Celanese

ZytelBond™ for direct plastic-metal joining

Cohesive failure after burst testing a cube (15 bar on left, 10 bar on right) shows failure in the weld joint and not the interface between metal and ZytelBond™.

Want to improve bonding strength vs. overmolding or welding? When Celanese investigated new solutions for joining polyamides and aluminum via chemical bonding, ZytelBond™ was born. This joining solution bonds Zytel® polyamides with metals, a common challenge for automotive and industrial components.

CHALLENGE

- Join thermoplastics with metal
- Resist water, chemicals and heat ageing
- Create stronger bond vs. adhesive and mechanical interlocking
- Simplify assembly compared to screws with gasket
- Reduce cost and weight

SOLUTION

- Chemical bonding technology for automotive and industrial components
- Compatible with all Zytel® polyamides

PROCESS STEPS

- Metal surface preparation
- Apply coating
- Weld metal with Zytel® polyamide

Burst pressure done after ageing at 20°C	Condition	Zytel® 70G35EF NC with Aluminium	Zytel® HTN51G35EF BK with Aluminium
At new	No ageing	15 bar	10 bar
Thermal shock test	50 cycles from -30°C to 150°C	15 bar	9 bar
Glycol - Water	90°C and 3000 hours	11 bar	5 bar
Dielectric oil	100°C and 7000 hours	11 bar	7 bar

Source: Celanese

BENEFITS

- Combine the best of both materials

POTENTIAL APPLICATIONS

- Cooling plates for EV battery
- Structural components
- Cooling plates for power electronics, oil coolers
- Fitting for tank and hydraulic components

For more information, contact your Celanese representative.

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