

## **Long Duration Life Test of Propylene Glycol Water Based Thermal Fluid within Thermal Control Loop**

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### **Abstract:**

Evaluations of thermal properties and resistance to microbial growth concluded that 50% Propylene Glycol (PG)-based fluid and 50% de-ionized water mixture was desirable for use as a fluid within a vehicle's thermal control loop. However, previous testing with a commercial mixture of PG and water containing phosphate corrosion inhibitors resulted in corrosion of aluminum within the test system and instability of the test fluid. This paper describes a follow-on long duration testing and analysis of 50% Propylene Glycol (PG)-based fluid and 50% de-ionized water mixture with inorganic corrosion inhibitors used in place of phosphates. The test evaluates the long-term fluid stability and resistance to microbial and chemical changes.