Immersion Cooling Fluids Testing

UL Solutions evaluates the performance properties of immersion cooling fluids through a series of industry-recognized test methods and analytical tests.

Immersion cooling is a method of cooling hardware by immersing it in an electrically nonconductive fluid, which is an excellent conductor of heat, so that electronic components remain cool during operation. Although this technology has been used to cool high-voltage transformers since the 1940s, the recent increase in high-powered data centers for applications such as artificial intelligence (AI), cryptocurrency mining and electric vehicle (EV) charging has sparked rapid growth for the immersion cooling industry.

Evaluate immersion cooling fluid performance with UL Solutions

Testing methods for immersion cooling fluids

We provide customized performance testing of immersion cooling fluids based on customer needs for specific end-product applications. We can help evaluate your immersion cooling fluids' critical attributes, including auto-ignition temperature, flash point and viscosity. After testing, we issue a letter, report and datasheet that document the results.

The most common attributes and testing methods include:

- Auto-ignition temperature (AIT) per ASTM E659-15
- Flash point testing per ASTM D93 (Pensky-Martens closed cup method)
- Flash/fire point testing per ASTM D92 (Cleveland open cup method)
- Dielectric strength per IEC 60156
- Dielectric breakdown per ASTM D1816
- Viscosity
- Specific gravity by pycnometer
- Qualitative infrared analysis

We also offer comprehensive services for audio/visual (AV) and information technology equipment (ITE) applications, including IEC/UL 62368-1 certification. We do offer additional types of testing; please contact us if the tests you need are not listed.

In development: UL Solutions Component Recognition service for dielectric insulating liquids

A UL Solutions Component Recognition service to separately certify dielectric insulating liquids is in development. This service will enable cooling system manufacturers to preselect fluids with the appropriate critical characteristics, which can help reduce the cost of and time needed for system certification.

Why choose UL Solutions for immersion cooling fluid testing?

As a leading global third-party testing provider, UL Solutions stands committed to advancing immersion cooling fluid testing to relevant safety and performance standards. Our experts use internationally accepted test methods established by ASTM International and the International Electrotechnical Commission (IEC) to evaluate immersion cooling fluids.

Learn more at ul.com/services/immersion-cooling-fluids-testing.

Safety. Science. Transformation.™