



ElectroSafe® Single-Phase Fluids

Liquid Immersion Cooling's Most Effective Coolants

In 2009, GRC took a disruptively simple approach to the problem of rapidly increasing processor heat and power loads in data centers – single-phase liquid-immersion cooling with ElectroSafe coolants. With this cooling method, IT components are completely immersed in a steady-flowing dielectric ElectroSafe fluid, which has 1,200 times the heat capacity of air, which helps make single-phase immersion cooling a more effective method than other cooling technologies.

ElectroSafe encompasses a broad spectrum of Earth-friendly, high-performance coolants that have undergone a meticulous selection and testing process. These coolants are globally available and have been deployed with GRC immersion cooling systems around the world, ensuring maximum performance, reliability and compatibility with virtually every OEM server and IT component available.

ElectroSafe fluids are an indispensable feature of our ICeraQ® and ICETank® modular immersion cooling systems. Combined with ElectroSafe, our systems have been engineered to ensure maximum system uptime while maintaining its cooling capacity.

ElectroSafe fluids are comprised of the following properties, enabling IT equipment to run efficiently and reliably day after day:

- Eco-friendly
- Chemically inert
- Odorless
- Electrically non-conductive
- Non-toxic
- Non-evaporative



ElectroSafe® Single-Phase Coolants — Vastly Better than Two-Phase Coolants

When it comes to immersion cooling, there are two primary technologies, two-phase and single-phase. Two-phase coolants change from a liquid to a gaseous state and then back again, continuously. They evaporate quickly, require a completely sealed environment, are significantly more expensive than single-phase coolants, and carry uncomfortably high GWP's (global warming potential). Also, maintaining a two-phase system exposes technicians to inhalation risks from the highly volatile vapors of certain varieties of coolants and requires companies to make a big commitment to extra environmental issues. Extra precautions are required to maintain technician and operator safety.

On the other hand, ElectroSafe fluids are always in a liquid state and never evaporates or needs to be replaced. Plus, unlike two-phase coolants, there are no health risks due to exposure, inhalation, or ingestion by technicians. Even maintenance gloves are optional, with many techs preferring not to wear them.

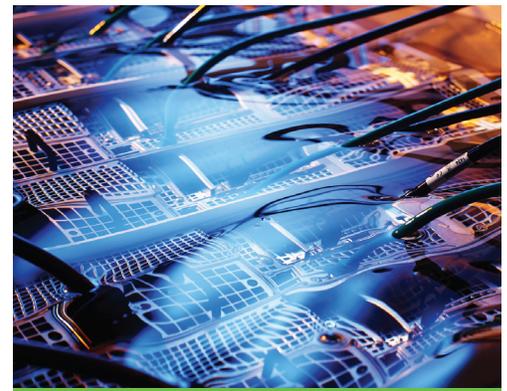
GRC immersion cooling systems are optimized to deliver the best cooling performance with ElectroSafe coolants. There is an ElectroSafe coolant that is suitable for every computing environment.

Characteristics of ElectroSafe Coolants

Evaporation Rate	Nil
Percent Volatile	Nil
Auto-Ignition Temperature	> 662° F (350° C)
Specific Gravity	0.80-0.88

Fire and Safety Building Code

The National Fire Protection Association (NFPA) rates ElectroSafe Coolants as 0-1-0 to 1-1-0 or better. They have an extremely low flammability rating, do not readily ignite, and pose no health hazard.



ElectroSafe Fluids Are:

- Time-tested & proven — globally
- Substantially less expensive & safer than two-phase coolants
- Compatible with Dell, HPE, Supermicro and all other OEM servers properly optimized for immersion cooling
- In compliance with regulatory and building codes
- Protective — shielding immersed hardware from dust, moisture, corrosion, vibrations, and hot spots

ElectroSafe Fluids Are Validated to Ensure Maximum End-User Benefit

Participating Partners



Learn More About Immersion Cooling and GRC's ElectroSafe Line of Coolants
Email ContactUs@grcooling.com • Visit grcooling.com • Call **+1.512.692.8003**