

20-GP-18a
June 1957
CANCELLATION
December 1972

CANADIAN GOVERNMENT SPECIFICATIONS BOARD

Standard
for

ADHESIVE, RUBBER, OIL RESISTANT

This standard is hereby cancelled because it has been superseded by CGSB 71-GP-1 Adhesive,
Rubber: General Purpose and Oil Resistant Types.

CANADIAN GOVERNMENT SPECIFICATIONS BOARD

Specification
for

ADHESIVE, RUBBER; OIL RESISTANT

4. DETAIL REQUIREMENTS

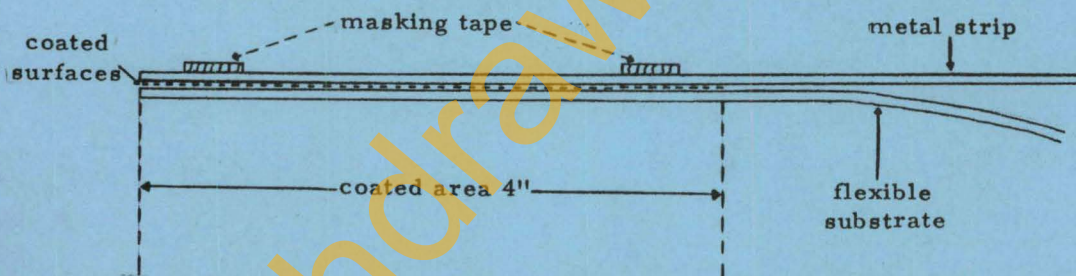
4.4 Storage Life

In lines 1 and 4, change " $100 \pm 2^{\circ}\text{F}$ " to read " $140 \pm 2^{\circ}\text{F}$ ".

6. INSPECTION

* 6.2.2 Preparation of Specimens for Strip Adhesion

Replace the drawing with the following:



* Change from previous amendment.

20-GP-18a
14 June 1957
AMENDMENT No. 1
11 July 1958

CANADIAN GOVERNMENT SPECIFICATIONS BOARD

Specification
for

ADHESIVE, RUBBER; OIL RESISTANT

Section 4.4

Lines 1 and 4: change " $100 \pm 2^{\circ}\text{F}$ " to read " $140 \pm 2^{\circ}\text{F}$ ".



CANADA

CANADIAN GOVERNMENT SPECIFICATIONS BOARD

SPECIFICATION

FOR

ADHESIVE, RUBBER; OIL RESISTANT

20-GP-18a

14 JUNE 1957

SUPERSEDES 20-GP-18

13 SEPTEMBER 1956

ARCHIVES COPY

THIS SPECIFICATION APPLIES TO A GENERAL PURPOSE OIL RESISTANT RUBBER CEMENT FOR BONDING CLOTH, LEATHER, FELT, CORK, RUBBER AND SIMILAR MATERIALS, TO EACH OTHER OR TO METALS, WOOD, GLASS, AND PLASTIC LAMINATES IN APPLICATIONS WHERE THE UNIT STRESS ON THE ADHESIVE IS NOT APPRECIABLE.

NATIONAL RESEARCH COUNCIL, OTTAWA, CANADA

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CANADIAN GOVERNMENT SPECIFICATIONS BOARD

Specification
for

ADHESIVE, RUBBER; OIL RESISTANT

1. DEFINITION

1.1 This specification applies to a general purpose oil resistant rubber cement for bonding cloth, leather, felt, cork, rubber and similar materials, to each other or to metals, wood, glass, and plastic laminates in applications where the unit stress on the adhesive is not appreciable.

2. APPLICABLE SPECIFICATIONS

2.1 The following publications of the issue in effect on the date of invitation to bid form a part of this specification.

2.1.1 ASTM Methods - D15 - Methods of Sample Preparation for Physical Testing of Rubber Products (Tentative).

D471 - Methods of Test for Change in Properties of Elastomeric Vulcanizates Resulting from Immersion in Liquids (Tentative)

D816 - Methods of Testing Rubber Cements (Tentative)

2.1.2 CGSB Specification 4-GP-42 - Duck, Cotton, Ounce; Plied Yarn (Unbleached, Bleached or Dyed).

2.1.3 DID Specification TEXT-7-2-3 - Cloth, Nylon, Twill, Coated O.D. 7 - 5.8 ozs.

2.1.4 CSA HA. 4. 24 - Alclad Aluminum Alloy Sheet, Plate and Coil.

3. GENERAL REQUIREMENTS

3.1 Consistency - The adhesive shall be of a consistency suitable for brush application at all temperatures between 40° and 100°F.

3.2 Corrosion - The adhesive shall not corrode metals or exert a deteriorating effect on any of the materials listed in section 1.1 to which it might be applied.

3.3 Workmanship - The adhesive as supplied shall be a homogeneous, colloidal solution, compounded, prepared and packaged in accordance with good commercial practice .

4. DETAIL REQUIREMENTS

4.1 Strip Adhesion - Specimens shall be prepared as specified in section 6.2.2, and tested:

1. As received
2. After water immersion (section 6.5)
3. After oil immersion (section 6.6)
4. After fuel immersion (section 6.7)
5. After aging (section 6.8)

and shall show strip adhesion values not less than those shown below when tested by the procedures in section 6.3.

TABLE I

Condition	Metal Sheet Bonded To:				
	Cotton Duck	GRS	GRM Neoprene	GRA acrylonitrile	Vinyl
As Received	15 lbs.	10 lbs.	10 lbs.	10 lbs.	10 lbs.
After water immersion	15 lbs.	-	-	-	-
After oil immersion	15 lbs.	-	-	-	-
After fuel immersion	7 lbs.	-	-	-	-
After aging	15 lbs.	-	-	-	-

4.2 Dead Load Test - Specimens prepared and tested as specified in section 6.2.4 shall sustain a dead load of 2 lbs. for 4 hours at $140 \pm 2^\circ\text{F}$ ($60 \pm 1^\circ\text{C}$).

4.3 Bonding Range - The strip adhesion strength of metal-duck specimens assembled 10 minutes after applying the last coat of adhesive and tested one hour after assembly, shall be not less than 3 lbs. (section 6.2.3).

4.4 Storage Life - After 10 days storage in an unopened container at $100 \pm 2^\circ\text{F}$ ($60 \pm 1^\circ\text{C}$), the strip adhesion strength of metal-duck assemblies shall be not less than 15 lbs. when tested by the procedure in section 6.3. After 21 days storage in an unopened container at $100 \pm 2^\circ\text{F}$ ($60 \pm 1^\circ\text{C}$), the adhesive shall not have increased in viscosity sufficiently to be unsuitable for brushing, and there shall be no separation of components not readily dispersible by stirring.

4.5 Low Temperature Performance - At least three specimens out of four prepared as specified in section 6.2.5 shall be capable of supporting a 50 pound weight for one hour at -40°C after cold soaking and flexing as specified in section 6.9.

5. PREPARATION FOR DELIVERY

5.1 Unless otherwise specified by the purchaser, commercial packaging shall be acceptable.

5.2 Marking - Containers shall be clearly marked with at least the following:

- Adhesive, Rubber; Oil Resistant
- Manufacturer's Name
- Specification No. 20-GP-18a
- Recommendations re storage such as "keep in a cool place", "do not allow to freeze" as may be applicable.
- Date of manufacture
- Thinning instructions
- Directions for use including special instructions for use with difficult substrates such as glass, use at high temperatures and in the cold, etc.
- Caution - This is a general purpose adhesive suitable for joining many materials. It should NOT be used in applications where the unit stress is appreciable.

6. INSPECTION

6.1 Sampling - shall be at the discretion of the inspecting authority. Three unopened or factory sealed containers, two of one-pint size and one of one-quart size are required for complete testing.

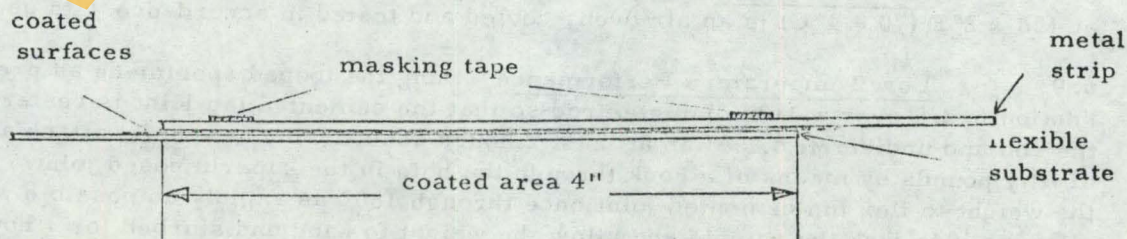
6.2 Specimen Preparation

6.2.1 Materials - For routine testing any cotton duck, aluminum or steel sheets, GRS, Neoprene, or Acrylonitrile, rubber, and Vinyl coated fabric may be employed. In cases of dispute the following shall be used.

Cotton duck - Specification 4-GP-42, 12 oz. dyed OD-7 GRS -
 ASTM D-15, Standard formula for GRS-10 - Channel Black Neoprene
 ASTM D-15, Standard formula for neoprene - Channel Black Nitrile - ASTM D-15,
 Standard formula for nitrile rubber (mechanical goods type).
 Metal - CSA HA. 4. 24 (Alclad) - 0.064" thick
 Vinyl - DID/DND CAN/TEXT 7-2-3

6.2.2 Preparation of Specimens for Strip Adhesion - The metal panels shall be cleaned with trichloroethylene; rubber and vinyl materials shall be cleaned with naphtha and dried with a clean lint free cloth, fifteen minutes before cementing.

The metal strips shall be cut into lengths, 1 x 6", the other materials into 10 x 6" rectangles. For convenience, 5 metal strips may be laid parallel 1/8" apart and temporarily joined with masking tape. One coat of adhesive shall be brushed on the metal plates for 4-inches of the 6-inch length. Two coats covering 4-inches at one end shall be used on the rubber and vinyl substrates, and three coats on the cotton fabric. Thirty minutes drying shall be allowed between coats and before bonding. The specimen shall be assembled as shown:



rolled with a two-pound metal roller to remove entrapped air, cured for 48 ± 2 hours at room temperature and tested as specified in Section 6.3.

- 6.2.3 Preparation of Specimens for Bonding Range - Specimens shall be prepared as in section 6.2.2 except that they shall be assembled 10 minutes after applying the last coat of adhesive and tested as specified in Section 6.3 after one hour of curing at room temperature.
- 6.2.4 Preparation of Specimens for Dead Load Test - Each 1 x 4" aluminum strip shall have a 1/4" hole drilled centrally 3/8" from one end. Apply by brush two coats of adhesive to somewhat more than one inch of the ends of the strips remote from the holes, thirty minutes drying time being allowed between coats. Thirty minutes after the application of the last coat, the strips shall be bonded with a 1.0" overlap, held under pressure of 10 psi for 2 hours and allowed to cure for 48 ± 2 hrs. at room temperature and tested, as specified in Section 6.4.
- 6.2.5 Preparation of Samples for Low Temperature Performance Test - Apply three coats of adhesive by brush to somewhat more than 1-inch of one end of each of eight 1 x 6" cotton duck strips. Allow 30 minutes between coats. Thirty minutes after applying the third coat, bond pairs of strips to form 1" x 1" lap joints making sure that the joint is straight. Place the joints under 10 psi pressure for 2 hours and cure 48 ± 2 hours at room temperature. Superimpose the free ends of each specimen and join them over an area of approximately 1-inch by sewing, rivetting or stapling. Punch a hole through the center of the 1 x 1" superimposed joint.
- 6.3 Strip Adhesion Test - This test shall be carried out as specified in ASTM D-816, Method C using a jaw separation of 2-inches per minute. The average of four tests shall be reported as the strip adhesion strength.
- 6.4 Dead Load Test - Condition 3 specimens for 30 minutes at $140 \pm 2^\circ\text{F}$ ($60 \pm 1^\circ\text{C}$). Suspend a two pound weight from the bottom of each and hang in an oven at $140 \pm 2^\circ\text{F}$ ($60 \pm 1^\circ\text{C}$) for four hours. Separation of any of the three specimens in less than 4 hours shall be considered as failure.
- 6.5 Water Immersion - Four cotton duck-metal specimens shall be immersed in distilled water for 24 hours at room temperature, removed and tested in accordance with section 6.3 while wet.
- 6.6 Oil Immersion - Four cotton duck-metal specimens shall be immersed for 24 hours at $158 \pm 2^\circ\text{F}$ ($70 \pm 1^\circ\text{C}$) in ASTM #1 Oil (ASTM D-471), removed, cooled and tested in the wet condition in accordance with section 6.3.
- 6.7 Fuel Immersion - Four cotton duck-metal specimens shall be immersed for 24 hours at room temperature in ASTM Reference Fuel type B, removed and tested in the wet condition in accordance with section 6.3.
- 6.8 Artificial Aging - Four cotton duck-metal specimens shall be aged 20 days at $158 \pm 2^\circ\text{F}$ ($70 \pm 1^\circ\text{C}$) in an air oven, cooled and tested in accordance with section 6.3.
- 6.9 Low Temperature Performance - Hang the looped specimens as prepared in section 6.2.5 over a 3/8" diameter rod so that the cemented lap joint is centered above the rod and undistorted. After at least 2 hours conditioning at -40°C , attach a weight of fifty pounds by means of a hook through the hole in the superimposed joint. Allow the weight to flex the cemented joint once through 180° as rapidly as possible without allowing it to jerk the sample and allow the weight to hang undisturbed for 1 hour. To make certain that the lapped joint is properly flexed it may be found desirable to cement the 3/8" rod to the inside of the loop at the middle of the lapped seam or to fix the seam between two 3/8" rods clamped or wired tightly together.

7. NOTES

7.1 Intended Uses - Adhesives covered by this specification are resistant to water, fresh and salt, oil and fuels, and are intended for use in applications where the unit stress on the adhesive is not appreciable. Under no circumstances shall adhesives covered by this specification be used for structural purposes, or for life raft, airship, or de-icer boot manufacture or repair. The adhesives will bond synthetic rubbers, cotton duck, leather, felt, cork, and similar dry oil free materials to each other or in combination. They will also bond the above materials to aluminum alloy, magnesium alloy, steel, vinyl plastics, laminates, wood and glass.

7.2 Storage - The adhesives covered by this specification show gelling tendencies upon aging, but will remain usable under normal storage conditions for at least six to nine months. For government use, the adhesive should not be purchased in quantities greater than necessary for a three month supply. Elevated storage temperatures shorten the usable life of these adhesives. Whenever practicable, the adhesive shall be stored in a cool place. Refrigeration at 40° to 60°F is recommended where available.

7.3 Publications referenced in this specification may be obtained as follows:

ASTM - American Society for Testing Materials, 1916 Race Street, Philadelphia 3, Pa., U. S. A.

CGSB - The Secretary, Canadian Government Specifications Board, National Research Council, Ottawa 2, Canada.

DID - Directorate of Inter-Service Development, Department of National Defence, Ottawa, Canada.

CSA - Canadian Standards Association, 235 Montreal Road, Ottawa, Canada.

7.4 When a general purpose cement, suitable for use where exposure to fuels and lubricants is unlikely, is required reference should be made to specification 20-GP-20.

Correspondence regarding this specification should be addressed to the Secretary, Canadian Government Specifications Board, National Research Council, Ottawa 2, Canada.