



# CASSIDA TECHNICAL REPORT FM FLUID RC 150

*Speciality high performance fluid designed for rotary cookers and sterilisers*

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**CASSIDA**  
food grade lubricants

## FM FLUID RC 150

Speciality high performance fluid designed for rotary cookers and sterilisers.

- Developed for use in rotary equipment in food and beverage canning plants
- Specially formulated to reduce wear in sliding steel-bronze contacts
- Water miscible and does not contribute to residues in cooking vessels, sterilisers and water purification units
- Resists formation of deposits at elevated temperatures
- Improves can rotation in cooker/cooler
- Good protection against corrosion of all metal surfaces
- Temperature range -10°C to +140°C
- ISO 21469 certified
- NSF H1 registered

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## Application Details

A rotary cooker is a unique and innovative manufacturing tool. Seamed containers enter the rotary system directly from the closing machine. A feed device delivers the containers into the revolving reel of the first vessel. The reel, working in conjunction with the stationary spiral, advances the containers through the vessel. The continuous spiralling motion and rotation of the container through the vessel provides an even cook to every container. At the end of the cooking process the containers are transferred to a cooling vessel where a similar process efficiently cools them.



## Lubrication Requirements

As rotary cookers operate on a continual basis, the demand on the lubricant is severe. Lubrication is conducted via a centralised system which lubricates the can exchange valves and other moving components. With high levels of heat, steam and pressure, the lubricant must be specially developed to provide excellent lubrication characteristics and wear protection in these conditions.

As a consequence of the critical nature of the lubricant, many food manufacturers use OEM supplied lubricants at extremely expensive prices. However, the FUCHS portfolio of NSF H1 registered lubricants offers an equally efficient solution to OEM recommended lubricants.



## Customer

Following a report of poor lubrication performance and excessive maintenance issues at a major UK manufacturer, FUCHS was requested to supply an oil for the lubrication of the rotary cookers. The customer, with major manufacturing assets in the UK, is part of an international group of the highest prestige, and was using FUCHS CASSIDA lubricants without issue throughout the remainder of the factory.

FUCHS suggested the use of FM FLUID RC 150, and provided documented evidence regarding the improved lubrication and anti-wear properties of the FM FLUID RC against the OEM supplied lubricant through a series of unique, but pertinent laboratory tests.



## Laboratory Support

To determine the lubrication and anti-wear characteristics, the FM FLUID RC and OEM product were subject to analysis using the BICERI test.

The BICERI universal wear machine is thought to be the only laboratory rig available that is capable of testing all three common test geometries. These modules and other optional systems allow the rig to test surface fatigue, abrasive wear and adhesive wear under realistic operating conditions, including dry, lubricated and three-body and at elevated temperatures.

In terms of this test, the co-efficient of friction was recorded at three different temperatures, as well as anti-wear.

To make the test as relevant as possible, a sample of a relevant machine part was supplied by the customer and test pieces created in the form of billets. The billets are loaded down onto a mild steel plate by levers and weights, and the plate is fixed within a reservoir of the two lubricants.

The friction created on the lever arm is translated by movement sensors as a data output plotted over time on a PC monitor.

## Results

### *Friction Results or Lubrication Capability*

The co-efficient of friction was determined at four different loads. The table below shows the average COF over the four different loads. The test was then repeated at three different temperatures.

Temperature	40°C	80°C	120°C
	Average Co-Efficient of Friction		
OEM Lubricant	0.131	0.281	0.270
FM FLUID RC 150	0.135	0.224	0.236

At ambient temperatures, both fluids are very viscous and offer excellent results. Once the temperature is raised, and the lubrication ability of the fluids challenged, it is important to note the improved performance of the FM FLUID RC 150.

### *Anti-Wear Results*

The BICERI rig was commissioned to operate at 120°C, with 20kg load weight for 30 minutes. The billets were weighed before and after to determine the amount of wear generated.

Wear	mg
OEM Lubricant	7.5
FM FLUID RC 150	1.1

The results show a significant improvement in anti-wear capability for the FM FLUID RC 150.



## Conclusion

All the tests indicate FM FLUID RC 150 offers equivalent, if not improved, protection compared to OEM supplied oils.

Following this test work, the customer tested the FM FLUID RC 150 in an operating environment to show improved performance and maintenance reliability.

The commercial benefit of this change of lubricant was significant, but remains confidential.