

# SOUTHWEST RESEARCH INSTITUTE®

## Fuels and Lubricants Research Division

### JASO M340-18 Lubricity Test

#### Specifications

- JASO
- ISO 13738

#### Objective

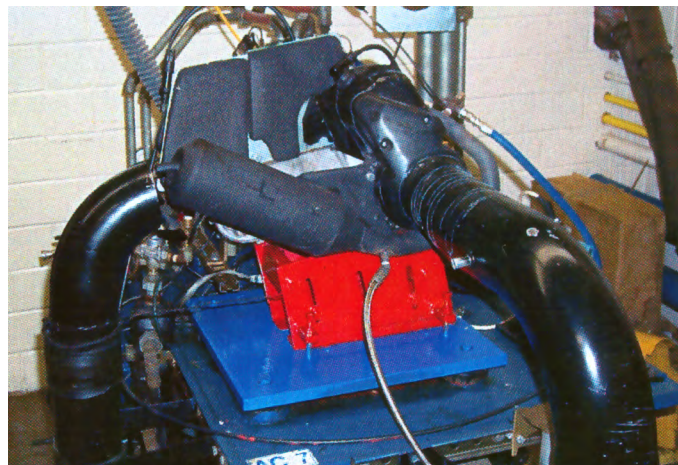
- Evaluate the lubricity of a lubricant used in two-stroke cycle engines.

#### Field Service Simulated

- Two-stroke cycle gasoline engine operation such as motorcycle, utility, and outboard engines.

#### Test Fixture

- A Honda AF-27, type SK-50MM, air-cooled, single-cylinder, two-stroke cycle, spark-ignition engine is coupled to a high-speed 10-hp dynamometer.
- External cooling air is supplied to the engine by a variable delivery fan.



#### Test Parameters

- A test consists of three sets of five to seven piston “tightenings.” In a tightening, the torque decrease is measured as the spark plug gasket temperature increases from 200°C to 300°C.
- The first and third sets are conducted using Jatre-1 reference lubricant.
- The second set is conducted using the candidate lubricant.

Each set is preceded by a 30-minute preliminary operation period at the following test conditions:

- The cooling fan is then stopped. During the tightening, the torque and spark plug gasket temperature are monitored.
- When the spark plug gasket temperature reaches 300°C, the cooling fan is restored and the engine is allowed to cool while running.
- When the spark plug gasket temperature is 160°C, the engine is allowed to stabilize for five minutes before starting the next tightening. During this time, the exhaust gas CO<sub>2</sub> is checked.
- This operational cycle continues until three sets of five to seven tightenings per set are obtained.

#### Test Parts Evaluation

- None.

#### Used Lubricant Analysis

- None.

#### Pass/Fail Criteria

- The minimum lubricity index is 95 for all grades (FB, EGB, FC, EGC, FD, EGD).
- Lubricants in each grade correspond to the following two-stroke cycle lubricants:
  - The FB and EGB grades correspond to lubricants that have high performance in lubricity, but are non-low-smoke type.
  - The FC and EGC grades correspond to lubricants typical of low-smoke type lubricants in the Japanese market.
  - The FD and EGD grades correspond to lubricants that have greater detergency performance as identified in International Standard 13738.

Parameter	Value
Engine speed, rpm	4000
Spark plug gasket temp, °C	160
Torque, Nm	WOT
Exhaust gas CO concentration, %	6
Fuel/lubricant ratio	50:1

**We welcome your inquiries. For additional information, please contact:**

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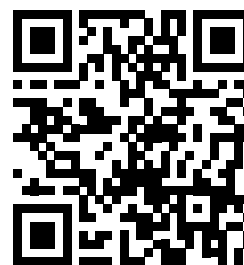
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