

Abbreviations

Aluminum	Al
Axial plunge load	APL
Bending force	BF
Copper	Cu
Cooling enhanced friction stir welding	CFSW
Dynamic cross sectional area of pin	DAP
Dynamic cross sectional surface of pin	DSP
Depth of sinking pin	DSP
Dwell time	DT
Electrical resistivity	ER
Electrolytic tough pitch	ETP
Fracture to the elongation	EL
Friction stir	FS
Friction stir brazing	FSB
Friction stir butt barrier welding	FSBBW
Friction stir diffusion bonding	FSDB
Friction stir welding	FSW
Friction stir spot welding	FSSW
Energy dispersive X-ray spectrographs	EDX
Heat affected zone	HAZ
Heating assisted friction stir welding	HFSW
Intermetallic compounds	IMCs
Joint efficiency	JE
Micro-friction stir welding	μ FSW
Normal friction stir welding	NFSW
Scanning electron microscopy	SEM
Thermo mechanically affected zone	TMAZ
Tip diameter	TD
Tool material	TM
Tool pin offset	TPO
Tool tilt angle	TTA

Pin length	PL
Pin surface profile	PSp
Polygonal edge size	PES
Resistance spot welding	RSW
Root diameter	RD
Rotational speed	RS
Static cross sectional area of pin	SAP
Static cross sectional surface of pin	SSP
Self-piercing rivets	SPR
Shoulder diameter	SD
Shoulder to pin diameter ratio	SPR
Shoulder surface profile	SSp
Ultimate tensile strength	UTS
Under water friction stir welding	UFSW
Vickers hardness number	VHN
Welding speed	WS
X-ray diffraction analysis	XRD
Yield strength	YS