

## Frequently Asked Questions

Cryotech has developed a new liquid runway deicer for the upcoming 2008-2009 winter season in response to the Potassium Acetate Deicer shortage. Cryotech XT360® is formulated to be used where the outdoor air temperature (OAT) is below 10°F (-12°C) on a routine basis. XT360 does not contain triazole (TTZ), ethoxylated compounds, nitrites, or nitrates.

### Product Information

#### What is Cryotech XT360®?

XT360 is a proprietary aqueous solution, containing Susterra® propanediol plus corrosion inhibitors. It has been developed as a direct substitute for Cryotech E36®.

#### When will XT360 be available?

XT360 is available for shipment from Fort Madison, Iowa. Additionally, XT360 is being strategically placed throughout Cryotech's distribution network.

#### What are the characteristics of XT360?

XT360 is a bio-based liquid runway deicer. There are no anticipated differences in handling, pumping, or spraying between XT360 and E36.

#### How does the price of XT360 compare to E36?

For more information on pricing, please contact your Cryotech Account Representative.

#### How does XT360 differ from propylene glycol based deicers?

XT360 uses a bio-based propanediol (Susterra® propanediol) component where propylene glycol (PG) formulations use a traditional petroleum based compound. Environmentally, Susterra® propanediol is similar to PG, including Chemical Oxygen Demand (COD), but it has better aquatic toxicity values and better low temperature viscosity. Runway deicers made with Susterra® propanediol also exhibit better friction characteristics than runway deicers made from PG.

#### How does the conductivity of XT360 compare to other airport approved runway deicers?

XT360 is less conductive than traditional acetate runway deicers, which lessens concerns with airport lighting systems and aircraft electrical components.

#### Are there any expected supply issues with XT360?

Cryotech expects to be able to meet the deicing needs of its current customers.

### Product Performance

#### Does XT360 perform similar to E36?

For anti-icing, XT360 performed as well as E36 in the SHRP testing for Ice Melting, Ice Penetration, and Ice Undercutting. If used for deicing below 15°F (-9°C), it must be used in conjunction with a solid deicer such as Cryotech NAAC®. This testing is performed at multiple temperature ranges.

#### Can XT360 be used as a lavatory antifreeze?

XT360 can be used at low temperatures (-20°F / -29°C) and has been approved by Airbus, Boeing, Douglas, and Lockheed for use as a lavatory antifreeze.

#### Has XT360 been field trialed?

XT360 was developed in response to the industry shortage of potassium hydroxide (KOH). XT360 meets the AMS 1435 specification, and third party testing on friction and ice melting has been conducted. XT360 was successfully field trialed in Alaska and Cryotech is confident that XT360 will be a high performing fluid.

### Certifications

#### Is it approved by FAA?

FAA authorizes the use of liquid pavement deicing products at airports that comply with AMS 1435. XT360 meets the AMS 1435 specification and is fit for use on runways and airside areas.

#### Do AMS specifications require deicers to be compatible with carbon brakes?

No, the current revision of the AMS 1435 deicing material specification does not require deicers to meet any standards for compatibility with carbon brakes. The SAE Aerospace and Landing Gear A5-A subcommittee is collaborating with the G12F Catalytic Oxidation working group to incorporate this testing into the AMS 1435 specification for deicing materials. This would be a universal test for measuring weight loss on brakes from all major manufacturers.

#### What effect does XT360 have on carbon brakes?

Based on previous experience, Cryotech expects catalytic oxidation on carbon brakes to be similar to aircraft deicers for XT360. Cryotech is investigating potential testing to determine the impact of XT360, if any, on carbon brakes.

#### Is XT360 compatible with airframe materials?

XT360 meets the AMS 1435 specification which encompasses compatibility testing with metals, plastics, and other materials.

## Frequently Asked Questions

### Storage, Handling, and Application

#### What is the transition procedure when switching from Cryotech E36® to XT360?

XT360 and E36 can be mixed at any ratio on pavement or in tanks.

#### Can XT360 be put in a tank with another manufacturer's deicing fluid?

Cryotech does not recommend mixing XT360 with competitors' fluids, as they may be based on a different chemistry and may not be compatible with XT360. Please contact Cryotech with questions about a specific fluid.

#### How should XT360 be stored?

There are no anticipated differences in handling, pumping, or storing between XT360 and E36. For more in depth details on suggested tanks, pumps, sprayers, and other information, please contact Cryotech.

#### How should XT360 be applied?

It is expected that XT360 will have similar application rates to E36.

- Anti-icing:

0.5 gallons/1000ft<sup>2</sup> (25g/m<sup>2</sup>)

- Deicing:

1 - 3 gallons/1000ft<sup>2</sup> (50 g/m<sup>2</sup>) near 32°F (0°C) on thin ice

Below 15°F (-9°C), XT360 must be used in conjunction with a solid deicer such as Cryotech NAAC®

#### Is pre-wetting different with XT360?

If pre-wetting, XT360 can be used at the same rates as E36.

- 1.25 gallons per 100lbs (130g/kg) of NAAC or sand

#### Can existing equipment be used when applying XT360?

Cryotech expects that equipment used to apply E36 will be suitable for use with XT360. For more in depth details on suggested pumps, tanks, sprayers, and other information, please contact Cryotech.

### Environmental Characteristics

#### What is a bio-based product?

Bio-based products (other than feed or food) are wholly or partly composed of renewable agricultural crops such as corn, wheat, or sugar cane.

#### What are the benefits of using a bio-based product like XT360?

XT360 is made with Susterra® propanediol, a high-performance material derived from corn, a renewable farm resource. This reduces our reliance on petroleum-based materials, requires less energy to manufacture than petroleum-based glycol products, reduces greenhouse gas emissions, and supports airline, airport, and military sustainability goals.

#### What are the environmental impacts of XT360?

XT360 is non-persistent, biodegradable, and has a low toxicity to fish, mammals, and vegetation. The bio-based component notably reduces energy use and greenhouse gas emissions over traditional propylene glycol.

#### Will this product comply with airport water permits?

Cryotech is aware of airports that are applying for, and being granted, variances on their water permits from the EPA due to the industry shortage. If environmental personnel need any specific information on XT360, please let Cryotech know.

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