

## Application Description

**Low surface energy (LSE) substrates** are notoriously difficult to bond. These substrates have a low affinity for other substances which result in poor wetting properties. As a result, traditional adhesives often fail to adhere to these substrates securely. To overcome this, several strategies can be employed including surface treatment, primer or adhesion promoter and mechanical bonding. Unfortunately, these strategies add time, cost and weight or design restrictions to the project.

Speciality adhesives are a way to overcome these challenges, increase process efficiency, lightweight and improve aesthetics. The ability to bond a wide variety of materials is integral realising innovative design possibilities.

SG400LSE is a new product designed to overcome the bonding challenges of low surface energy plastics.

## Testing Project



A cartridge of SG400LSE was tested for lap shear performance on the following:

- Polypropylene to Polypropylene
- Aluminium to Aluminium
- Polypropylene to Aluminium

An overlap of 25mm was used for all lap shear samples

## Test Methods

GTM-002	Measuring the lap shear strength of metal specimens by tension loading
GTM-003	Measuring the lap shear strength of Rigid Plastics by tension loading

## Results

		EX400B LB-1	EX400B LB-2
Polypropylene to Polypropylene	Tensile Stress at Maximum Load (MPa)  Failure Mode	3.82 Stopped-stretched	3.78 Stopped-stretched
Aluminium to Aluminium		6.62 0/100/0	9.16 Stopped-stretched
Polypropylene to Aluminium		4.16 Stopped-stretched	4.07 Stopped-stretched

## Final Observations & Conclusions

Both batches showed either substrate stretch or 0/100/0 (Adhesive/Cohesive/Stock Break). This indicates that all of the specimens in the test failed cohesively.

SG400LSE can bond and hold strength on polypropylene and polypropylene to aluminium.

Before choosing an adhesive for use in an application, it is important to not only evaluate material properties but the performance of the entire assembly.