

ATmaP™ (Accelerated Thermo-Molecular Adhesion Process)

Executive Overview

ATmaP™ is an innovative patented one step process for treating a range of materials (e.g., Plastics, Glass, and Metals) prior to painting or bonding without the need to use Adhesion Promoting Primers. ATmaP™ is an acronym for; Accelerated Thermo-molecular adhesion Process.

ATmaP™ is the process of grafting a nitrogen-based coupling agent to the surface of a material being treated via atomization and vaporization through the center of a Cirqual® gas burner. When the Cirqual® flame (with the atomized and vaporized coupling agent) contacts a component being treated, it chemically bonds oxides of Nitrogen into its surface. ATmaP™ is an environmentally friendly process, with no discharge of VOC's or abatement.

Current technologies, such as adhesion promoters, conventional flame treatment, corona discharge and plasma chambers are unable to match the levels of adhesion achieved by ATmaP™. ATmaP™ exceeds current OEM requirements for industry standard adhesion tests such as; Stone-chip Resistance, Gasoline Soak, Mandrel Bend, Water Jet, Thermal Shock, Humidity, Chemical Resistance, Lap Shear, and Cross Hatch etc.

ATmaP™ Performance Standards:

DaimlerChrysler in July 2003 issued a Global Process Specification (PS-10789) for use of the ATmaP™ technology on painted exterior TPO/PP.

General Motors Holden has also tested the ATmaP™ process on interior and exterior painted TPO/PP, with ATmaP™ exceeding current GMH performance specifications.

The ATmaP™ Process Offers The Following Benefits:

- Increased Adhesion without the use of Adhesion Promoters
- Cost Reductions
 - Substantial reductions in energy consumed in production process
 - Faster process time (no primer oven required)
 - Allows for material substitution (recyclable and lower cost materials)
 - Reduced maintenance costs
 - No required abatement
 - Reduced floor space required verses current manufacturing processes
- Reduced use of solvents
- Improved first time quality via the Elimination of Adhesion Promoter 'Dirt'
- Reduced warranty claims through Increased Adhesion
- Environmental improvements (Elimination of Significant Amounts of Emissions)

**Resulting In A Reduction in Total Manufacturing Costs Verses Current
Adhesion Promoting Technologies**

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ATmaP™