



Sustainable biomass derived UpSycal[®] 2cSt base oil

100% Natural, Upcycled & Bio-based

TARGET APPLICATIONS

Immersion Coolant, Battery Heat Transfer Fluids, Functional fluids

About UpSycal[®] 2cSt Base oil

UpSycal[®] 2cSt base oil is a 100% bio-based, branched hydrocarbon oil derived entirely from upcycled agricultural waste and other non-edible feedstocks, manufactured according to Green Chemistry principles to ensure high purity, freedom from petroleum-borne impurities, and potential biodegradability.

The UpSycal[®] family of products is based on patented technology that enables fine tuning of the fluids to meet specific applications and customer specifications. This renewable branched hydrocarbon technology provides a sustainable alternative to petroleum-derived polyalphaolefin fluids, enabling the formulation of stable, environmentally responsible immersion-cooling products that deliver the renewability, safety, and performance required by modern server-farm and data-center operators.

UpSycal[®] 2cSt oil is compatible with Open Compute Project standards, making it suitable for modern digital infrastructure. UpSycal[®] 2cSt fluid has high thermal stability and environmental safety and is free of per- and polyfluoroalkyl substances (PFAS). The product offers low toxicity and biodegradability to varying degrees.

The Upsycal[®] Technology can also serve as drop-in replacements for fossil-based oils in heat transfer fluids, EV fluids, functional fluids, and personal care formulations.



UpSycal[®]2cSt base oil Key Properties

Physical Properties

- CAS of key ingredient: 193072-77-4
- Colorless to slight yellowish
- Odorless to slight hydrocarbon odor
- Density (ASTM D4052); 0.8049 g/mL at 25°C
- Refractive index: 1.4 – 1.44
- Non-toxic based on HRIPT test

Low Temperature Properties

- Pour point (ASTM D97): -32 ± 4.5 °C
- Viscosity (ASTM D445)
 - 20°C: 16.19 cSt
 - 40°C: 8.195 cSt
 - 100°C: 2.331 cSt
- Viscosity index: 96.1

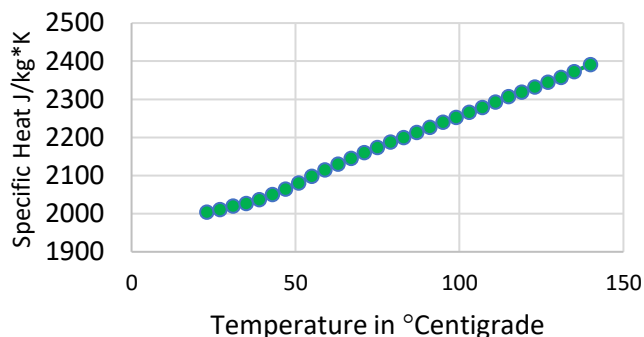
Electrical Properties

- Dielectric constant (ASTM D924): 2.1
- Dielectric Loss tangent (ASTM D924): 0.0021
- Volume resistivity (ASTM D1169)
 - 25°C: 1.96×10^{11} ohm-cm
 - 100°C: 1.86×10^8 ohm-cm
- Dielectric Breakdown Voltage (ASTM D877)
 - 56.9 kV @2.54 mm gap
- Electrical conductivity (ASTM D2624): <1 pS/m

Thermal Properties

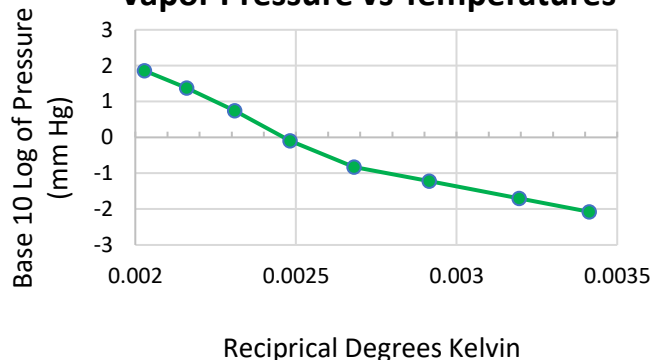
- Flash point (ASTM D92): 193°C
- Fire Point (ASTM D92): 205°C
- Boiling point: (ASTM D1120 & D6352)
 - 360 ± 10 °C
- Thermal conductivity (ASTM D2717)
 - 20°C: 0.140 W/m.K
 - 100°C: 0.136 W/m.K

Specific Heat vs Temperatures



- Specific heat (ASTM E1269 & E1131)
 - 23°C: 2.004 kJ/kg.K
 - 51°C: 2.081 kJ/kg.K
 - 71°C: 2.160 kJ/kg.K
 - 99°C: 2.253 kJ/kg.K

Vapor Pressure vs Temperatures



- Vapor Pressure (ASTM D2879)
 - 20°C: 0.0011 KPa
 - 40°C: 0.0027 KPa
 - 100°C: 0.0200 KPa

