



Shell Cassida Fluid HT

Heat transfer fluid for use in food manufacturing industry

Shell Cassida Fluid HT 32 is a high performance synthetic heat transfer fluid for closed circuit and pressureless heat transfer systems. The fluid has been specially developed to meet the stringent requirements of the food industry.

It is based on a careful blend of synthetic fluids and selected additives chosen for their ability to meet the stringent requirements of the food industry.

Registered by NSF (Class H1) for use where there is potential for incidental food contact. This product meets the guidelines (1998) of, and was previously authorized by, the US Department of Agriculture Food Safety and Inspection Service (USDA FSIS) for H1 use (lubricant with incidental food contact) and listed in Miscellaneous Publication No 1419 "List of Proprietary Substances and Nonfood Compounds". Product contains only substances permitted under US 21 CFR 178.3570, 178.3620 and 182 for use in lubricants with incidental food contact.

Applications

- ◆ Heat transfer systems with a bulk oil temperature range of approximately -30°C to +280°C where the surface temperature of the heating elements (oil film temperature) should not exceed +320°C.

Performance Features

- ◆ High viscosity index results in minimum variation of viscosity with change in temperature. This facilitates pump selection.
- ◆ Wide temperature range for application
- ◆ High temperature and oxidation stability
- ◆ Neutral odour and taste

Seal and Paint Compatibility

Compatible with the elastomers, gaskets, seals and paints normally used in food machinery lubrication systems.

Specifications and Certificates

- ◆ NSF H1
- ◆ Kosher
- ◆ Halal

Approvals & Recommendations

This is an ongoing process, please contact your local Shell company for any updates.

- ◆ Relutherm have stated that Shell Cassida Fluid HT 32 is suitable for use as a heat transfer oil in their equipment. They also recommend annual oil condition checks as part of routine maintenance.
- ◆ Shell Cassida HT 32 has been successfully used in systems of Wanson and Claasen.

Operating Guidelines

Care should be taken to ensure sufficient flow rate to avoid even a temporary overheating of the heat

transfer fluid. Reynolds-Number should be >10,000 (ten thousand). This is most important during start up and shut down of the heating system. The surface temperature of the heating elements (film temperature) should not exceed 320°C. The physical parameters of the oil necessary for the calculation of the heat transfer coefficient in the system, such as density, specific heat and coefficient of thermal conductivity are indicated in the table overleaf.

Synthetic lubricants

- ◆ Does not contain natural products derived from animals or genetically modified organisms (GMO).
- ◆ Does not contain any allergenic or intolerance-inducing substances as specified in Annex IIIa of EC directive 203/98/EC
- ◆ Suitable for use where vegetarian and 'nut-free' food is prepared.
- ◆ Biostatic; does not promote the growth of bacteria or fungal organisms.

"Incidental Food contact"

Registered by NSF (Class H1) and meets the USDA H1 guidelines (1998) for lubricants for use where there is a potential for incidental food contact.

Made only from substances permitted under the US FDA Title 21 CFR 178.3570, 178.3620 and/or those generally regarded as safe (US 21 CFR 182) for use in food grade lubricants.

To comply with the requirements of US 21 CFR 178.3570, contact with food should be avoided where possible. In the case of incidental food contact, the concentration of this product in the food must not exceed 10 parts per million (10mg/kg of foodstuff).

In locations and/or applications where local legislation does not specify maximum concentration limits, Shell recommends that this same 10 ppm limit be observed, as up to this concentration Shell Cassida Fluid HT will not impart undesirable taste, odour or colour to food, nor will cause adverse health effects.

Consistent with good manufacturing practice, use only the amount necessary to achieve correct lubrication and take appropriate corrective action should excessive incidental contact with food be detected.

Health & Safety

Based on information available, Shell Cassida Fluid HT is unlikely to present any significant health or safety hazard when properly used in the recommended application and good standards of industrial and personal hygiene are maintained. As for all oils, prolonged or repeated contact with the skin should be avoided. For further information refer to the appropriate Shell Material Safety Data Sheet.

Oil condition during use

It is recommended that the condition of the oil and the equipment be regularly checked to ensure safe operation.

Protect the environment

Take used lubricants and empty packs to an authorised collection point. Do not discharge into drains, soil or water

Handling and storage

All food grade lubricants, such as Shell Cassida Fluid HT, should be stored separately, out of direct sunlight or other heat sources, from other lubricants, chemical substances and foodstuffs. Store between 0°C and 40°C. Provided that the product has been stored under these conditions we recommend that the product be used within 5 years from the date of manufacture. Consult your local Shell Company for details.

Accept for use new Shell Cassida Fluid HT only if the manufacturer's seal is intact.

Before opening the pack ensure the area around the closure is clean. It is recommended that it be cleaned with Shell Cassida Fluid PL and/or potable water and then dried with a clean cloth before opening.

Record the date the seal was broken. To prevent product contamination, always close the package after use. Upon opening a pack, the product must be used within 2 years (or within 5 years of date of manufacture, whichever is the sooner).

Parameters for the calculation of the system

Temperature t °C	Density ρ kg/m ³	Specific heat c kJ / (kg·K)	Thermal conductivity λ W / (m·K)	Kin. Viscosity mm ² /s
0	835	2,07	0,150	218
20	824	2,12	0,148	70
60	799	2,29	0,146	15
100	774	2,42	0,144	6,0
150	742	2,55	0,141	--
200	713	2,79	0,139	--
250	683	2,92	0,137	--
300	652	3,16	0,135	--

$$Re = \frac{v \cdot d}{kin. Visc.}$$

- Re = Reynolds-Number
- V = Speed of heat transfer fluid in the pipe (m/s)
- d = Pipe diameter (m)
- kin. Visc. = (m²/s) [at temperature of system]

Typical Physical Characteristics

Shell Cassida Fluid HT 32

Property	Test method	
NSF Registration No.		92545
Colour		Colourless
Density at 15°C	kg/m ³	ISO 12185 827
Flashpoint	°C	ISO 2592 230
Pourpoint	°C	ISO 3016 -54
Kin. Visc. at 40°C	mm ² /s	ISO 3104 32
Kin. Visc. at 100°C	mm ² /s	ISO 3104 6.0
Maximum oil film temperature*	°C	320
Maximum bulk oil temperature	°C	280

* Oil film temperature is the surface temperature of the heating elements

These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur.

Produced according to Shell Quality Standards, in facilities where HACCP audit and Good Manufacturing Practice have been implemented and form part of the quality/environment management system ISO 9001/ ISO 14001.