



APC400 Series

**AeroPel™**  
NANOCOMPOSITE PROTECTIVE LAYER

### AeroPel™ APC400 – Ice Protection Series

The AeroPel™ APC400 Ice Protection Series provides a super-hydrophobic Nanocomposite Protective Layer (NPL) designed to repel water, limit ice nucleation, and minimize snow accumulation. Ice protection NPL is stable under extreme UV and ozone exposure.

Developed specifically for aviation applications, ice protection NPL uses proprietary nanotechnology to create a super-hydrophobic surface on existing substrates that can repel water and drastically minimize ice buildup. In addition, ice protection NPL provides excellent corrosion protection for the substrate.

Ice protection NPL may eliminate the traditional aircraft de-icing process in cold weather operations. With the surface having an ultra-low ice adhesion strength, a more environmental-friendly process such as high pressure air or water may be used to displace any ice and snow instead of harmful chemicals.

In tests conducted by the United States Army Corps of Engineers Cold Regions Research and Engineering Laboratory, ice NPL achieved the lowest ice adhesion strength ever measured.

#### Key Benefits:

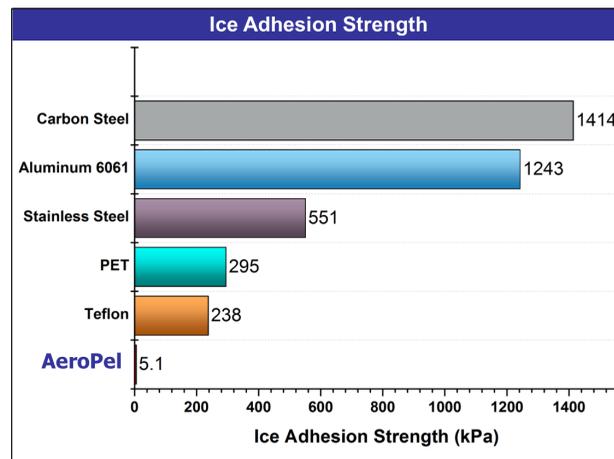
- Excellent water and ice repellency under extreme weather conditions
- Ultra-low ice adhesion strength on protected surface
- Superior corrosion protection in highly corrosive environments
- Stable and functional in extreme conditions from -60°F to 400°F (-51°C to 204°C)
- Improves overall operational efficiency and provides long term savings



One of the hazards in cold weather operations of aircraft is the formation of ice on the airframe, particularly the wings and flight control surfaces. Icing on the ground and from flights in known icing condition may quickly cause adverse effects if precaution is not taken. Icing may also affect certain power plant components and may reduce optimized performance. AeroPel™ APC400 Ice Protection Series creates ultra-low ice adhesion properties resulting in super-hydrophobic surface to protect critical areas from ice buildup in extreme conditions.

### AeroPel Ice Protection NPL Performance

Lab and field tested for performance in both ice buildup prevention and protection against environmental corrosion. Aluminum 6061 applied with ice protection NPL demonstrated a 5.1 kPa (0.71 psi) of ice adhesion strength in testing by the US Army Cold Regions Research and Engineering Lab (CRREL). This was the lowest ice adhesion strength ever recorded in tests at CRREL, leading the laboratory to call AeroPel, ‘the best icephobic coating (they had) ever tested.’



### Contact Angle

AeroPel APC400 Ice Protection Series imparts super-hydrophobic properties which forces moisture to bead at a contact angle greater than 160° on protected aluminum, compared to approximately 80° on bare aluminum.

### Receding Angle

Receding angle of water on surfaces are a well-known indicator of the force required to push ice or water away from the surface. A higher receding angle corresponds to lower ice adhesion. Through standard measurements, AeroPel was demonstrated to have a very high receding angle of 138°, higher than any commercial coatings/surface treatments, indicating a strong ice release behavior.

