

# Static Failure Mechanisms of Spot Friction Welds of Aluminum

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## ABSTRACT

Spot friction welding is a recently developed welding technology in joining aluminum alloys. Microstructures and failure mechanisms of spot friction welds in aluminum 6061-T6 lap-shear specimens are investigated based on experimental observations. Optical micrographs of the cross sections of spot friction welds in lap-shear specimens before and after failure are examined. These spot friction welds show the failure mode of nugget pullout under lap-shear loading conditions. The experimental observations suggest that under lap-shear loading conditions, the failure is initiated near the original notch tip in the stir zone and the failure propagates along the circumference of the nugget to final fracture.

Keywords : Spot friction weld, Lap-shear specimen, Fracture, Microstructure

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