



NIPPON GREASE CO., LTD.

Toyosaki Bldg.,
18-21 Chayamachi Kita-ku Osaka 〒530
TEL(06)373-0171 FAX(06)373-0174

FL BRIGHT MARTEMPER OIL S

FL Bright Martemper Oil S is a martempering oil mainly consisting of highly refined mineral oil base oil, designed to be operable at high temperatures.

Especially featuring life of brightness, **FL Bright Martemper Oil S** is operable stably for a long term even under high temperature condition, and is the most suitable martempering oil for heat treatment to reduce quenching distortions.

FEATURES

1. Effect by use of low-sulfur mineral oil as base oil and addition of the most proper oxidation inhibitor enables it to extend the life of brightness even at not only batch-type furnaces but also at open-type furnaces (such as continuous furnace) in where oxidation polymerization is apt to be accelerated.
2. Has been used for gas carburizing and quenching of shafts and gears of automotive/motorcycle parts at many customer, and can reduce quenching distortion in batch-type furnaces, tray-pusher-type continuous furnaces and pit type furnaces.
3. In batch-type furnaces (sealed), full martempering is applicable (oil temperature between 150°C and 200°C), and it also can reduce quenching distortion.
4. Generates less sludge and change of viscosity thanks to good thermal stability and oxidation stability.

SPECIFICATIONS and PHYSICAL PROPERTIES

| TEST ITEM | | | SPEC | TYPICAL VALUE |
|---------------------|----------------------------|--------------------|-------------|---------------|
| Viscosity | (100°C) | mm ² /s | 23.0 ~ 28.0 | 26.80 |
| Flashpoint | (COC) | °C | Min. 260 | 298 |
| Carbon Residue | | mass% | Report | 0.32 |
| Water Content | | vol% | Max. 0.0 | 0.0 |
| Brightness | | | Min. 0.800 | 0.850 |
| Stability | Viscosity Ratio | | Max. 1.5 | Pass |
| | Carbon Residue Increment | mass% | Max. 2.0 | Pass |
| Cooling Performance | 800°C → 400°C | sec | Max. 7.0 | 5.50 |
| | Characteristic Temperature | °C | Min. 600 | 660 |
| | H Value | 1/cm | - | 0.095 |

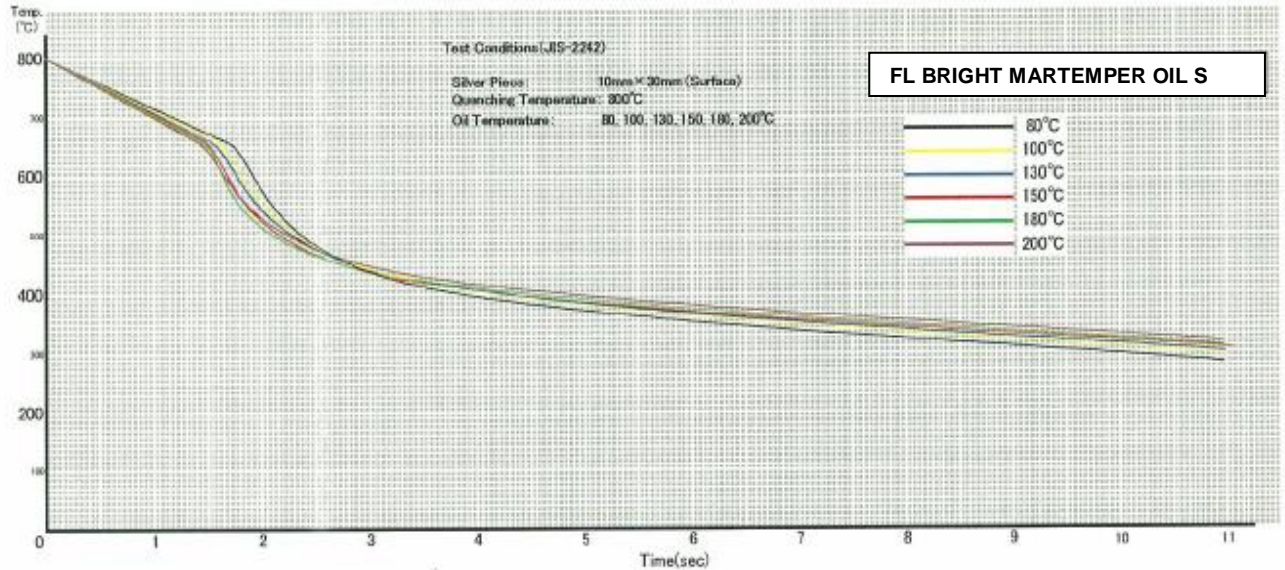
- Please read handling instructions on the container carefully when you use this product.
- Described properties and performances do not necessarily guarantee accuracy and perfectness. These are subject to change without notice.



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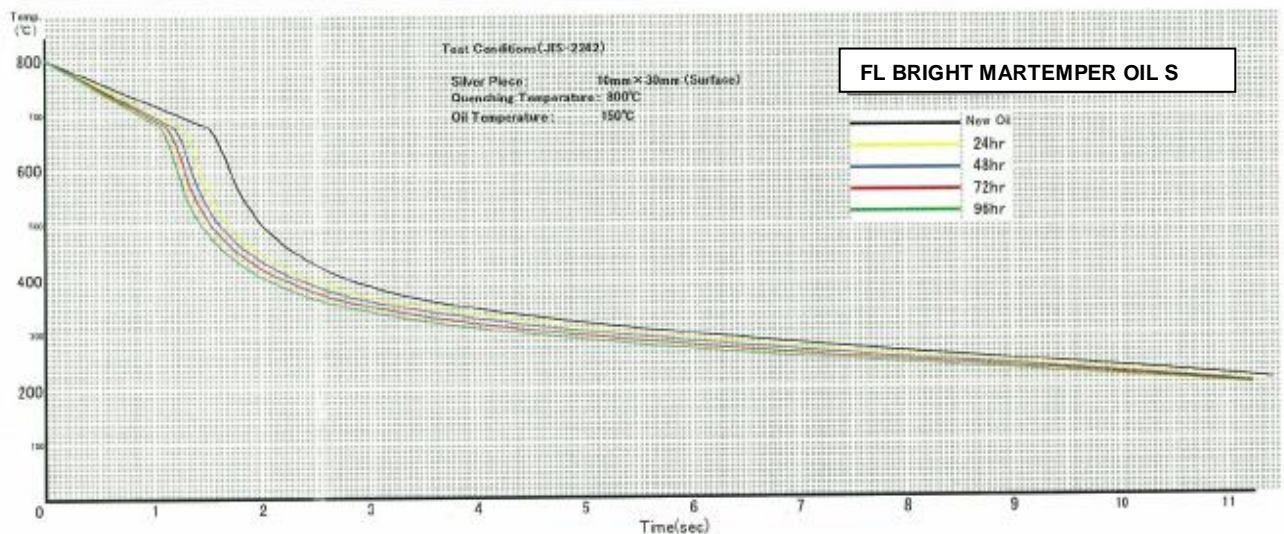
COOLING CURVES at EACH TEMPERATURE



RESULTS of OXIDATION STABILITY TEST and COOLING CURVES

Blew dry air 10 liters/hr at 200°C

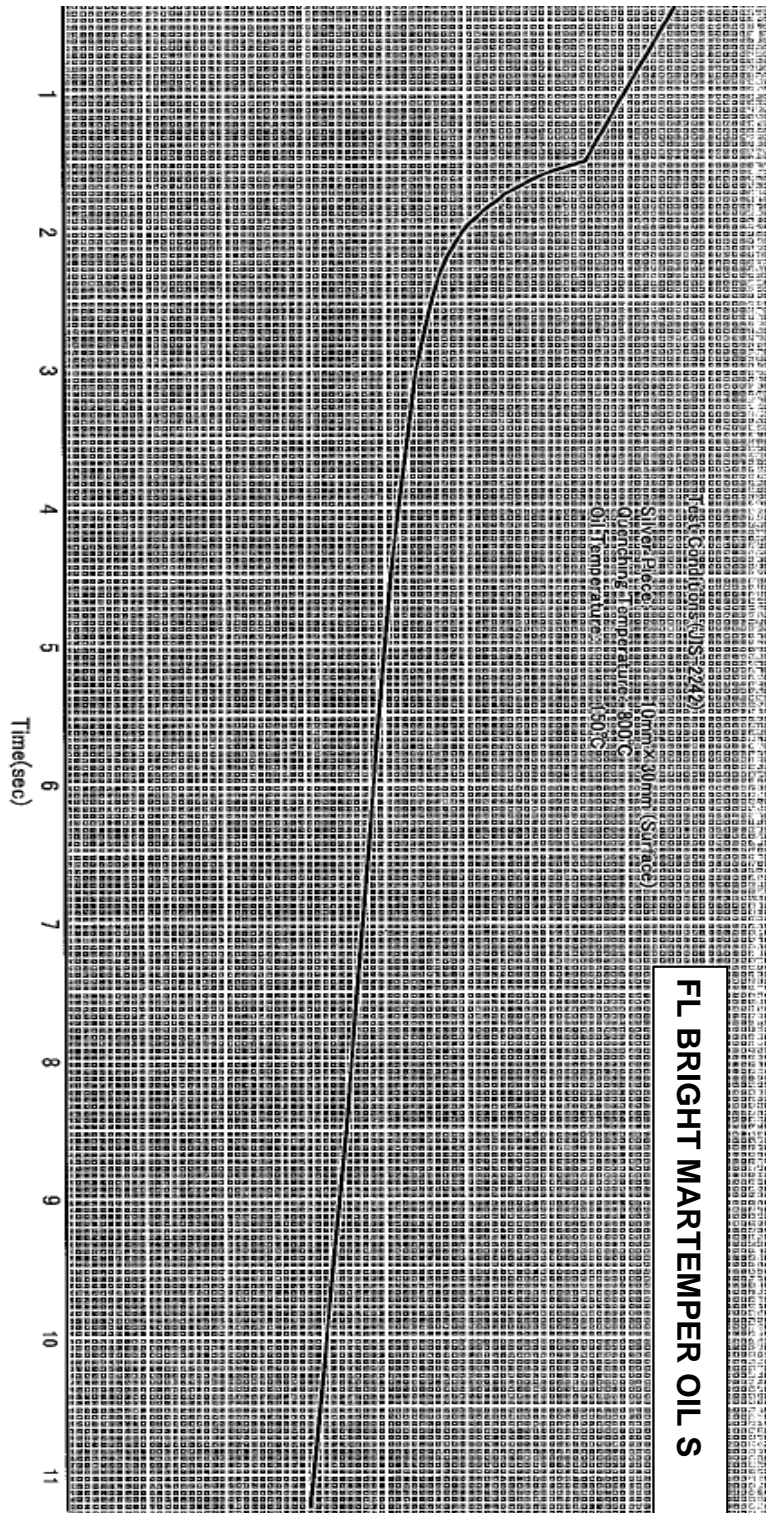
| Blowing Time | Viscosity (100°C) mm ² /s | Flashpoint °C | Carbon Residue % | Sludge % | Brightness % |
|-----------------|--------------------------------------|---------------|------------------|----------|--------------|
| 0 hour(New Oil) | 26.60 | 298 | 0.33 | 0.00 | 0.850 |
| 24 hours | 29.61 | 296 | 0.85 | 0.00 | 0.875 |
| 48 hours | 33.80 | 288 | 1.34 | 0.00 | 0.813 |
| 72 hours | 38.66 | 288 | 1.98 | 0.00 | 0.750 |
| 96 hours | 56.50 | 286 | 2.89 | 0.00 | 0.513 |





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420, CC, Normal, Air