AERONAUTICAL MATERIAL SPECIFICATION

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29 West 39th Street
New York City

AMS 3420C

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DEHYDRATING AGENT
Silica Gel

1. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

2. FORM: Granular. Indicator grades shall be impregnated with cobalt chloride.

3. APPLICATION: Primarily to prevent corrosion of metals during storage in closed spaces.

4. TECHNICAL REQUIREMENTS:

4.1 General:

4.1.1 Material shall be non-deliquescent.

4.1.2 Material shall adsorb water by physical means and not by chemical combination except for the cobalt chloride in indicator grades.

4.1.3 Color: Indicating grades shall have characteristic colors when in equilibrium with the atmosphere and shall closely match the colors shown on AS 167 for relative humidities of 0, 20, 40 and 60% at 77 F ± 5.

4.2 Grades: Unless otherwise specified, material shall be supplied in one of the following grades:

Grade D -	Through No. 6,	On No. 18 Screen, Indicator Type
Grade E -		On No. 80 Screen, Plain Type
Grade F -		On No. 80 Screen, Indicator Type

4.2.1 When so ordered, the above grades shall be blended in proportions specified by the purchaser but no blend shall contain less than 25% of indicating types.

4.3 Composition:

4.3.1 Grade E: Shall be silica gel containing not less than 99.4% SiO_2 on a dry basis.

4.3.2 Grades D and F: Shall be silica gel containing not less than 99.6% of SiO_2 impregnated with not more than 1.5 lb of anhydrous cobalt chloride ($CoCl_2$) per 100 lb of finished material on a dry basis.

4.4 Properties: Material shall conform to the following requirements as shipped.

4.4.1 Water Content: Shall not exceed 5.75% by weight for Grades D and F determined as in 4.4.1.1; no limit is established for Grade E.

4.4.3 Particle Size: Shall be as follows for the respective grades:

Screen	Distribution, % Grade D	Distribution, % Grades E & F
Retained on No. 6	2.0 max	
Through No. 6, retained on No. 12	55.0 min	
Through No. 12, retained on No. 18	19.0 min	
Through No. 18	3.5 max	
Through No. 20	0.5 max	
Retained on 0.530 in. opening		0.0
Through 0.530 in. opening, retained on No. 80		96.0 min
Through No. 80		4.0 max

4.4.3.1 Bring a sample of material to approximate equilibrium with the atmosphere. Place a 150 g sample of material on the coarsest screen in a nest of the applicable sizes and shake for 3 min. on a screen shaker equivalent to the W.S. Tyler Ro-Tap machine.

4.4.4 Particle Strength: Shall be such that powdering in excess of the following amounts will not occur when tested as in 4.4.4.1.

	Powdering, % Grade D	Powdering, % Grades E & F
Through No. 30 Screen	1.50 max	--
Through No. 200 Screen	--	0.8 max

4.4.4.1 Repeat the particle size test of 4.4.3.1. Mix the portions of the Grade D sample retained on the No. 18 and coarser screens, and the portion of Grade E or F retained on the No. 80 and coarser screens, bring to approximate equilibrium with the atmosphere, weigh out a 50 g ± 5 sample to an accuracy of ± 0.2 g and place on the No. 18 or No. 80 screen, as applicable, together with 5 copper disks the size and weight of a U.S. penny. Fit the screen with a tight cover and nest with a finer screen and a retaining pan; the finer screen shall be No. 30 for Grade D and No. 200 for Grades E and F. Shake the sample for 15 min. in the apparatus specified in 4.4.3.1. Weigh the powder collected in the retaining pan and report as a percentage of the original sample weight.

5. REPORTS: Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report of the composition and the results of tests made on the batch of material from which the order was filled, to determine conformance to the requirements of this specification. This report shall include the purchase order number, material specification number, grade, quantity, and date of shipment.

6. PACKAGING AND MARKING:

6.1 Grades D and F: Shall be furnished in bulk, unless otherwise specified.

6.2 Grade E: Shall be furnished in 5 g, 10 g, 15 g, 1 oz, 2 oz, 4 oz, 8 oz, 1 lb or 5 lb bags, as ordered. Bags shall be substantially dustproof, attained by a paper lining or other means which will not materially retard the rate of water vapor adsorption of the contained material.

6.3 Domestic Shipments: Unless otherwise specified, all grades shall be packed in 5 lb, 25 lb or 100 lb metal containers, as ordered.

6.3.1 Quantities of 5 lb or less shall be packed in 1 gal round cans made from chemically treated steel coated inside and out with a baked enamel. Top shall be fitted with multiple-friction opening and plug. Top and bottom shall be double seamed and cemented and side seams shall be cemented. Body and bottom shall be made from 31 U.S. standard gage plate and top ring and plug from 30 U.S. standard gage plate. Alternately, containers may be made from special coated manufacturer's terne plate, using 95 lb basis weight for body and bottom and 100 lb basis weight for top ring and plug with same construction as above except that side seams shall be soldered rather than cemented.

6.3.2 Quantities of over 5 lb to 25 lb, inclusive, shall be packed in 5 gal square cans of the same construction as in 6.3.1 for the steel container except that all parts shall be made from 30 U.S. standard gage plate. Alternately, cans may be used of the same construction as in 6.3.1 for terne plate containers except that all parts shall be made of 107 lb basis weight material and all seams shall be soldered.

6.3.3 Both 1 gal and 5 gal cans shall be packed in commercial containers so constructed as to ensure acceptance by common or other carrier for safe transportation at lowest rate to point of delivery. Containers shall comply with Consolidated Freight Classification Rules in effect at time of shipment and shall be capable of withstanding storage, rehandling and reshipment without being repacked.

6.3.4 Metal drums of 100 lb nominal size shall be bolted ring style and straight sided type with welded side seam, full open head, and closure fitted with rubber gasket. Body and heads of drum shall be of 24 U.S. standard gage or heavier low carbon steel sheet suitably treated to prevent corrosion. No overpacking is required.

6.3.4.1 Random samples of drums, closed as for use, shall withstand the following test without leakage or other evidence of failure.

6.3.4.1.1 Drum filled with finely divided material to authorized gross weight shall be dropped 4 ft onto solid concrete so as to strike diagonally on top chine. Closing devices and other parts projecting beyond chine or rolling hoops shall withstand this test. If leaks or other defects develop, such defects may be repaired only by the same welding procedure used in the original construction.

6.4 Overseas Shipments: Unless otherwise specified, all grades shall be packed in 25 lb or 100 lb metal containers, as ordered.

6.4.1 Quantities of 25 lb or less shall be packed in 5 gal lug cover style containers with welded side seam and closure fitted with rubber gasket. Body and heads of container shall be of 24 U.S. standard gage low carbon steel sheet suitably treated to prevent corrosion. No overpacking is required.

6.4.2 Metal drums of 100 lb nominal size shall be of the same style and construction as in 6.3.4 except that material shall be 22 U.S. standard gage or heavier. No overpacking is required.

6.4.3 Export containers of both sizes shall withstand the test of 6.3.4.1.

6.5 Marking:

6.5.1 Each container shall be conspicuously marked with the following information:

DEHYDRATING AGENT
AMS 3420C
GRADE _____
NET WEIGHT _____
GROSS WEIGHT _____
PURCHASE ORDER NUMBER _____
DATE OF SHIPMENT _____
MANUFACTURER'S IDENTIFICATION _____

6.5.2 The following precautionary label shall be placed in a conspicuous location on each container:

C A U T I O N

Inspect by weight, not by count
Gross Weight as packed ____ lb ____ oz
This Container Contains
Dehydrating Agent

Due to the moisture adsorbent properties of the dehydrating agent, this container positively must not be opened for any longer period than is absolutely necessary for withdrawals. Withdrawals should be as near as possible to the exact quantity intended to be used.

The container shall be tightly resealed immediately after any withdrawals.

6.5.3 Other markings on container shall be as required by Interstate Commerce Commission Regulations.

7. APPROVAL:

7.1 To assure adequate performance characteristics, sample material shall be approved by purchaser before material for production use is supplied, unless such approval be waived. Results of tests on production material shall be essentially equivalent to those on the approved sample.

7.2 Manufacturer shall use the same manufacturing processes for production material as for approved sample material. If necessary to make any change in processing, vendor shall obtain permission from purchaser prior to incorporating such change.

8. REJECTIONS: Material not conforming to this specification or to authorized modifications will be subject to rejection.

NOTE. SIMILAR SPECIFICATIONS: MIL-D-3716 is listed for information only and shall not be construed as an acceptable alternate unless all requirements of this AMS are met.