AERONAUTICAL MATERIAL SPECIFICATION

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A G E N T , D E H Y D R A T I N G
Silica Gel

1. ACKNOWLEDGMENT: A vendor must mention this specification number in all quotations and when acknowledging purchase orders.

2. FORM: The form shall be granular, and in suitable particle sizes as required. If desired, it shall be impregnated with cobalt chloride for the purpose of indicating the degree of saturation.

3. GRADES:

Grade A - On #8 sieve, Plain Type
Grade B - On #8 sieve, Indicator Type
Grade C - On #6 - #18 sieves, Plain Type
Grade D - On #6 - #18 sieves, Indicator Type
Grade E - On #45 sieve, Plain Type
Grade F - On #45 sieve, Indicator Type

Any combination of the above grades may be blended together in proportions as specified, provided the minimum quantity of any of the individual grades constituting the blend shall be not less than 10% of the whole.

4. COMPOSITION: (a) Grades A, C and E shall contain not less than 99.6% silica (SiO_2) on a dry basis. These grades as supplied shall contain not more than 5.50% water.

(b) The basic material in grades B, D and F shall contain not less than 99.6% silica (SiO_2) on a dry basis and it shall be impregnated with cobalt chloride in the proportion of 0.75 - 1.50 lb anhydrous $CoCl_2$ per 100 lb of material on dry basis. These grades as supplied shall contain not more than 5.75% water.

5. REQUIREMENTS: (a) The material shall be non-deliquescent.

(b) The material shall absorb moisture by physical means alone except for the effect of the cobalt chloride used for impregnation.

(c) Water Vapor Absorption Capacities of the respective grades of material, when in equilibrium with the relative humidities indicated, shall be not less that the following:

Relative Humidity %	Water Vapor Absorption Grades A, C, E: % by weight	Grade B, D, F: % by weight
10	5.50	4.25
20	10.00	8.25
40	21.75	18.25
60	33.25	27.50
80	36.75	32.75
100	38.25	34.00

(d) Particle Strength of the respective grades of material, as determined by the test procedure described in section 6, shall be as follows:

	Grades A, C, E: %	Grades B, D, F: %
Through #30 sieve	1.50 max	1.50 max
Through #45 sieve	0.75 max	0.90 max

(e) Sieve Analyses of the respective grades of material, after 150-gram samples have been shaken for exactly 3 minutes in a sieve shaker equivalent to the W. S. Tyler Ro-Tap machine, shall be as follows; the sieve numbers refer to U. S. Standard sieves:

	Grades A,B: %	Grades C,D: %	Grades E,F: %
Retained on 0.263 inch opening	3.0 max		
Through 0.263-inch opening, retained on #6	35.0 min	2.0 max	
Through #6, retained on #8	17.0 min	5.0 max	
Through #8	4.0 max		
Through #6, retained on #12		55.0 min	
Through #12, retained on #18		19.0 min	
Through #18		3.5 max	
Through #20		0.5 max	
Retained on 1.050-inch opening			0.0
Through 1.050-inch opening retained on #45			96.0 min
Through #45			4.0 max

6. PARTICLE STRENGTH TEST: (a) Preparation of sample. -

(1) Samples as received shall first be allowed to come into equilibrium with air in the testing room by spreading the material in a thin layer on a flat dish or pan, and exposing it to the air until it shows no appreciable change in weight. Place 150 grams of sample on an 8-inch #16 sieve backed by a #18 sieve. Shake for 15-20 minutes until not over 0.05 gram passes through the #18 sieve in 1 minute of continuous sieving. The sieve shall be shaken with a rotary motion and, at the same time, gently tapped. The fraction through #16 and on #18 shall be used for test. U.S. Standard sieves shall be used throughout preparation and test.

(2) When preparing samples of grades A and B only, for this test, a suitable quantity shall be ground to produce the required fraction through #16 and on #18 sieve.

(b) Procedure. - Place 50 grams of the #16 - #18 material, prepared as in (a) (1) or (a) (2) on an 8-inch U.S. #30 sieve, which shall be backed by a #45 sieve and retaining pan. Place 5 copper disks (of the size and weight of one-cent pieces) on the #30 sieve, and shake with tapper in operation for 15 minutes in a standard Testing Sieve Shaker, such as a W. S. Tyler Ro-Tap or approved equivalent, directly connected to a motor with a speed of 1725 r.p.m. Weigh the sample remaining on the #30 sieve and the quantity which has passed through the #45 sieve. From these weights calculate the respective percentages.