SOLARBRINE® D Series Technical Data Sheet

High-Efficiency Water-Based Thermal Transfer Fluid

Smart Cooling, Green Future.

1. PRODUCT OVERVIEW

SOLARBRINE® D Series is a high-performance water-based thermal transfer fluid designed for modern industrial and electronic cooling systems. It's extremely low viscosity, high heat transfer capability, and multi-metal corrosion inhibition make it highly suitable for servers, water-cooled plates, and closed-loop cooling systems.

2. KEY FEATURES

Icon	Feature	Description
💧	Water-Based Coolant	Ultra-low viscosity for superior heat dissipation compared to glycol-based mixtures.
🫧	Low Foam Tendency	Extremely low foaming under turbulent or high-speed flow conditions, helping maintain stable performance.
🧪	Rubber Compatibility	Safe for EPDM, silicone rubber, fluoro rubber, and common plastic/resin components used in cooling systems.
🧬	Dual Inhibitor System	Combination of organic and inorganic corrosion inhibitors providing long-term protection for multiple metals.
⚖️	Neutral pH Formulation	Maintains a stable, slightly alkaline pH to minimize material stress and extend the service life of the system.
❄️	Wide Temperature Range	Functional and stable in ambient temperatures from 0 – 80 °C for general industrial conditions.
♻️	Environmentally Safe	Free from silicates, phosphates, borates, and amines, reducing environmental impact and risk of precipitation or clogging.

3. APPLICATIONS

- Water-cooled plates for servers, AI accelerators, and HPC systems
- Closed-loop liquid cooling systems for electronic equipment
- General industrial thermal transfer systems requiring low viscosity and high flow

4. USAGE & MAINTENANCE

4.1 Usage

- Fill SOLARBRINE® D series directly into a **closed cooling system**. Do not use in open systems.
- Before filling, rinse the system using deionized water with conductivity < 5 μS/cm to remove impurities.
- Do not mix with other coolants, antifreeze products, gasoline, kerosene, or preservatives.
- When filling or refilling, avoid introducing dust or foreign particles into the system.

4.2 Maintenance

- Check the system pH at least once per year using a calibrated pH meter, or periodically send samples for analysis.
- If the fluid level decreases, inspect the system for leaks and repair them before refilling with undiluted SOLARBRINE® D series.
- If the level drops due to evaporation at high temperature, top up with deionized water to restore the proper level.
- In case of leakage, wipe the area dry with a dry cloth, then clean with a damp cloth to avoid white additive residue.

5. SAFETY & HANDLING

- Avoid contact with skin or clothing. If contact occurs, rinse thoroughly with clean water. Seek medical attention if irritation develops.
- If the fluid comes into contact with eyes, rinse immediately with water for at least 15 minutes and seek medical attention.
- Do not drink. If swallowed, induce vomiting only if instructed by medical personnel and seek medical attention immediately.
- Store in sealed, clearly labeled containers away from direct sunlight and out of reach of children.

- Dispose of used or unused products via certified industrial waste handlers in accordance with local regulations.

6. TECHNICAL SPECIFICATIONS

6.1 General Properties

Item	Specification	Result	Test Method
Appearance	Clear liquid without sediment or suspended matter	Coincident	Visual
Color	Colorless	Colorless	Visual
Odor	No irritating odor	Coincident	Smell
pH	7.5 ~ 8.5	7.89	SH/T0069
Density (20 °C)	1.000 ~ 1.020 g/cm³	1.005	SH/T0068
Boiling Point	100 ~ 110 °C	108 °C	SH/T0089
Reserve Alkalinity	Report	0.56 (mL)	SH/T0091
Refractive Index	≥ 1.33580	1.33631	GB/T6488
Freezing Point	0 ~ −5 °C	−1.1 °C	SH/T0090

6.2 Foaming Characteristics (88 °C)

Item	Specification	Result
Foaming Tendency (Volume)	≤ 150 mL	50 mL
Break Time	≤ 5.0 s	2.8 s

6.3 Chemical Content

Item	Specification	Result	Method
Chlorine Content	≤ 25 mg/kg	2 mg/kg	SH/T0621, JT/T1230
Sulfate Content	≤ 50 mg/kg	0 mg/kg	SH/T0621, JT/T1230
Ash Content	≤ 2.5 %	0.5 %	SH/T0067

6.4 Corrosion in Glassware (88 ± 2 °C, 336 ± 2 h)

Material	Allowable Change (mg/piece)	Result (mg/piece)	Method
Copper	±10	−1.4	

Solder	±30	−4.9	SH/T0085, ASTM D1384
Brass	±10	−0.9	
Steel	±10	+0.1	
304 Steel	±10	0.0	
316L Steel	±10	0.0	
Cast Iron	±10	−1.7	
Al Alloy	±30	−7.3	
ZL107 Al Alloy	±30	−8.4	

Liquid pH after test: 8.20 (within 7.0–9.0, pH change +0.30, within ±1.0).

6.5 Conductivity & Stability

Item	Specification	Result	Method
Conductivity (25 °C)	Report	8460 μS/ cm	GB/T6908
Storage Stability (60 °C, 336 h)	No obvious color change; no precipitation or suspended matter	Coincident	GB29743.1 Appendix D
Hard Water Stability (90 °C, 336 h)	Sediment volume ≤ 0.5 mL	0 mL	GB29743.1 Appendix D
Impact on Organic Coatings	No impact	Pass	SH/T0084

7. CERTIFICATIONS

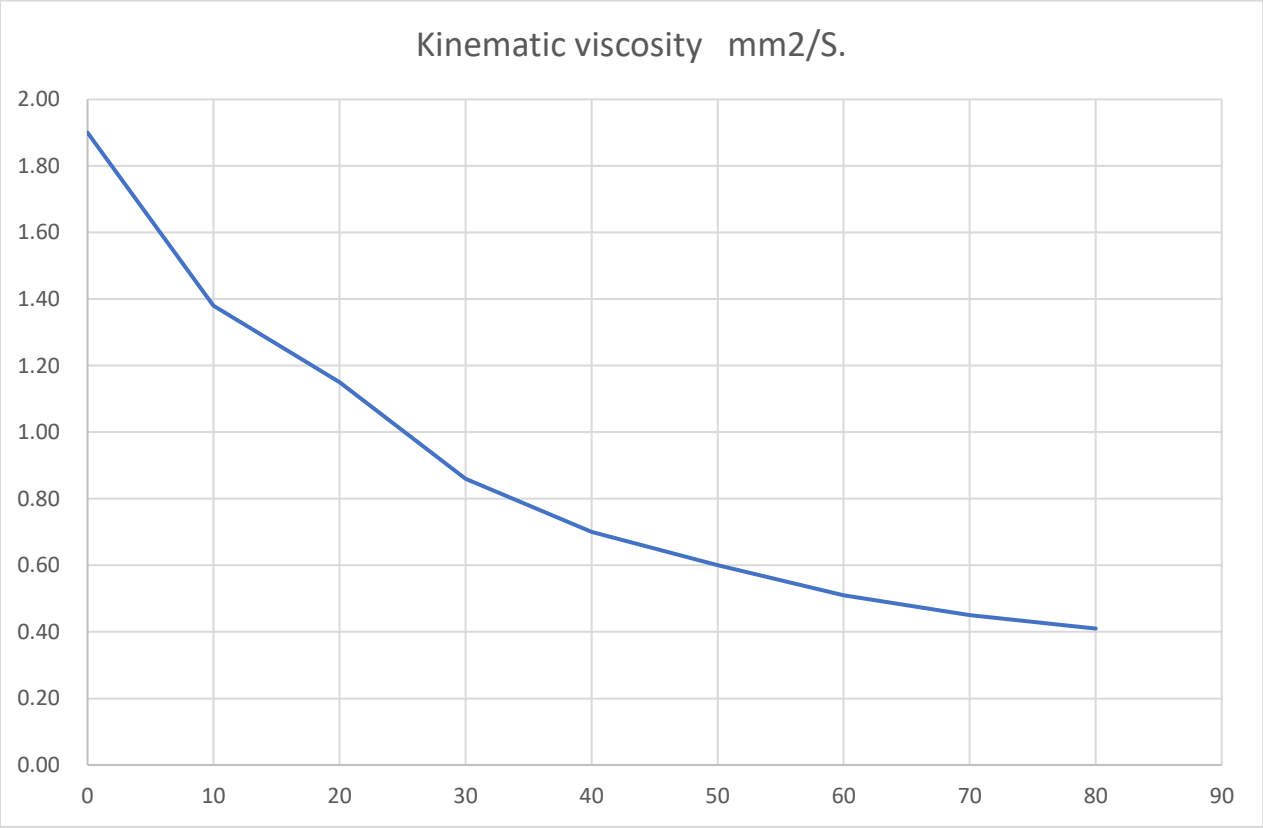
- ISO 9001 – Quality Management System
- ISO 14001 – Environmental Management System
- ISO 45001 – Occupational Safety Management System

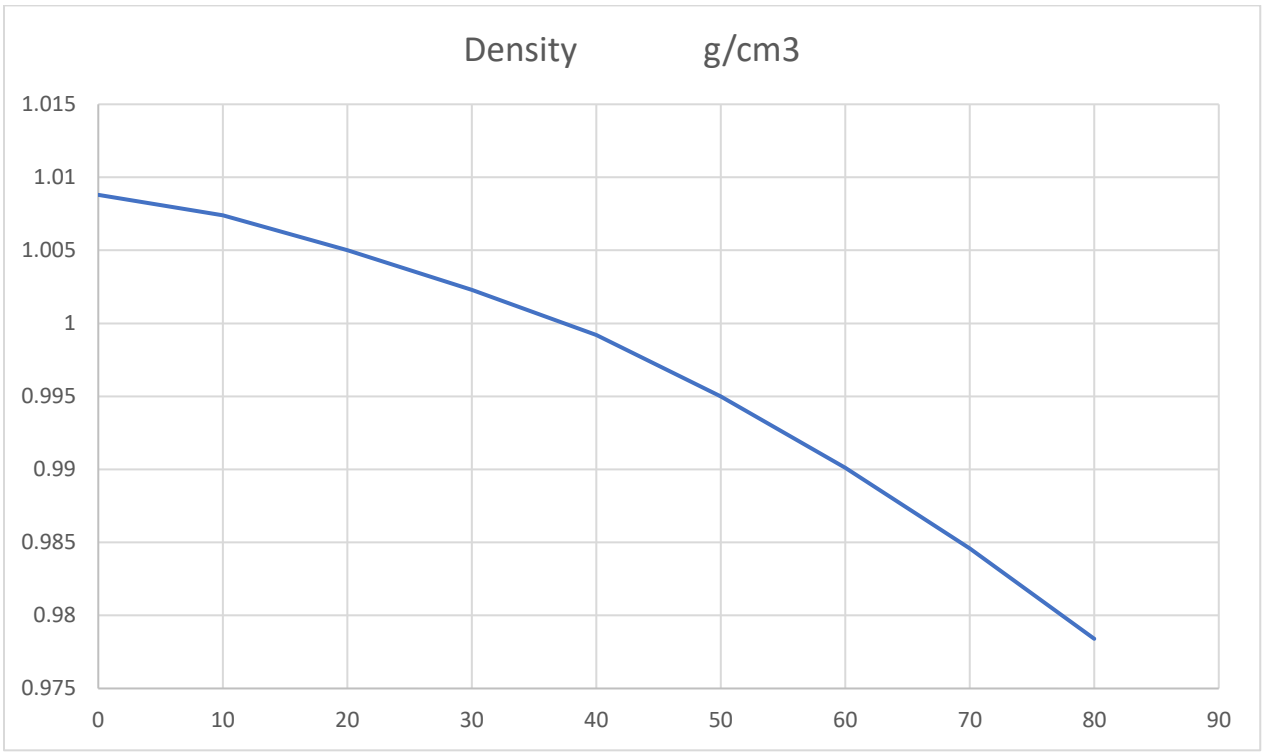
8. CONTACT INFORMATION

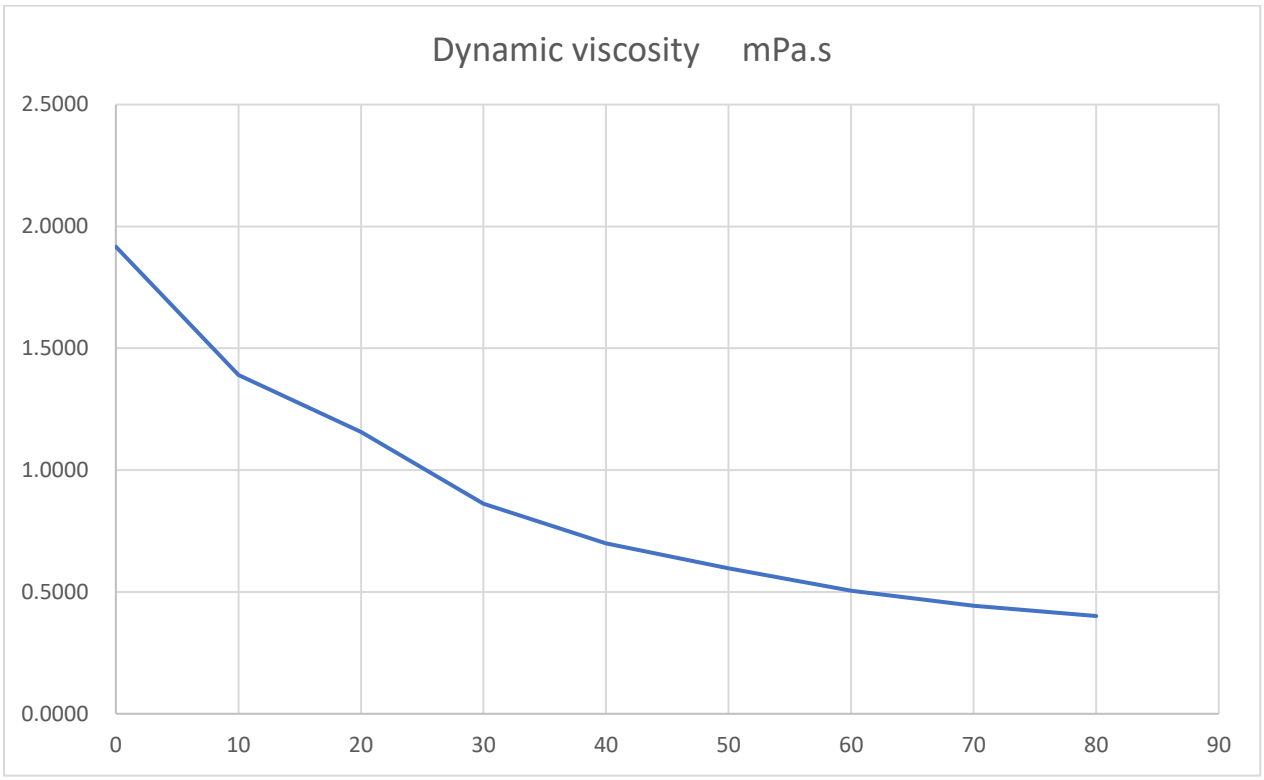
SOLAR APPLIED MATERIALS TECHNOLOGY CORP.
No. 1, Gongye 3rd Rd., Annan Dist., Tainan City 709411, Taiwan
Tel: +886-6-5110123 | Fax: +886-6-6000568
Website: **www.solartech.com.tw**
E-mail: pauline_chen@solartech.com.tw

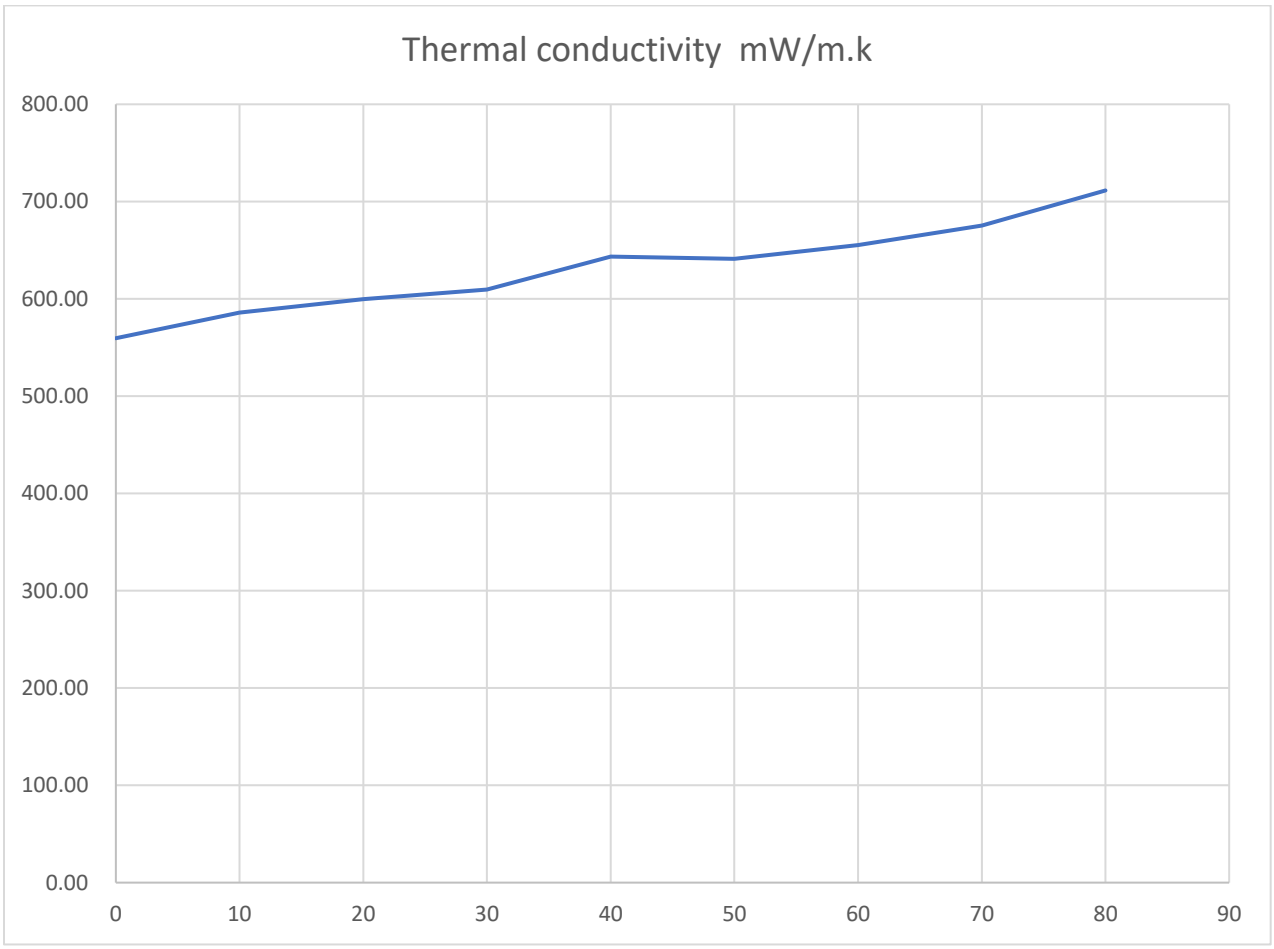
SOLARBRINE® D series Physical Property

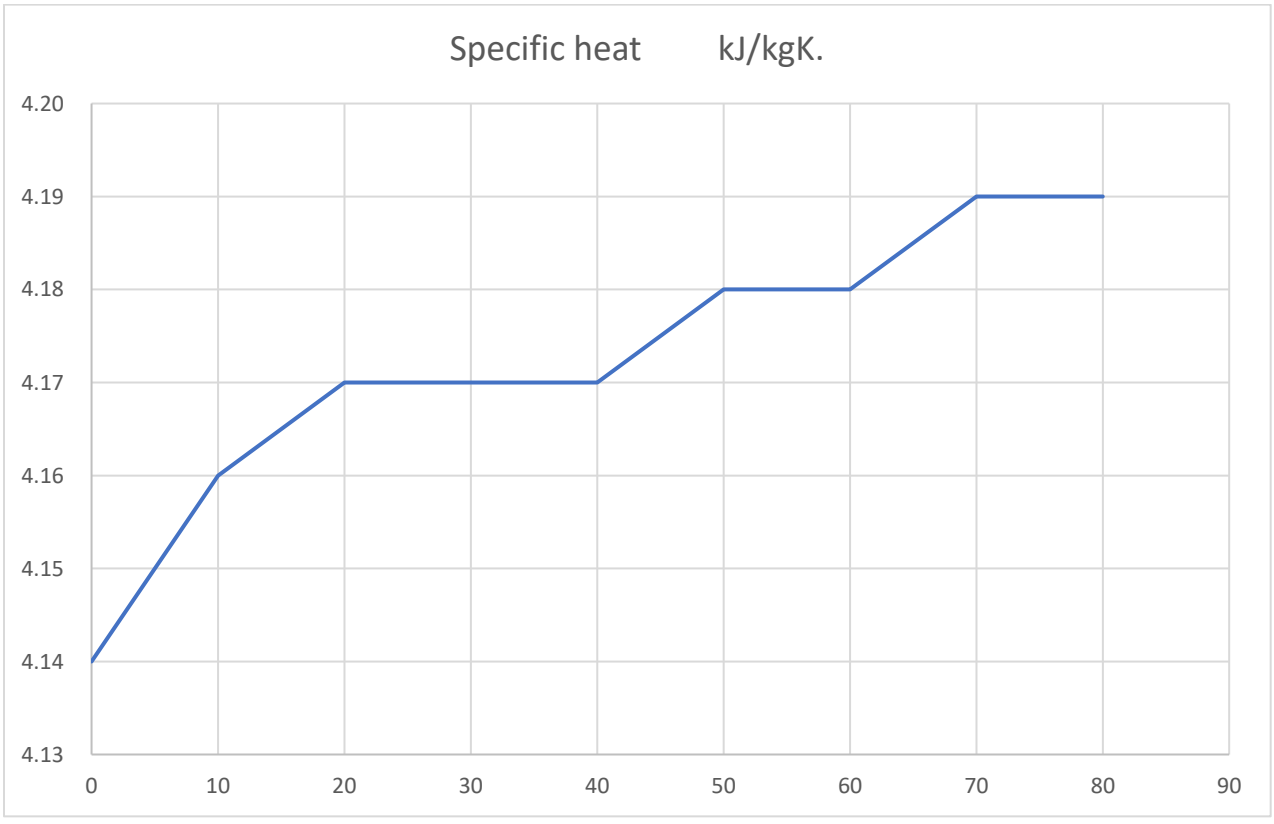
	No.	Test temperature ℃	0	10	20	30	40	50	60	70	80
SOLARBRINE D Series	1	Kinematic viscosity $mm^2/S.$	1.90	1.38	1.15	0.86	0.70	0.60	0.51	0.45	0.41
	2	Density g/cm^3	1.0088	1.0074	1.005	1.0023	0.9992	0.995	0.9901	0.9846	0.9784
	3	Dynamic viscosity mPa.s	1.9167	1.3902	1.1558	0.8620	0.6994	0.5970	0.5050	0.4431	0.4011
	4	Thermal conductivity mW/m.k	559.58	585.91	599.72	609.60	643.49	641.33	655.26	675.52	711.45
	5	Specific heat kJ/kgK.	4.14	4.16	4.17	4.17	4.17	4.18	4.18	4.19	4.19




Density g/cm3
1.015
1.01
1.005
1
0.995
0.99
0.985
0.98
0.975
0
10
20
30
40
50
60
70
80
90


Dynamic viscosity mPa.s
2.5000
2.0000
1.5000
1.0000
0.5000
0.0000
0
10
20
30
40
50
60
70
80
90


Thermal conductivity mW/m.k
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
0
10
20
30
40
50
60
70
80
90


Specific heat kJ/kgK.
4.20
4.19
4.18
4.17
4.16
4.15
4.14
4.13
0
10
20
30
40
50
60
70
80
90