

DEPARTMENT OF COMMERCE

BUREAU OF STANDARDS  
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UNITED STATES GOVERNMENT MASTER SPECIFICATION FOR  
MATCHES, SAFETY (FULL SIZE, IN BOXES)

FEDERAL SPECIFICATIONS BOARD SPECIFICATION No. 428

This specification was officially promulgated by the Federal Specifications Board on September 25, 1926, for the use of the departments and independent establishments of the Government in the purchase of safety matches (full size, in boxes).

The latest date on which the technical requirements of this specification shall become mandatory for all departments and independent establishments of the Government is December 27, 1926. They may be put into effect, however, at any earlier date after promulgation]

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I. GENERAL SPECIFICATIONS

There are no general specifications applicable to this specification.

II. GRADE

Safety matches shall be of one grade only, as hereinafter described.

III. MATERIAL AND WORKMANSHIP

See General requirements.

#### IV. GENERAL REQUIREMENTS

Safety matches shall be chemically impregnated to prevent glowing of the stick or splint after the match flame has been extinguished. They shall be damp proof and shall be nonignitable by friction except on the special coating provided for that purpose on the box when tested as directed in Section VI, 2 (c). The sticks or splints shall be made of a good grade of wood and shall be approximately 2 inches long. The matches shall be packed in small wooden or cardboard boxes having two sides of the cover coated with a preparation that will ignite the matches when rapidly drawn across the coated surface. The coating shall not be smeared over the edges, especially at the ends of the box. The cover shall fit sufficiently tightly so that the box will not fall out when the closed box of matches is held in a vertical position. A box (average of six boxes) shall contain not less than 50 matches. Not more than three matches per box, based on an average of three boxes, shall fail to ignite readily and burn freely without breaking and without the heads flying off or dropping glowing particles when rapidly drawn one at a time across the same coated side of the box. No box, based on an average of six boxes, shall contain more than two splints without heads. The oily or waxy material used for transmitting the flame must not cause the matches to burn with a sooty flame except at the instant of lighting. These requirements shall be met under the atmospheric conditions prevailing at the time of testing and under the condition described below under the "damp-proof test." When the match flame is blown out, not more than two of the heads or splints shall show any after-glowing (based on an average of three boxes). The matches when tested according to the "heating test" described below shall show an ignition temperature of not less than 170° C. (338° F.).

The top of each box shall be labeled with the name of the contents and the name of the manufacturer or dealer, or the trade-mark or brand of the match.

#### V. DETAIL REQUIREMENTS

See General requirements.

#### VI. METHODS OF INSPECTION AND TESTS

##### 1. SAMPLING

Two packages, each containing 12 boxes of matches, shall be taken at random from a delivery and submitted to the testing laboratory with the wrapper unbroken. The inspector should note whether the material is properly packed and labeled as regards packages.

## 2. TESTS

(a) **PRELIMINARY PROCEDURE.**—Note the label and the condition of the package. Remove wrappers and note the number of boxes in a package, the kind of box, the label, the nature of the sticks or splints, and the approximate length of the matches. Note the number of coated sides to a box and observe whether the coating extends over the edges so that it might light the matches on opening the box. Hold the closed box in a vertical position and note whether the box falls out.

(b) **COUNT.**—Count the matches contained in six boxes and report the average as the number per box. Report the average number of splints without heads.

(c) **IGNITION TEST.**—Holding the match halfway up the splint, rapidly draw a number of the matches across various surfaces except glass or other highly polished surfaces, or the special coating on the box, and note whether any of the matches will ignite. Then take at random three unopened boxes of the matches and, holding the matches as above, rapidly draw them, one at a time with as nearly the same force as possible, across the same coated side of the box. Note the number of matches that fail to ignite and burn, that burn with a sooty flame except at the instant of lighting, that break, or from which the heads fly off or drop glowing particles. After the ignited matches have burned about halfway down, blow out the flame and note the number of heads and splints that glow. Report the average number of matches per box proving defective under each test.

(d) **DAMP-PROOF TEST.**—Place three half-opened boxes of the matches on a perforated plate in a 6-inch glass desiccator the bottom of which is well covered with water. The boxes should be stood vertically, with the exposed heads of the matches up. Close the desiccator and let stand at room temperature (65 to 85° F.) for 24 hours. Without delay apply the ignition test described under (c).

(e) **HEATING TEST.**—Place five matches on a solid shelf in an air oven having a thermometer with the bulb touching the shelf near the heads of the matches. Close any openings in the oven so as to prevent drafts. Heat to 170° C. (338° F.) and note whether the matches ignite.

## VII. PACKING AND MARKING

Twelve single boxes of matches shall be wrapped in paper, which shall be securely pasted or glued to make a tight package. Each package shall be labeled in the same manner as the boxes. Twelve of these paper packages shall be wrapped in heavy paper, which shall be securely pasted or glued to make a tight package and labeled in the same manner as the smaller packages. The shipping container shall be marked as specified by the purchasing agency.

## VIII. NOTES

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