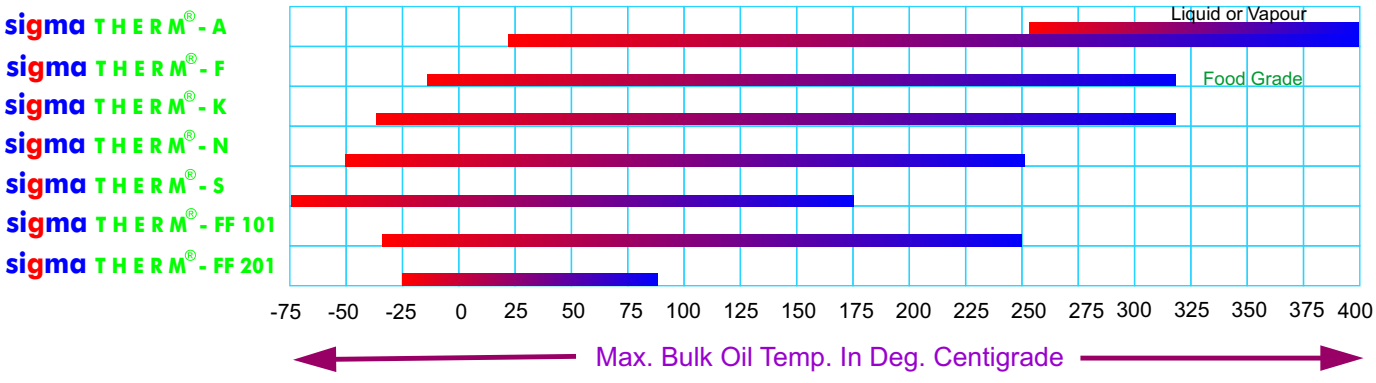
Food Grade
Heat Transfer Fluid

sigma THERM® - F

Extended Life Thermic Fluid

Thermic Fluid Range



www.sigma-therm.com

ISO 9001

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NSF International / Nonfood Compounds Registration Program

Nonfood Compounds Program Listed

October 3, 2011

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™ - F
Category Code: HT1
NSF Registration No. 145290

Dear Mr. Rahul G. Nasit (Patel):

NSF has processed the application for Registration of **sigma T H E R M™ - F** to the NSF International Registration Guidelines for Proprietary Substances and Nonfood Compounds (2009), which are available at www.nsfwhitebook.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). The NSF Registration Mark can be downloaded by clicking the "Download Registration Mark" link on 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.

Sincerely,

Clifton Mclellan
NSF Nonfood Compounds Registration Program

Company No: C0089719

Food Grade Heat Transfer Fluid

sigma THERM® - F

Description :

sigma THERM® - F is a thermally stable food grade heat transfer fluid. It is recommended up to 320 °C bulk oil temperature into closed loop heat transfer system.

Formulation of **sigma THERM® - F** is based on all ingredients complies with US FDA, chapter 21 CFR, 178.3570

Non Food Compounds
Program Listed (HT1)
Reg. No. 145290

sigma THERM® - F is registered with NSF for HT1 grade (Reg. No. 145290)
(HT – Heat Transfer, 1 – Incidental Food Contact) – Highest Safety

Benefits :

- High Thermal Stability.
- High Specific Heat
- Very low carbon deposits.
- Low Volatility

Application :

It is recommended to use as a heat transfer media in all types of Food and Pharma industries like Edible Oil Refinery, Spices, Herbs, Namkeen, Sweets, Restaurants, Bakery, Dairy, Confectionery items, Distillery, etc.

sigma THERM® - F meets highest safety standers for food industries and fit perfectly in HACCP (Hazard Analysis and Critical Control Point) and GMP (Good Manufacturing Practice) plans.

Typical Properties :

Appearance	Bright & Clear
Kin. Vis. @ 40°C, cSt	27 - 32
Kin. Vis. @ 100°C, cSt	5 ± 0.5
Specific Heat KJ / Kg °K @ 300°C	3
Max. Bulk Temperature, ° C	320
Flash Point °C	200 to 230
Density @ 15.5 °C	0.85 ± 0.03
Auto Ignition Temp. °C	Above 350
Distillation 10 % °C	375
Pour Point °C	-10

Packing : 210 Ltrs

sigma THERM® - F

Temp	Density	Specific Heat	Vapour Pressure	Thermal Conductivity	Kinematic Viscosity
°C	kg/m³	kJ/(kg °K)	kPa	W/(m °K)	cSt
0	852.34	1.8003	0.00	0.1345	228.78
10	848.46	1.8422	0.00	0.1338	116.00
20	844.48	1.8841	0.00	0.1331	70.00
30	840.51	1.9259	0.00	0.1324	45.00
40	836.53	1.9678	0.00	0.1316	30.00
50	832.65	2.0097	0.00	0.1309	20.00
60	828.67	2.0515	0.00	0.1302	15.00
70	824.69	2.0934	0.00	0.1295	11.00
80	820.72	2.1353	0.00	0.1288	8.50
90	816.74	2.1771	0.01	0.1281	6.50
100	812.86	2.2190	0.02	0.1274	5.00
110	808.88	2.2609	0.03	0.1267	4.00
120	804.91	2.3027	0.05	0.1259	3.30
130	800.93	2.3446	0.06	0.1252	2.75
140	797.05	2.3865	0.08	0.1245	2.23
150	793.07	2.4283	0.10	0.1238	1.99
160	789.10	2.4702	0.16	0.1231	1.81
170	785.12	2.5121	0.24	0.1224	1.63
180	781.24	2.5539	0.38	0.1217	1.48
190	777.26	2.5958	0.57	0.1209	1.35
200	773.28	2.6377	0.85	0.1202	1.24
210	769.31	2.6796	1.26	0.1195	1.13
220	765.33	2.7214	1.84	0.1188	1.05
230	761.45	2.7633	2.55	0.1181	0.97
240	757.47	2.8052	3.57	0.1174	0.88
250	753.50	2.8470	4.90	0.1167	0.82
260	749.52	2.8889	6.67	0.1160	0.76
270	745.64	2.9308	9.17	0.1152	0.71
280	741.66	2.9726	12.39	0.1145	0.67
290	737.69	3.0145	16.35	0.1138	0.62
300	733.71	3.0564	21.63	0.1131	0.59
320	737.69	3.0983	27.85	0.1124	0.57

Provided data is for information only

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