

**SPECIFICATION
FOR
PLUGS, SPARK, IGNITION**

(This specification is released for procurement purposes until revised or rescinded.)

SCOPE

This specification covers spark plugs used on internal combustion engines for passenger cars, patrol pursuit cars, cargo trucks and buses, and heavy highway engineer equipment.

I. CLASSIFICATION

A. TYPES AND CLASSES

- Type I - Shielded (zero gas leakage through insulator)
- Type II - Shielded
- Type III - Unshielded

Each of the above types shall be furnished either as Class A, resistor (suppressed), or Class B, nonresistor (nonsuppressed) when so requested in the Invitation for Bids.

II. APPLICABLE STANDARDS

The following document of issue in effect on the date of the Invitation for Bids shall form a part of this specification:

Federal Specification W-S-506B - Spark Plug
General Services Administration
Specifications Distribution Branch
Building 197
Washington, DC 20407

SAE Standard J548D - Spark Plugs
Society of Automotive Engineers, Inc.
400 Commonwealth Dr.
Warrendale, PA 15096

III. REQUIREMENTS

A. QUALIFICATION

The spark plugs furnished under this specification shall be a product which has been tested and has passed the qualification inspection and tests specified herein. Each bidder shall certify that his product has met these tests. The successful bidder shall hold a one-day workshop in each of the Highway Division Areas plus the central shop area in Raleigh.

Emphasis shall be on the proper heat range and selection of plugs. All affected State agencies shall participate in these workshops.

B. PERFORMANCE REQUIREMENTS

1. Torque Resistance

When tested in accordance with paragraph 4.4.8 of Federal Specification W-S-506B with dry threads, spark plugs shall withstand the torque values specified in Table I without damage to the threads or other portions of the plug.

There shall be no change or distortion to the gap setting. The spark plugs shall subsequently conform to paragraph 3.4.3 of Federal Specification W-S-506B. Spark plugs shall withstand the specified torque applied to the hex.

TABLE I

TORQUE REQUIREMENT

TYPE	SIZE	TORQUE*
Flat Seat	10mm	15 pounds-foot
Flat Seat	12mm	20 pounds-foot
Flat Seat	14mm	45 pounds-foot
Flat Seat	18mm	60 pounds-foot
Flat Seat	7/8 inch	75 pounds-foot
Conical Seat	14mm	15 pounds-foot
Conical	18mm	20 pounds-foot

*These torque values are for test purposes only. Proper installation torques are specified in SAE J548D or by the manufacturer.

- a) Terminal End Torque Resistance - Types I and II spark plugs shall withstand a 25 pounds-foot torque applied to the harness lead terminal end without damage to the threads or gap setting, or damage to other portions of the plug. Plugs shall subsequently conform to paragraph 3.4.3 of Federal Specification W-S-506B.

2. Electrical Resistance

When tested as specified in paragraph 4.4.1 of Federal Specification W-S-506, suppressor resistors in Class A spark plugs, at a established temperature of 80° ± 10°F, shall have the resistance specified on the applicable drawing (commercial drawing for Type III plugs). An additional tolerance of ±25% shall be allowed when tested at 450° ± 5°F and after the endurance test.

3. Gas Leakage

Type I - When tested as specified in paragraph 4.4.2 of Federal Specification W-S-506B, there shall be no leakage through the insulator into the terminal area of the spark plug, and the total leakage at all other points shall be not more than 5cc per minute.

Types II and III - When tested as specified in paragraph 4.4.2 of Federal Specification W-S- 506B, the total gas leakage occurring at all points, shall be not more than 5cc per minute.

4. Preignition Rating

When determined as specified in paragraph 4.4.3 of Federal Specification W-S-506B, the average preignition rating of the spark plugs tested shall be with $\pm 5\%$ of the rating specified on the applicable drawing (commercial drawing for Type III plugs). The individual I.M.E.P. rating of the spark plugs shall be within $\pm 10\%$ of that average.

5. Resistance To High Potential

When tested as specified in paragraph 4.4.4 of Federal Specification W-S-506B, the spark plug insulator shall evidence no cracking, charring, or flashover.

6. Insulator Resistance

When tested as specified in paragraph 4.4.5 of Federal Specification W-S-506B, the minimum electrical resistance of the spark plug insulator shall be 1 megohm.

7. Mechanical Shock Resistance

When tested as specified in paragraph 4.4.6 of Federal Specification W-S-506B, the spark plugs shall evidence no cracking or chipping of the ceramic or glaze and shall subsequently meet the requirements of paragraph 3.4.6 of Federal Specification W-S-506B.

8. Endurance

After testing in accordance with the 300-hour endurance test specified in paragraph 4.4.7 of Federal Specification W-S-506B, the spark plugs shall meet the requirements of paragraphs 3.4.2, 3.4.3, 3.4.5, and 3.4.6 of Federal Specification W-S-506B.

9. Corrosion Resistance

When tested as specified in paragraph 4.4.9 of Federal Specification W-S-506B, Types I and II spark plugs shall evidence no corrosion.

C. DIMENSIONS

The dimensions for all spark plugs shall conform to those recommended in SAE J548D.

D. WORKMANSHIP

The workmanship shall be such as to assure a product free of defects which may affect its serviceability.

IV. WARRANTY

The contractor warrants to the owner that all spark plugs furnished under this specification will be new, of good material and workmanship, and agrees to replace promptly any spark plug which by reason of defective material or workmanship shall fail under normal use, free of negligence or accident for a minimum period of 12 months from date of acceptance.

V. SERVICE, PARTS, AND MANUALS

This section is not applicable.

VI. ACCEPTANCE EVALUATION AND QUALITY ASSURANCE

Acceptance evaluation and quality assurance shall be in accordance with the applicable portions of Federal Specification W-S-506B. The State also reserves the right to conduct additional tests to determine specification compliance.

VII. DELIVERY AND PAYMENT

Delivery of, and payment for, spark plugs under this specification shall be in accordance with the terms and conditions of the Invitation for Bids. The contractor shall be responsible for any packing, packaging, or protection required to insure safe delivery in an undamaged condition.

VIII. ORDERING DATA

Purchasers should exercise any desired option herein and should specify the following:

1. Title, number, and date of this specification
2. Type(s) and class(es) of spark plugs desired