

Single Fluid for Cooling and Heating

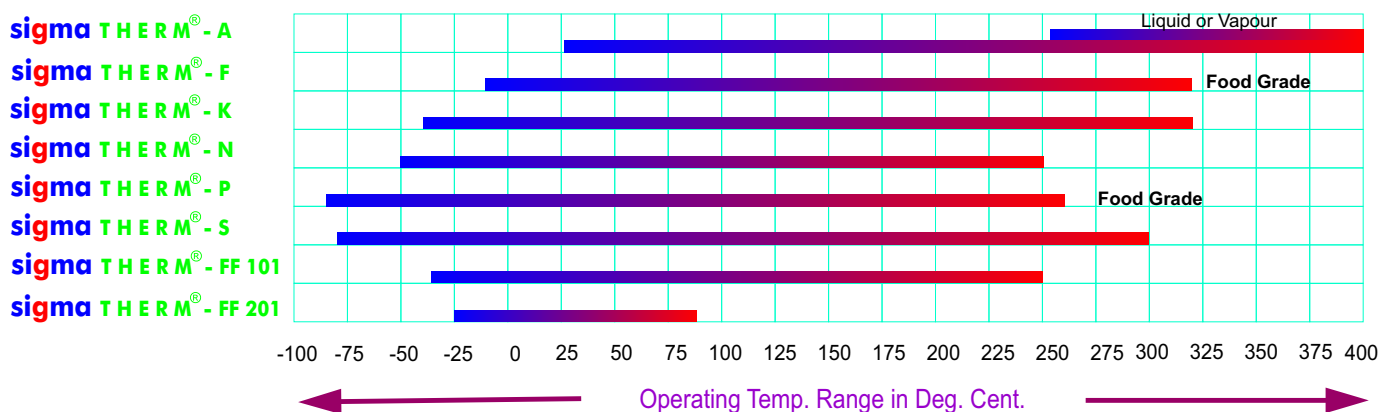
-85 °C to 260 °C

Food Grade

sigma THERM[®] - P

Synthetic Thermic Fluid

Thermic Fluid and other Speciality Range



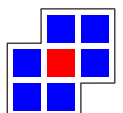
www.sigma-therm.com



Shreyas Petroleum Additives Limited

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Description :

sigma THERM® - P is a Food Grade synthetic organic heat transfer fluid.



Application :

Indirect closed heat transfer systems from - 85 °C to 160 °C in liquid phase without pressurization of system and with proper pressurization up to 260°C.

Non Food Compounds
Program Listed (HT1)
Reg. No. 151811

This single fluid is used for challenging requirement of Pharmaceutical, Fine Chemicals and other industries where two different circuits with different fluids are there for cooling and heating purpose.

It replaces traditional dual steam & glycol or steam & brine systems.

Formulation of sigma THERM® - P is based on all ingredients complies with US FDA, chapter 21 CFR, 178.3570, HT1 category.

Benefits :

- Eliminates dual fluids for heating and cooling.
- Long Life.
- Cost Effective Solution
- Trouble free operation

Gasket Material Compatibility :

sigma THERM® - P has an acceptable compatibility when used within the temperature and pressure limitation of the following polymers or gasketing materials:

Acetal, Aramid Fiber, Chemraz (FFKM), Epoxy, Fluorocarbon (FILM), Fluoroelastomer, Glass Fiber, Gylon, Kalrez, PEEK, PTFE, Teflon (All) , PTFE Silicon, PTFE Viton, PTFE Fiberglass, Kel-F (CTFE), Viton

Typical Properties :

| | | |
|-------------------------------|--------------|-------------------|
| Composition | | 100 % Synthetic |
| Appearance | visual | Clear Water White |
| Colour | ASTM D 156 | 30 |
| Max. Bulk Temperature, ° C | | 260 |
| Max. Film Temperature, ° C | | 280 |
| Kin. Vis. @ 40°C, cSt | DIN 51562-1 | 1.2 |
| Pour Point , ° C | DIN ISO 3016 | < - 85 |
| Density @ 15 ° C | DIN 51757 | 774 |
| Auto Ignition Temp. ° C | DIN 51794 | Above 275 |
| Flash Point ° C, Closed Cup | DIN EN 22719 | Min. 62 |
| Vapour Pressure @ 20 ° C, kPa | | - |
| Total Acidity, mgKOH/g | DIN 51558-1 | <<0.2 |
| Moisture content | DIN 51777-1 | < 70 ppm |
| Chlorine content | DIN 51577-3 | <<0.005% |
| Copper Corrosion | EN ISO 2160 | << 1a |

Packing : 210 Ltrs.

| Temp | Density | Specific Heat | Thermal Conductivity | Kin. Vis | Vapour Pressure |
|------|-------------------|---------------|----------------------|----------|-----------------|
| °C | Kg/m ³ | kJ/Kg K | W/m·K | cSt | kPa |
| -85 | 837 | 1.78 | 0.143 | 347 | |
| -70 | 826 | 1.79 | 0.142 | 70 | - |
| -60 | 820 | 1.85 | 0.138 | 28 | - |
| -40 | 806 | 1.92 | 0.134 | 8.60 | - |
| -20 | 792 | 1.98 | 0.13 | 4.00 | - |
| 0 | 778 | 2.05 | 0.125 | 2.43 | - |
| 20 | 763 | 2.12 | 0.121 | 1.66 | - |
| 40 | 749 | 2.20 | 0.116 | 1.21 | 0.3 |
| 60 | 734 | 2.28 | 0.111 | 0.94 | 0.9 |
| 80 | 719 | 2.36 | 0.107 | 0.76 | 2.2 |
| 100 | 704 | 2.45 | 0.102 | 0.63 | 5.7 |
| 120 | 689 | 2.54 | 0.097 | 0.53 | 11.8 |
| 140 | 673 | 2.64 | 0.092 | 0.46 | 23.2 |
| 160 | 656 | 2.74 | 0.087 | 0.40 | 42.1 |
| 180 | 637 | 2.85 | 0.083 | 0.36 | 71.6 |
| 200 | 618 | 2.96 | 0.078 | 0.32 | 116 |
| 220 | 598 | 3.07 | 0.074 | 0.29 | 177 |
| 240 | 576 | 3.18 | 0.069 | 0.26 | 263 |
| 260 | 552 | 3.29 | 0.064 | 0.24 | 376 |

Note : Above data is for reference only

Liability Disclaimer : This information and our technical advice – whether verbal, in writing or by way of trials – are given in good faith but without warranty, and this also applies where proprietary rights of third parties are involved. Our advice does not release you from the obligation to verify the information currently provided – especially that contained in our safety data and technical information sheets – and to test our products as to their suitability for the intended processes and uses. The application, use and processing of our products and the products manufactured by you on the basis of our technical advice are beyond our control and, therefore, entirely your own responsibility. Our Products are sold in accordance with the current version of our General Conditions of Sale and Delivery.

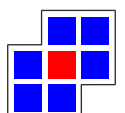


ISO 9001

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Nonfood Compounds
Program Listed

July 15, 2015

Mr. Rahul G. Nasit (Patel)
Shreyas Petroleum Additives Limited
2 Hiranya Complex
Sardar Patel Chowk, Vastrapur
Ahmedabad 380015
India

RE: Sigma T H E R M® - P
Category Code: HT1
NSF Registration No. 151811

Dear Mr. Rahul G. Nasit (Patel):

NSF has processed the application for Registration of **Sigma T H E R M® - P** to the NSF International Registration Guidelines for Proprietary Substances and Nonfood Compounds (2013), which are available upon request by contacting NonFood@nsf.org. The NSF Nonfood Compounds Registration Program is a continuation of the USDA product approval and listing program, which is based on meeting regulatory requirements including FDA 21 CFR for appropriate use, ingredient and labeling review.

This product is acceptable for use as a heat transfer fluid where there is possibility of incidental food contact (HT1). The amount used should be the minimum required to accomplish the desired technical effect.

NSF Registration of this product is current when the NSF Registration Number, Category Code, and Registration Mark appear on the NSF-approved product label, and the Registered product name is included in the current NSF White Book Listing of Nonfood Compounds at the NSF website (www.nsfwhitebook.org).

NSF Listing of all Registered Nonfood compounds by NSF International is not an endorsement of those compounds, or of any performance or efficacy claims made by the manufacturer.

Registration status may be verified at any time via the NSF website, at www.nsfwhitebook.org. Changes in formulation or label, without the prior written consent of NSF, will void Registration, and will supersede the on-line listing. Please contact your NSF Project Manager or nonfood@nsf.org if you have any questions or concerns pertaining to this letter.

Sincerely,

Carolyn Gilliland
NSF Nonfood Compounds Registration Program

Company No: C0089719