

## Non Toxic Geothermal Antifreeze Fluid

### Performance Properties

Thermox DTX has been especially formulated for use in Geothermal heating systems, to exploit the advantages Ethylene Glycol has over Propylene Glycol - whilst delivering a non toxic solution. Specifically;

- More efficient heat transfer.
- Easier to pump, especially at low temperatures.
- Less volume for the same freeze protection.

**Antifreeze:** Thermox DTX is miscible with water in all proportions and can protect Geothermal and Air Source systems down to -50°C depending on concentration.

**Non Toxic:** Although based on Ethylene Glycol, Thermox DTX has been tested and classified as Non Toxic by an EPA certified laboratory. Previously Propylene Glycol was the only non toxic glycol available, that is no longer the case. DeTox™ prevents Ethylene Glycol from being metabolised (during digestion) into toxic by-products, which cause kidney failure, blindness and death. Tests carried out on Thermox DTX confirmed the toxicity was "so low that it was impossible to determine an LD50 value".

The DeTox™ additive has very little effect on heat transfer or antifreeze performance. In fact similar volumes of Thermox DTX or Ethylene Glycol are required to achieve a specific freeze protection

**Optimum Flow:** Thermox DTX has improved heat transfer characteristics. Including lower Dynamic Viscosity and higher Thermal Conductivity. For detailed comparison please refer to the Fluid Performance Chart - available upon request



**Protection:** Thermox DTX contains synergistic corrosion inhibitors to protect metals commonly found in such systems. It has been independently tested and found to meet BS6580 and ASTM D1384 corrosion standards.

Thermox DTX also contains scale and biological inhibitors to help prevent fouling - thus promoting long operational life and high thermal efficiency

**Biodegradable:** Thermox DTX mixtures are readily biodegradable (90% over ten days) and will not remain in the environment or bio-accumulate.

**Quality Assured:** manufactured in accordance with certified ISO9001-2008 procedures

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### Physical Properties:

Thermox DTX is a green slightly viscous liquid. It is mildly sweet to the taste and has a non-pungent but characteristic aroma.

Density: 1.04–1.15 g/cm<sup>3</sup>

pH: 7.5 –10.5 depending on inhibitors

Boiling point: > 100°C

### Application:

As per BSRIA guide BG 29/2012 all pipe-work systems should be clean and free from biological contamination and debris prior to commissioning.

To minimise corrosion air ingress should be minimized. A pressurised system is best.

Determine the total system volume and add Thermox DTX to the system according to the minimum operating temperature required (see table). The minimum dose of Thermox DTX should not be less than 22% of the system volume and the maximum does not normally exceed 60%. Avoid water containing high levels of calcium salts or Chlorides [Cl-].

### Health & Safety:

Please refer to the associated Safety Data Sheet. Available upon request.

### Shelf Life:

>3 years when stored in sealed containers out of direct sunlight.

### Diluting Concentrate:

When measuring the percentage concentration of Thermox DTX in solution we recommend the use of a recently calibrated refractometer.

Frost Protection °C	v/v of Thermox DTX	Refractive Index
-10	22%	1.356
-15	28%	1.362
-20	33%	1.367
-25	38%	1.372
-30	42%	1.376
-35	46%	1.380