum	**Ti**	Titanium	**V**	Vanadium
W	Tungsten	**Zr**	Zirconium		

The chart rates pairs of pure elements. Commercial alloys contain several elements, so for an alloy pair the chart is a starting point, and a sample weld confirms the result. A dash (–) means the pair isn't rated in the original chart; a dot (·) marks the same element.