CASE STUDY

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SCIGRIP
SG400 LSE
MMA Methyl Methacrylate Adhesive

Goodbye blow holes: bonding and sealing polyethylene tanks using MMA adhesive

Customer

A rotational moulding company

Customer benefits

- Sealing and bonding LDPE
- Improved productivity as a result of eliminating the need for surface preparation
- Significantly reduced scrappage
- Enabled manufacturers to improve product quality by repairing tank defects

Our partner, IPS Adhesives, worked with a **rotational moulding company** to repair blow holes frequently occurring in their low density polyethylene (LDPE) tanks using our **Methyl Methacrylate Adhesive** (MMA), **SG400LSE**.

As a manufacturer of tanks used for things such as water and wastewater collection, the moulding company was frequently discovering blow holes in their tanks, sometimes up to 2.5cm in size. These tanks are typically made of LDPE and are blow moulded into shape. LDPE has poor adhesion properties due to its low surface energy, and is ordinarily difficult to bond.

Keen to help them find a solution to their problem, the SCIGRIP team rose to the challenge.

Challenge
Getting a deeper understanding of the problem was the first step. For these tanks, holes smaller than 1.6mm can result in leaks that lead to the entire tank being scrapped, particularly those used in recreational vehicles (RVs) for wastewater storage. As these holes can be common in the manufacturing process, finding a way to repair the holes would help the moulding company avoid the significant cost implications of wasted materials and production disruption.

The SCIGRIP team suggested the company use SG400LSE to effectively repair the tanks. This two-part translucent MMA (10:1) can bond slippery, low surface energy plastics including polyethylene and polypropylene with minimal surface preparation. As SG400LSE is applied more often in the field and in a broader range of applications, even more successes are expected.

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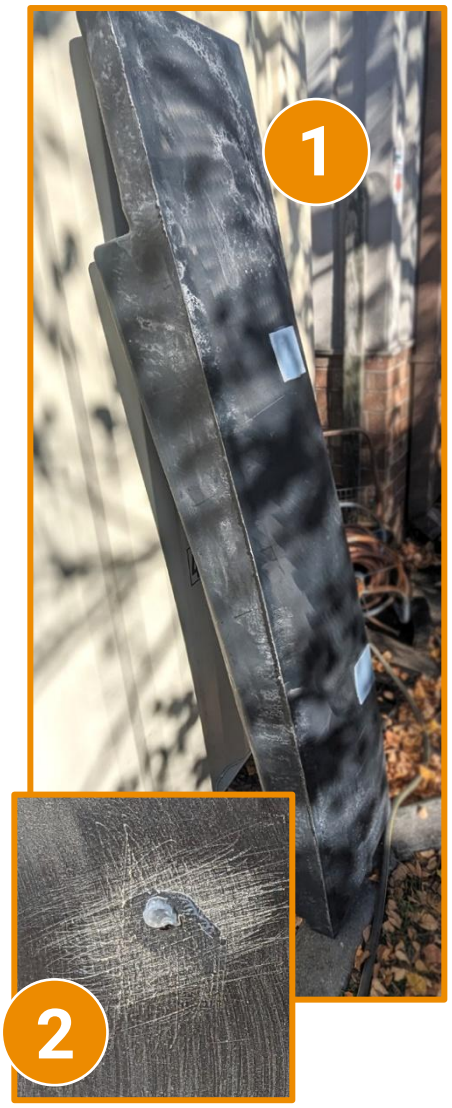
With everyone involved set on SG400LSE, a period of trialling the material began, involving tests on a black wastewater tank, typically used in RVs, to assess the effectiveness of patching and hole-filling (plugging) to combat the problem.



Using SG400LSE to create patches & plugs
The SCIGRIP team approached the problem in two ways: patching for larger holes and plugging for smaller ones (see right for images).

1. **To set up the patching trial,** 2.5cm holes were drilled into the tank. These holes were drilled into what would be the bottom of the tank as it would be installed in a RV in order to simulate damage that might be experienced while traveling. SG400LSE was applied to the tank, completely encircling each hole. A second piece of LDPE, approximately 3mm thick, was then pressed onto the SG400, encircling the hole and forming a seal.
2. **To set up the plugging trial,** 3mm and 6.35mm holes were drilled into what would be the bottom of the tank. These holes were meant to simulate a worst-case scenario of what could occur during blow moulding. SG400LSE was dispensed into these holes, completely filling the holes and creating plugs.

The tank was left overnight so that the patched and filled holes could cure. The following day, the tank was filled and positioned vertically to create maximum water pressure. Both repair solutions resulted in no leaking, indicating successful repairs.

SG400LSE was highly effective at repairing the holes and ultimately enabled the manufacturers to improve the quality of their product and make significant savings as a result of reduced scrappage and improved productivity.

This case study was originally from IPS Adhesives.

SCIGRIP SG400LSE MMA Methyl Methacrylate Adhesive for Low Surface Energy Plastics

- Bonds polypropylene, polyethylene
- Bonds low surface energy plastics without primers or extensive surface preparation
- Primerless adhesion for most metals simplifies bonding processes
- Can replace hot air or heat welding of plastics
- Non-sag on non-level surfaces
- Creates durable cross bonds with plastics, metals, and composites
- Low exotherm properties, minimising heat generation during curing
- Fast cure time and high initial tack for an efficient assembly process
- Supplied in pre-measured, side-by-side double syringe cartridges for easy application

Applications include: Polypropylene bonding, polyolefins and low surface energy plastics like polyethylene, bonds plastics to metals, aluminium, and stainless steel.

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