

High Performance | Exceptional Thermal Stability | Proven Formulation

## Overview

Paratherm™ HR is an alkylated aromatic fluid engineered for high performance in closed-loop liquid phase heating systems to 650°F (343°C) in fired heaters and 675°F (357°C) in solid fuel-fired heat recovery and full convection heaters.

## Operating Range



9°F (-13°C) to 675°F (357°C)

## Performance Features

- Best-in-class thermal stability and efficiency
- Wide operating range / excellent pumpability
- Unique formulation resists thermal decomposition and fouling at high temperatures

## Typical Industries

- Chemical Processing
- Biofuel Processing
- Oil & Gas Processing
- Alternative Energy & Emerging Technologies

## Typical Properties

Product Chemistry	Alkylated Aromatic
Appearance	Water-White Liquid
Odor	Slight Hydrocarbon
Maximum Film Temperature	705°F (375°C)
Maximum Operating Temperature (Fired Heaters)	650°F (343°C)
Maximum Operating Temperature (Other Heaters)	675°F (357°C)
Minimum Operating Temperature, 20 cPs (20 mPa-s)	78°F (26°C)
Minimum Start-Up Temperature, 300 cPs (300 mPa-s)	9°F (-13°C)
Kinematic Viscosity, cSt @ 40°C (104°F)	11
Kinematic Viscosity, cSt @ 100°C (212°F)	2.3
Kinematic Viscosity, cSt @ 343°C (650°F)	0.34
Density @ 60F/15.5C, lb/gal (kg/m <sup>3</sup> )	8.0 (959)
Pensky-Martens Closed Cup Flash Point (ASTM D93)	> 315°F (>157°C)
Average Boiling Point (14.7 psia/101 kPa)	608°F (320°C)
Vapor Pressure @ Maximum Operating Temperature, psia (kPa)	18 (124)
% Volumetric Expansion Over Operating Range, per 100°F (°C)	5.5 (9.9)
Average Molecular Weight	240

\*These are typical laboratory values and do not represent a specification. Full engineering properties can be found at [www.paratherm.com](http://www.paratherm.com)

## Additional Product Highlights

Paratherm HR offers superior thermal stability vs. competitive aromatic fluids rated to the same temperatures. Thermal stability testing per ASTM D6743 shows that Paratherm HR experiences nearly half the degradation as its closest competitor when held at 700°F for 500 hours. Additionally, Paratherm HR offers low viscosity which means better low temperature pumpability and efficiency vs. other synthetic aromatics in its class. These properties are advantageously combined to provide many years of consistent, reliable performance.

## Customer Support

Paratherm specializes in the supply and support of heat transfer fluid technologies. As such, our business is structured to meet the unique needs of our customers. Multiple distribution sites and 24/7 response ensure product is at your facility when you need it with no minimum order quantity. We provide expert support by phone, email, or on-site visits when necessary.

## Extending Fluid Lifetime

When Paratherm fluids are used as recommended they can provide many years of reliable service. Systems using Paratherm fluids should be designed and installed by qualified engineers and should be maintained as any other critical production asset. Fluid oxidation is the leading cause of the most serious maintenance issues associated with closed-loop heat transfer systems– including cold spots, heater coking, plugged pressure sensors and ultimately fluid gelling. Paratherm recommends installation of a nitrogen blanket on the expansion tank to prevent oxidation of the fluid. All systems may benefit from side-stream filtration to promote long-term fluid and system reliability.

## Fluid Analysis Services

Paratherm offers a comprehensive fluid monitoring service to help keep systems running at their best. Our state-of-the-art laboratory is certified to ISO 9001:2015 and well-equipped to run all critical tests. Annual testing is recommended and can identify system issues before they become catastrophic. The fluid in new systems should be tested within 9 to 12 months of start-up. New fluid in existing systems should be tested within the first month of operation to establish a base line for future testing, and annually thereafter.

## Replacing Fluid

Replacement should be preceded by analysis of the fluid to determine if cleaning or flushing of the system is recommended prior to introducing new heat transfer fluid. Newly commissioned systems typically do not require cleaning before filling. Paratherm recommends installation of a Y-strainer with a minimum 60-mesh screen upstream of the pump to catch any residues from manufacturing and construction of system components.

## Fluid Storage

Drums and totes should be stored indoors to prevent environmental contamination. If sealed drums must be left outdoors, provisions should be made to prevent water from pooling on their tops. While unopened totes are considered weatherproof, Paratherm recommends they not be stacked when stored outdoors. If the fluid is below its minimum pumpable temperature, the containers may be moved indoors to warm up before charging into the system. Refer to the product safety data sheet (SDS) for additional handling and storage recommendations.

The information and recommendations in this literature are made in good faith and are believed to be correct as of the below date. The user or specifier should independently determine the suitability and fitness of Paratherm Heat Transfer Fluids for use in your specific application. We warrant that its products conform to Paratherm's manufacturing specifications as of the date of delivery. Because our assistance is furnished without charge, and because we have no control over the fluids end use or the conditions under which it will be used, we make no other warranties – expressed or implied, including the warranties of merchantability or fitness for a particular use or purpose (recommendations in this bulletin are not intended nor should be construed as approval to infringe on any existing patent). The user's exclusive remedy, and Paratherm's sole liability is limited to refund of the purchase price or replacement of any product proven to be otherwise than warranted. Paratherm will not be liable for incidental or consequential damages of any kind.