

CHANGE

AC NO: 150/5370-10 CHG 4

DATE: August 23, 1978



ADVISORY CIRCULAR

DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

SUBJECT: CHANGE 4 TO ADVISORY CIRCULAR 150/5370-10, STANDARDS FOR
SPECIFYING CONSTRUCTION OF AIRPORTS

1. PURPOSE. This change replaces Item P-606 of the subject advisory circular and provides product improvement by specification changes listed in paragraph 2.
2. CHANGES.
 - a. Prewarming of adhesive compounds clarified.
 - b. Elongation requirement changed for compounds to be formulated for use in cold climates.
 - c. Dielectric property tests limited to compounds formulated for sealing electrical wiring in pavements.
 - d. Curing time for adhesion tests changed to meet formulation requirements.
 - e. Asphalt concrete compatibility test is specified.

PAGE CONTROL CHART

Remove Pages	Dated	Insert Pages	Dated
379 through 384	10/24/74	379 through 384	8/23/78

A handwritten signature in cursive script, reading 'Robert J. Aaronson'.

ROBERT J. AARONSON
Assistant Administrator
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Initiated by: AAP-550

ITEM P-606 ADHESIVE COMPOUNDS, TWO-COMPONENT, FOR 1.5
SEALING WIRE AND LIGHTS IN PAVEMENT 1.6

1. DESCRIPTION	3
1.1 This specification covers two types of material; a liquid suitable for sealing electrical wire in saw cuts in pavement and for sealing light fixtures or bases in pavement, and a paste suitable for embedding light fixtures in the pavement. Both types of material are two-component filled formulas with the characteristics specified in 606-2.4. Formulations supplied for use with bituminous pavements shall be free from any components that can soften asphalts.	6 6 8 9 9 11 12 12
2. EQUIPMENT AND MATERIALS	14
2.1 CURING. When prewarmed to 77 degrees F (25 degrees C), mixed, and placed in accordance with manufacturer's directions, the materials shall cure at temperatures of 40 degrees F (4.4 degrees C) or above without the application of external heat.	17 19 20 21
2.2 STORAGE. The adhesive components shall not be stored at temperatures over 86 degrees F (30 degrees C).	24 25
2.3 CAUTION. Installation and use shall be in accordance with the manufacturer's recommended procedures. Avoid prolonged or repeated contact with skin. In case of contact, wash with soap and flush with water. If taken internally, call doctor. Keep away from heat or flame. Avoid vapor. Use in well-ventilated areas. Keep in cool place. Keep away from children.	28 30 32 35 37 39
2.4 CHARACTERISTICS. When mixed and cured in accordance with the manufacturer's directions, the materials shall have the following properties:	42 43 43

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Physical or elec- trical property	Minimum	Maximum	ASTM method
Tensile.....	1,000 psi (70 kg/sq. cm)		D-638
Elongation.....	8%,#		D-638
Coef. of cub. exp. cu. cm/cu. cm/degree C....	0.00090	0.00120	D-1168
Coef. of lin. exp. cm/cm/degree C.....	0.00030	0.00040	D-1168
Dielectric strength, short time test.....	350 Volts/mil.		D-149
Arc resistance.....	125 secs.		D-495
Adhesion to steel	1,000 psi (70 kg/sq. cm)		
Adhesion to portland cement concrete.....	200 psi (14 kg/sq. cm)		
Adhesion to asphalt concrete.....	(no test available)		
# 20% or more (without filler) for formulations to be supplied for areas subject to freezing.			

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3. SAMPLING, INSPECTION, AND TEST PROCEDURES

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3.1 TENSILE PROPERTIES. Tests for tensile strength and elongation shall be conducted in accordance with ASTM D-638.

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3.2 EXPANSION. Tests for coefficients of linear and cubical expansion shall be conducted in accordance with ASTM D-1168, Method B, except that mercury shall be used instead of glycerine. The test specimen(s) shall be mixed in the proportions specified by the manufacturer, and cured in a glass tube approximately 2 inches (5 cm) long by 3/8 inch (1 cm) in diameter. The interior of the tube shall be precoated with a silicone mold release agent. The hardened sample shall be removed from the tube and aged at room temperature for 1 week before conducting the test. The test temperature range shall be from 35 degrees F (1.6 degrees C) to 140 degrees F (60 degrees C).

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3.3 TEST FOR DIELECTRIC STRENGTH. Test for dielectric strength shall be conducted in accordance with ASTM D-149 for sealing compounds to be furnished for sealing electrical wires in pavement.

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TEST FOR ARC RESISTANCE.

Test for arc resistance shall be

conducted in accordance with ASTM D-495 for sealing compounds to

be furnished for sealing electrical wires in pavement.

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TEST FOR ADHESION TO STEEL.

The ends of two smooth, clean,

steel specimens of convenient size (1 inch by 1 inch by 6 inches

(2.5 by 2.5 by 7.5 cm) would be satisfactory) are bonded together

with adhesive mixture and allowed to cure at room temperature for

a period of time to meet formulation requirements and then tested

to failure on a Riehle (or similar) tensile tester. The

thickness of adhesive to be tested shall be 1/4 inch (60 mm).

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ADHESION TO PORTLAND CEMENT CONCRETE.

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(a)

Concrete Test Block Preparation.

The aggregate grading

shall be as shown in Table 1.

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The coarse aggregate shall consist of crushed rock having a

minimum of 75% of the particles with at least one fractured face

and having a water absorption of not more than 1.5%. The fine

aggregate shall consist of crushed sand manufactured from the

same parent rock as the coarse aggregate. The concrete shall

have a water-cement ratio of 5.5 gallons (21 l) of water per bag

of cement, a cement factor of 6, plus or minus 0.5, bags of

cement per cubic yard (0.76 cu m) of concrete, and a slump of 2

1/2 inches, plus or minus 1/2 inch (6 cm plus or minus 1 cm).

The ratio of fine aggregate to total aggregate shall be

approximately 40% by solid volume. The air content shall be

5.0%, plus or minus 0.5%, and it shall be obtained by the

addition to the batch of an air-entraining admixture such as

vinisol resin. The mold shall be of metal and shall be provided

with a metal base plate. Means shall be provided for securing

the base plate to the mold. The assembled mold and base plate

shall be watertight and shall be oiled with mineral oil before

use. The inside measurement of the mold shall be such that

several 1-inch by 2-inch by 3-inch (2.5 by 5.0 by 7.5 cm) test

blocks can be cut from the specimen with a concrete saw having a

diamond blade. The concrete shall be prepared and cured in

accordance with ASTM C-192.

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Table 1.--Aggregate for Bond Test Blocks

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Type	:	Sieve size	:	Percent passing
Coarse aggregate.....	:	3/4 inch (19.0 mm)	:	97 to 100
	:	1/2 inch (12.5 mm)	:	63 to 69
	:	3/8 inch (9.5 mm)	:	30 to 36
	:	No. 4 (4.75 mm)	:	0 to 3
Fine aggregate.....	:	No. 4 (4.75 mm)	:	100
	:	No. 8 (2.36 mm)	:	82 to 88
	:	No. 16 (1.18 mm)	:	60 to 70
	:	No. 30 (600 micro-m)	:	40 to 50
	:	No. 50 (300 micro-m)	:	16 to 26
	:	No. 100 (150 micro-m)	:	5 to 9

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(b) Bond Test. Prior to use, oven-dry the test blocks to constant weight at a temperature of 220 to 230 degrees F (104 to 110 degrees C), cool to room temperature, 73.4 plus or minus 3 degrees F (23 plus or minus 1.6 degrees C), in a desiccator, and clean the surface of the blocks of film or powder by vigorous brushing with a stiff-bristled fiber brush. Two test blocks shall be bonded together on the 1-inch by 3-inch (2.5 by 7.5 cm) sawed face with the adhesive mixture and allowed to cure at room temperature for a period of time to meet formulation requirements and then tested to failure in a Riehle (or similar) tensile tester. The thickness of the adhesive to be tested shall be 1/4 inch (6 mm).

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3.7 COMPATIBILITY WITH ASPHALT CONCRETE. Test for compatibility with asphalt in accordance with ASTM D-3407.

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4. METHOD OF MEASUREMENT

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4.1 The adhesive compound shall be measured by the [pound (kg)] [gallon (l)] of adhesive as specified, in place, complete and accepted. When required in the installation of an in-runway lighting system or portion thereof, no measurement will be made for direct payment of adhesive, as the cost of furnishing and installing shall be considered as a subsidiary obligation in the completion of the installation.

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5. BASIS OF PAYMENT 198

5.1 Payment shall be made, where applicable, at the contract unit price per [pound (kg)] [gallon (l)] for the adhesive. This price shall be full compensation for furnishing all materials, and for all preparation, delivering, and application of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item. 202
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Payment will be made under: 215

Item P-606-5.1	Adhesive Compound - per [pound (kg).] [gallon (l).]	220
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6. TESTING REQUIREMENTS 222

ASTM C-192	Making and Curing Concrete Compression and Flexure Test Specimens in the Laboratory.	225
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ASTM D-149	Tests for Dielectric Breakdown Voltage and Dielectric Strength of Electrical Insulating Materials at Commercial Power Frequencies.	229
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ASTM D-495	Test for High-Voltage, Low-Current, Arc Resistance of Solid Electrical Insulating Materials.	235
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ASTM D-638	Test for Tensile Properties of Plastics.	238
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ASTM D-1168	Testing Hydrocarbon Waxes Used for Electrical Insulation.	241
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ASTM D-3407	Joint Sealants, Hot-Poured, For Concrete and Asphalt Pavements.	246
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