



USE OF ETHYLENE GLYCOL-DEIONIZED WATER IN LCW SYSTEMS

Ward Bosworth

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The use of ethylene glycol-water solution as a cooling or heating medium is a common method of heat transfer. Besides the customary use in automobile radiators, Dow Chemical markets ethylene glycol as a low temperature heat transfer fluid for ice skating rinks and as a secondary coolant in air conditioning systems. As a high temperature heat transfer fluid it is used for pipe tracing and for situations requiring accurate temperature control or to eliminate possible freeze-up problems.

My personal experience has been as a heat transfer medium in food refrigeration, and no problems were experienced. At present there are three glycol-water systems at the laboratory for cooling power supplies at two Booster locations and at the main ring RF building. A Barnstead Company package deionizing unit is easily maintaining these three systems. An inhibited glycol was used unsuccessfully at first but when replaced with pure ethylene glycol there have been no problems.

The main worry with glycol is corrosion. Conversations with Wyandotte Chemicals Company confirms that the decomposition of ethylene glycol at our 170<sup>o</sup>F maximum is very slow and any decomposition products are small molecular organics such as oxalic and formic acids and other oxidized products of ethylene glycol. Rohm and Haas states that such contaminants can readily be absorbed by our existing ion exchange resins and they will then easily be regenerated by our regeneration equipment. Our resins will not be poisoned and because the products are absorbed, there is no acidic corrosion.

Summarizing then, ethylene glycol is a usable solution in our LCW systems and our normal resins can be used without being contaminated.

As to radiation problems, ethylene glycol is a simple carbon, hydrogen and oxygen compound whose problems should be no different than water.