



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 38184-2019

**Road vehicles - Spark plug heat rating classification and test
method**

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1 Scope

This Standard specifies spark plug heat rating classification and test method of ignition engines of M, N, L road vehicles.

This Standard is applicable to ignition engine spark plug.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 6791, Road vehicles - Spark-plugs and their cylinder head housing -Basic characteristics and dimensions (GB/T 6791-2012, ISO 28741:2009, MOD)

SAE J2203, SAE17.6 Cubic Inch Spark Plug Rating Engine

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 heat rating

On the special heat rating machine, according to the specific working conditions, measure the thermal characteristics of spark plug.

3.2 heat rating value

The result of heat rating that is expressed by the indicated mean effective pressure (IMEP).

NOTE: The unit is kPa or psi.

3.3 heat rating classification

Classify the heat rating value according to intervals. Use specific Arabic - Fuel injection timing: cut off the fuel injection after the top dead center of the intake stroke $(60 \pm 5)^\circ$;

- Fuel flow rate: (2 ± 1) L/min;
- Fuel injection pump: the fuel injection pump has a return hole pressure of (100 ± 10) kPa, or a suitable EFI system;
- Fuel injection pressure: the minimum shall be 5170kPa. If using an EFI system, the fuel pressure needs to ensure adequate fuel supply and atomization;
- Mixing gas concentration: the mixing gas concentration when the hot plug temperature reaches the highest value;
- Intake air temperature: $(107 \pm 3)^\circ\text{C}$;
- Intake humidity: per 0.453kg of dry air contains (0.0048 ± 0.0016) kg of water;
- Coolant: choose the appropriate coolant that shall have good anti-fouling function;
- Water jacket inlet water temperature:
 - * $(107 \pm 3)^\circ\text{C}$ when it is with pressure fan cooling control;
 - * $(88 \pm 1)^\circ\text{C}$ when it is with embedded cylinder head engine;
- Coolant flow rate: (20 ± 2) L/min;
- Crankcase engine oil: SAE60 or equivalent additive-free aircraft oil;
- Engine oil pressure:
 - * (650 ± 40) kPa at the main bearing;
 - * over 100kPa at the valve device;
- Engine oil temperature: $(88 \pm 5)^\circ\text{C}$;
- Engine oil quantity: the engine oil level is located in the middle of the oil sight glass.

4.2.1 The pressure point of pre-ignition occurs is obtained by the following steps:

a) The boost pressure is gradually increased in an increment of 13.5kPa (4 inHg) till the pre-ignition occurs. It can be indicated by a rapid rise in the