



## Welding and Joining of Plastic Components

Dedicated to the research and development of materials joining and engineering technology, TWI houses unique expertise in the field of polymer welding. TWI experts work with industry to advise at every stage of a project.

### Welding and joining processes

- Vibration welding
- Spin welding
- Hot plate welding
- Ultrasonic welding
- Infrared welding
- Laser welding
- Hot air and ultrasonic staking
- Adhesive bonding

### Services offered

- Process selection and optimisation
- Mechanical testing
- Failure investigation
- Joint design
- Materials analysis
- Training and assessment
- Standards development
- Non-destructive inspection
- Materials selection
- Prototype equipment and part development
- Pre-production welding

### Mechanical testing

- Tensile
- Flexural
- Flower test
- Compressive
- Creep
- Peel
- Fatigue
- Impact
- Pressure/burst test
- Nano-indentation

### Inspection techniques

- Visual
- Microtoming
- SEM/EDX
- X-ray radiography
- Thermography
- Optical microscopy
- Ultrasonics

### Analytical testing

- DSC
- TGA
- DMTA
- FTIR
- GC-MS
- Rheometry
- Permeation