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Specification
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DEPARTMENT OF COMMERCE

BUREAU OF STANDARDS

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UNITED STATES GOVERNMENT MASTER SPECIFICATION FOR ASPHALT-SATURATED RAG FELT FOR FLASHINGS

FEDERAL SPECIFICATIONS BOARD SPECIFICATION No. 295

This specification was officially promulgated by the Federal Specifications Board on May 20, 1925, for the use of the Departments and Independent Establishments of the Government in the purchase of asphalt-saturated rag felt for flashings.

[The latest date on which the technical and inspection requirements of this specification shall become mandatory for all Departments and Independent Establishments of the Government is August 20, 1925. They may be put into effect, however, at any earlier date after promulgation]

CONTENTS

I. TYPE

The asphalt-saturated rag felt covered by this specification is intended for use in the construction of flashings in connection with built-up roofing and when it is desired to use a sheet heavier than 14 pounds for unsurfaced built-up roofing.

II. MATERIAL

This asphalt-saturated felt shall be composed of rag-roofing felt impregnated with asphaltic saturating materials.

III. GENERAL REQUIREMENTS

No details specified.

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IV. DETAIL REQUIREMENTS

1. Appearance.—The material shall be free from visible external defects, such as holes, ragged or untrue edges, breaks, rents, cracks, or indentations, and shall be uniform throughout. When unrolled at temperatures between 50 and 90° F., it shall not stick to such an extent as to cause tearing.

2. Width.—32 or 36 inches $\pm \frac{1}{4}$ inch.

3. Weight per 100 Square Feet Exclusive of Packing.—29 lbs. $\pm 1\frac{1}{2}$ lbs.

4. Pliability at 25° C. (77° F.).—No cracking on bending over a mandrel one-sixteenth inch in diameter.

5. Average Breaking Strength.—With the fiber grain, minimum, 40 pounds; across the fiber grain, minimum, 20 pounds.

6. Volatile Matter at 105° C. (221° F.).—Maximum, 2 per cent.

7. Weight of Moisture-Free, Desaturated Felt per 100 Square Feet.—Minimum, 10.4 pounds (equivalent to No. 50 felt).

8. Weight of Saturant per 100 Square Feet.—Minimum, 1.5 times the weight of the moisture-free felt per 100 square feet.

9. Ash of Desaturated Felt.—Maximum, 10 per cent.

V. METHOD OF INSPECTION AND TESTING

When required, deliveries will, in general, be sampled and tested by the following methods, but the purchaser reserves the right to use any additional information to ascertain whether the material meets the specification.

1. SAMPLING AND DETERMINATION OF WEIGHT AND WIDTH

The weight per 100 square feet of the material and its variation in weight can be most accurately determined by the inspector at the time he takes a sample for transmittal to the testing laboratory.

(*a*) From each shipment of more than 1,000 rolls take at random a number of rolls of felt equivalent to one-half the cube root of the total included in the lot. If this proves to be a fractional number, express it as the next higher digit. From each shipment of 1,000 rolls or less take at random five in each case.

(*b*) Remove wrappers, cores, and other packing material from each roll taken and weigh the roll and the packing material, etc., separately to the nearest one-fourth pound. Then unwind each roll and measure its length and the width at each end of the roll to the nearest one-fourth inch. Compute the weight per 100 square feet of each roll examined. At approximately 25 feet from the end of each roll taken cut two samples the full width of the roll and approximately 40 inches long, label, carefully wrap, and transmit one to the testing laboratory. Retain the other sample for check analysis in case of dispute.

2. LABORATORY EXAMINATION

(*a*) APPEARANCE.—Examine both sides of the sheet of felt and note the uniformity of color. The felt shall be thoroughly and uniformly impregnated and shall show no unsaturated spots at any point upon cutting 2-inch strips at random across the entire sheet and splitting them open for their full length.

(*b*) WEIGHT.—Trim the sample so that it is 36 inches long and the full width of the roll. Measure accurately and weigh to the nearest gram (15 grains). From the measurements and weight so obtained compute the weight per 100 square feet.

(*c*) PLIABILITY.—Cut five strips 1 inch wide and 6 inches long in the direction of the fiber grain and immerse in water at 25° C. (77° F.) for 10 to 15 minutes. Remove the strips from the water and immediately bend each strip flat over a $\frac{1}{16}$-inch mandrel through an arc of 180° at a uniform rate in approximately two seconds' time.

(*d*) BREAKING STRENGTH.—Cut 10 strips of the felt 1 inch by 6 inches with the fiber grain and 10 strips of the same size across the fiber grain. Test both sets of strips at 21° C. (70° F.) in a Scott or similar testing machine of the inclination-balance type having a capacity of 100 to 150 pounds. The test strips shall be gripped 1½ inches on each end, leaving 3 inches between the clamps, and the lower jaw shall travel at the rate of 12 inches per minute. If any strip breaks nearer than one-half inch to either clamp, the reading shall be disregarded and an additional strip tested in its place. The average of the 10 readings from strips cut in one direction shall be taken as the breaking strength of the sample in that direction.

(*e*) VOLATILE MATTER.—Cut two strips of the asphalt-saturated felt 6 inches wide and 12 inches long, weigh each strip, and suspend it for five hours in an oven maintained at 105° C. (221° F.) ±3° C. (5° F.). Remove from the oven, cool in a desiccator, and weigh. Compute the loss in weight and average the results on the two samples.

(*f*) WEIGHT OF DESATURATED FELT.—Cut a 2-inch strip the full width of the sample, measure accurately, weigh, and extract with benzol [1] in a suitable extraction apparatus until the solvent runs through colorless. Remove the desaturated felt from the extractor and allow to remain in air until the solvent has evaporated. Brush off any adhering particles of foreign matter. Then place the desaturated felt in a tared weighing bottle, dry at 100 to 105° C. (212 to 221° F.) for one-half hour, cool, and weigh. Compute the weight per 100 square feet of the desaturated felt.

[1] Carbon tetrachloride or carbon bisulphide will usually give the same results, but benzol shall be used in umpire tests in case of dispute.

(*g*) SATURATION OF FELT.—The weight of asphalt in the saturated felt is the difference in weight between the original sample taken for extraction (inspection, V, 2 (*f*) and the weight of the desaturated felt (obtained in V, 2 (*f*). The percentage saturation is obtained from the following formula:

$$\frac{\text{Weight of asphalt in saturated felt}}{\text{Weight of moisture-free desaturated felt}} \times 100 = \text{percentage saturation}$$

(*h*) ASH.—Cut the strip of desaturated felt obtained in V, 2 (*f*) into squares about 1 cm on each side and thoroughly mix. Take at random pieces amounting to about 10 g and after drying at 100 to 105° C. (212 to 221° F.) for one-half hour and cooling weigh accurately and incinerate in a weighed crucible in a muffle or over an open flame until all the carbon is consumed. Cool, weigh, and compute the percentage of ash in the moisture-free desaturated felt.

VI. PACKING AND MARKING

The felt shall be properly wrapped and labeled with the manufacturer's name, the brand, grade, weight, area of roll, and type of saturant. The gross weight of the roll shall be between 50 and 80 pounds. The weight of the wrapping and packing material shall not exceed ½ pound per roll.

VII. ADDITIONAL INFORMATION

No details specified.

VIII. GENERAL SPECIFICATIONS

No details specified.

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