



Ultimate non etching adhesion promoter for silver surfaces

Unique adhesion characteristics

AgPrep is Atotech's unique adhesion promoter for the lead frame industry. ApPrep dramatically increases the adhesion of all commonly used molding compounds (EMC) to silver surfaces in semiconductor and LED packages.

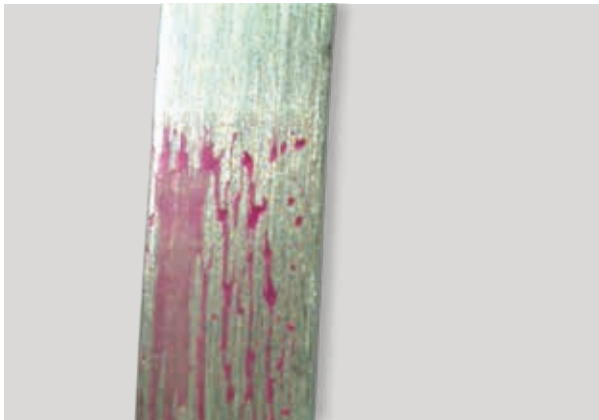


Fig. 1: Arco Test showing weak wetting (low adhesion) on non-treated silver surface

Non Etching Adhesion Promoter (NEAP)

AgPrep is a Non Etching Adhesion Promoter (NEAP), as it will not create any change to the original topography of the silver surface but substantially enhances the adhesion of this noble metal to the molding compound.

Most of the adhesion promoters show deterioration in adhesion strength when the treated parts are subjected to high thermal loading. In contrast, AgPrep treated silver shows excellent adhesion even after extreme heat treatment conditions.



Fig. 2: Arco Test showing full wetting of the AgPrep treated silver surface (strong adhesion)

Up to 100%

increase of shear force

Strong increase of IC and LED package reliability

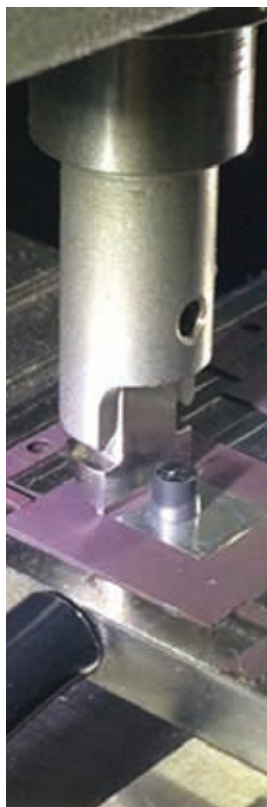


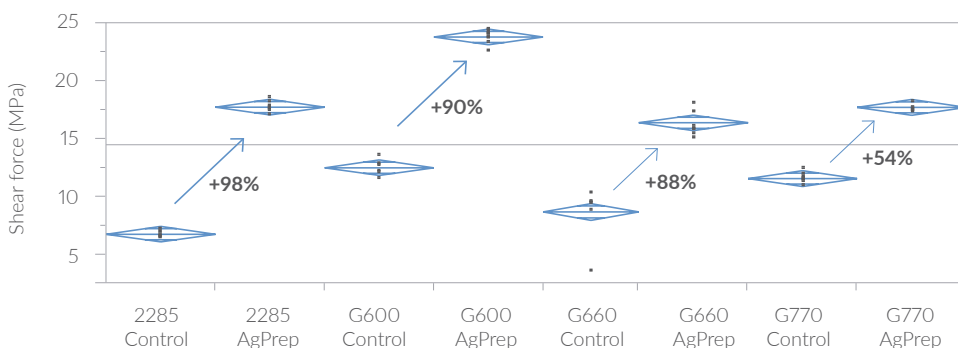
Figure 3:
Button shear testing

Button shear test results

Button shear tests were carried out to evaluate the effect of AgPrep on mold adhesion. All treated samples showed a significant improvement in adhesion strength. These excellent results were subsequently verified using customer lead frames. No delamination was found after MSL 1 for plastic packages treated with AgPrep.

Boxplot graph

Below diagram shows the significant increase in the shear force and consequently a stronger adhesion after AgPrep treatment for different molding compounds.



Features and benefits

- AgPrep substantially increases the adhesion of molding compounds (EMC) to silver surfaces
- AgPrep is applied to full silver lead frames (i.e. LED) and Cu / Ag lead frames in combination with Atotech's MoldPrep process (copper roughening)
- IC packages achieve MSL 1 + increased automotive requirements
- AgPrep adhesion is on the level of rough copper or better

