

Leisure Marine and Small Engine Lubricants Section

JASO Exhaust System Blocking (M 343-92)

SPECIFICATIONS
JASO

OBJECTIVE

The objective of this test is to evaluate the degree of engine output decrease due to deposits of carbon on the exhaust systems, etc. in relation to lubricating oil used in two-stroke cycle engines.

FIELD SERVICE SIMULATED

Two-stroke cycle gasoline engines such as motorcycle, utility, and outboard engines are simulated.

TEST FIXTURE

A Suzuki generator SX800 R, 69 cm³, single-cylinder, forced air-cooled, two-stroke cycle spark ignition engine is setup on a test bed. The engine is modified for testing purposes by removing the fuel tank, installing a pressure tap in the reed valve block, and fitting the muffler assembly with exhaust gas temperature and sample taps. During the modification of the muffler, all baffles and insulation are removed and discarded.

TEST PARAMETERS

A complete test program consists of an "A" and "B" test using two engines running simultaneously on the same test bed, one engine with the candidate lubricant and the other with the Jatre reference oil. Each engine and exhaust system are thoroughly de-carbonized before starting a test. The "B" test is conducted by exchanging the lubricants in the engines, i.e., the engine that ran Jatre 1 for the "A" test will run the candidate lubricant for the "B" test.

The test is conducted using premixed gasoline at 5:1 fuel oil ratio. Engines are operated at the following conditions until intake manifold pressure is less than -2.0 kPa.

Parameter	No Load	Load-750 Watts
Engine Speed, rpm	~3750	3600
Inlet Pressure, kPa	Record	Greater than -0.2 kPa
Exhaust Gas Temp., °C	330°C (625°F)	370°C (698°F)
Exhaust Gas CO, %	3.5	3.5

Cycle time is maintained at 90 ± 45 seconds during the test. The exhaust gas CO%, engine speed at 750 watts load, and cycle time are established within the first 10 cycles.

TEST PARTS EVALUATED

None.



TEST PARTS EVALUATED

None.

USED LUBRICANT ANALYSIS

None.

PASS/FAIL CRITERIA

The exhaust system-blocking index is calculated using the following formula:

$$[(\text{Total engine operating time of candidate oil}) / (\text{Total engine operating time of the reference Jatre 1})] \times 100$$

Total operating time = First test operating time + Second test operating time

An exhaust system blocking index < 100 indicates performance inferior to the reference oil.

To determine the indices for the classification, many two-stroke cycle oils from different parts of the world have been tested for their performance. Based on the test results, the indices for pass/fail limits for each category have been decided.

Oils in each category correspond to the following two-stroke cycle oils:

- The "FA" grade corresponds to the oils that have the absolute minimum acceptable performance level for 2-stroke cycle engines.
- The "FB" & "EGB" grade corresponds to oils which have high performance in lubricity, but are non-low smoke type.
- The "FC" & "EGC" grade corresponds to oils typical of low smoke type oils in the Japanese market.
- The "EGD" grade corresponds to the oils that have greater detergency performance as identified in proposed Draft International Standard 13738.

The pass/fail limits for each category are as follows:

	Minimum Exhaust System Blocking Index
FA	30
FB, EGB	45
FC, EGC, EGD	90



For more information, please contact:



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