

COMPARISON OF WELDING WIRE

RECOMMENDED ALUMINUM ALLOY FILLERS FOR STRUCTURAL WELDING

Base Metal	Base Metal	Aluminum Alloy Filler (Weld Material)
5052 (face sheet)	6061 (extrusions)	5356 or 4043*

*4043 may be used for some applications

ref: American Welding Society D1.2

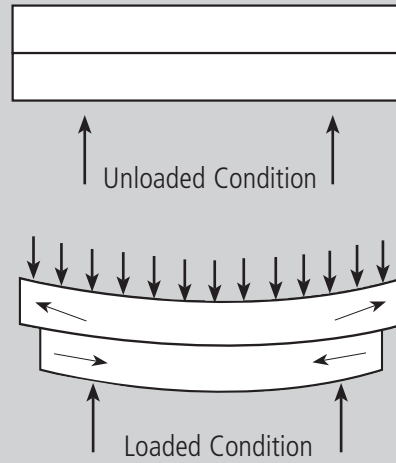
MINIMUM SHEAR STRENGTH OF FILLET WELDS

Definition: The tendency of two equal and parallel forces, acting in opposite directions to cause the adjoining surfaces of a member to slide one on the other.

Filler Alloy	Shear Strength KSI (1000 lbs/sq in)
4043	11.5
5356	17.0

ref: "Welding Alcoa Aluminum"

RESULT: 5356 is 47% stronger than 4043



DUCTILITY OF "WELDED JOINTS"

(combined strength of parent metals and weld wire)
Definition: The ability of the weld to stretch or bend after it has reached its yield point without breaking (malleability, lack of brittleness).

Filler Alloy	Free-Bend Elongation, %
4043	15
5356	35

ref: "Welding Alcoa Aluminum"

RESULT: 5356 is 2.33 times more ductile than 4043

WELDING SKILL

Definition: The level of welding expertise required to produce consistently high quality welded components.

Filler Alloy	Skill Level Required
4043	Low
5356	High

RESULT: Higher skill level = Higher cost

TENSILE STRENGTHS OF WELD

Definition: The stress that results from a force that tends to stretch or elongate a member.

Filler Alloy	Tensile Strength (lbs/sq in)
4043	10,000-25,000
5356	50,000

ref: "Welding Alcoa Aluminum"

RESULT: 5356 is 2-5 times stronger than 4043

COST OF FILLER ALLOY (WELD)

Filler Alloy	Cost per Pound
4043	\$5/lb
5356	\$6/lb

RESULT: 5356 is 20% more expensive than 4043