

Heating Pour Point Depressant

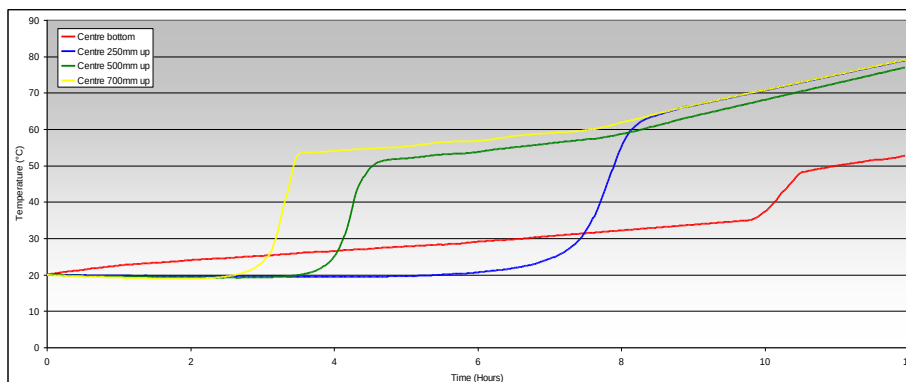
LMK Thermosafe Ltd have been providing solutions for drum and container heating projects in hazardous areas for over thirty years. The unique designs and award winning energy efficiency has made these heaters an essential element in a multitude of industries around the world.

Pour point depressants (also known as PPDs) are paraffin inhibitors that lower the temperature at which oil will pour or flow. They are widely used within the oil production industry. Heaters with certification for use in potentially hazardous areas must be used due to the flash points and locations of use.

Tests demonstrate the effectiveness of a Thermosafe heaters used with a particularly difficult to heat grade of PPD. The melting point of the PPD tested is around 40°C. Drums of PPD were stored at 20°C, however all testing was performed outside with an ambient temperature of around 0°C to reproduce typical operational conditions.

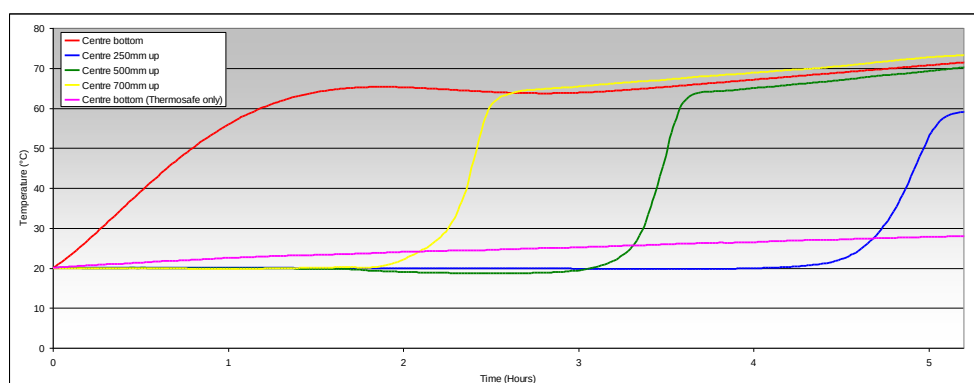
THERMOSAFE®

The Thermosafe Induction Drum Heater is ideal for heating liquids and melting solids. The Thermosafe is simply placed over the drum and heats the drum wall directly. The fast and efficient heating method used by the Thermosafe enables the complete drum to be melted in around 10 hours. The upper half of the drum is melted in around 4 hours permitting material removal to commence quickly if required.



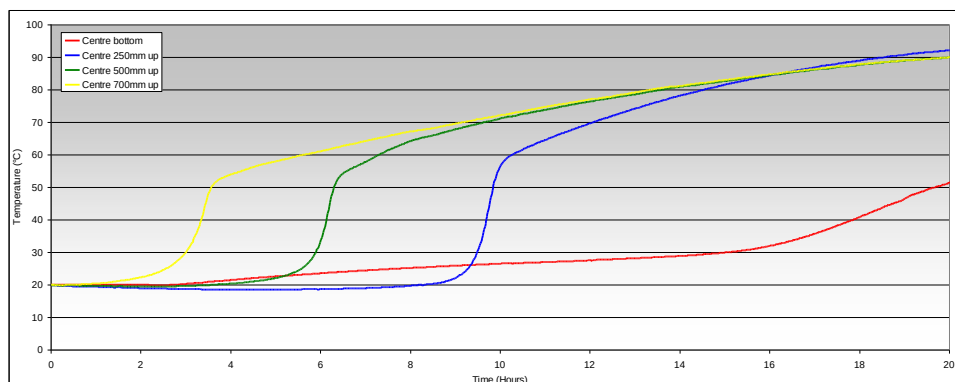
THERMOSAFE® and FARATHERM™

The Faratherm Induction Base Heater utilises the same technology as the Thermosafe. The drum is placed upon the Faratherm and heat is applied to the base of the drum. The addition of the Faratherm when using a Thermosafe yields a significant improvement in the time to melt a full drum. A 52% reduction in the complete melt time is shown below. The centre bottom temperature from the Thermosafe test shown above has been included for comparison.



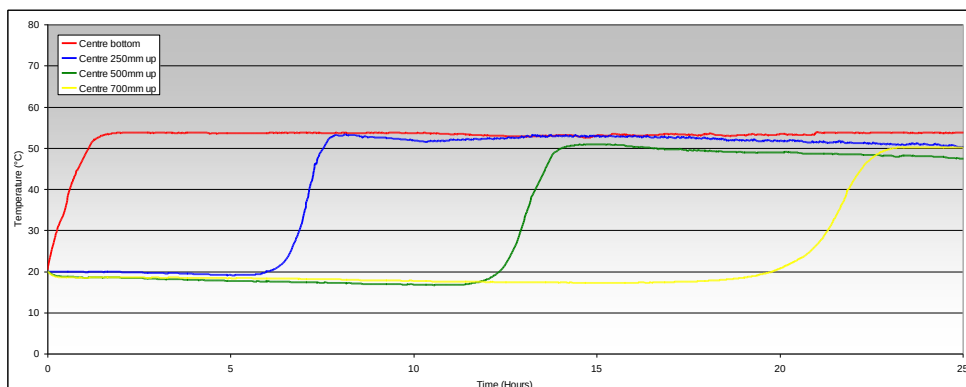
INTELIHEAT™

The IntelliHeat Heating Jacket, constructed from a patented heating membrane simple wraps around the drum. The IntelliHeat is designed as a lower cost, lower power drum heater ideally suited to gentle heating at lower temperatures than the Thermosafe. The results below show that a time of around 18 hours is needed for the full drum to liquefy, although much of the PPD will be liquid in around 10 hours.



Faratherm and Insulated jacket

As well as significantly improving heating rates when combined with a Thermosafe, the Faratherm can also be used on its own for direct heating to the base of a drum. A time of around 22 hours is required to melt the complete drum.



Conclusions

- Testing has demonstrated that the Thermosafe Drum Heater is ideal for melting PPD stored in a 210L drum. Its robust and sealed construction (IP66 dust and water proof) make it suitable for the types of environment that the PPD is required to be heated in.
- The addition of a Faratherm Base Heater reduces the melt time by more than half. An impressive complete melt time of under 5 hours can be achieved.
- Where operating conditions permit, for some grades of PPD, The **INTELIHEAT™** Flexible Jacket provides an excellent hazardous area certified solution.
- All testing was performed with an ambient temperature of around 0°C. A significant improvement can be expected with warmer ambient temperatures.

CONFIDENTIAL DATA SHEET

Test Data Footnote

Grade of PPD used during testing: PAO82076. Flash point: between 23°C and 61°C inclusive. Melt point: <43°C. Relative density: 0.850 – 0.920 @ 50°C. Viscosity: solid cSt @ 38°C

Other grades with lower melt points will generally produce shorter heating times.