WOOL FELT

GM863M GM866M GM869M GM872M GM6004M
GM864M GM867M GM870M GM873M GM6005M
GM865M GM868M GM871M GM875M GM6006M

1 SCOPE. These specifications (NOTE) cover wool felt of the various qualities and weights required for general automotive use. General information, recommended uses, etc not part of this specification are published in the Appendix as a guide in the selection of felts for particular uses.

NOTE: Conforms to SAE Standard SAE J314.

2 CHEMICAL AND MECHANICAL PROPERTIES. Material furnished to this specification shall conform to the chemical composition and mechanical properties shown in Table 1 for the GM number specified by the purchaser.

3 SUPPLEMENTARY REQUIREMENTS.

3.1 Color requirements of felt shall be as shown in Table 1 for the GM number specified by the purchaser.

3.2 Special sizing, adhesives and impregnating materials used to impart specific characteristics may change the physical properties (and the chemical composition) of standard materials. Where such characteristics are specified by the purchaser, limits, methods of tests, etc., shall be agreed upon by supplier and purchaser.

TABLE 1 - CHEMICAL AND MECHANICAL PROPERTIES

GM Material Number	Corresponding SAE Number	Chemical Properties					Mechanical Properties				Standard Width		Color
		Actual Wool Content[1]	Methyl Chloroform Soluble	Water Soluble	Combined Methyl Chloroform and Water	Ash	Tensile Strength Minimum		Splitting Resistance[2] Minimum				
									50 mm Width	2 in. Width			
		Min %	Max %	Max %	Max %	Max %	kPa	psi	N	lb	mm	in.	
GM 863-M	F-1	95	2.5	2.5	3.0	1.5	3450	500	142	32	1520	60	White
GM 872-M	F-2	90	2.5	2.5	4.0	2.0	3450	500	125	28	1520	60	Note 3
GM 864-M	F-3	85	2.5	3.0	4.5	2.5	2760	400	98	22	1520	60	Gray
GM 6004-M	F-5	95	2.5	2.5	3.0	2.0	2760	400	80	18	1520	60	White
GM 875-M	F-6	87	2.5	2.5	4.5	2.5	1900	275	71	16	1520 or 1830	60 or 72	Gray
GM 865-M	F-7	80	3.0	4.0	7.0	3.0	1730	250	53	12	1830	72	Gray
GM 866-M	F-10	95	2.5	2.5	3.0	2.5	1550	225	36	8	1830	72	White
GM 867-M	F-11	87	3.0	2.5	4.5	3.0	1380	200	27	6	1830	72	Gray
GM 6005-M	F-12	85	4.0	2.5	6.5	3.5	690	100	13	3	1830	72	Gray
GM 871-M	F-13	75	4.0	4.0	8.0	3.5	518	75	9	2	1830	72	Gray
GM 873-M	F-15	55	4.0	5.0	9.0	4.0	518	75	9	2	1830	72	Gray
GM 868-M	F-26	45	8.0	6.0	14.0	5.0	-	-	-	-	1830	72	Gray
GM 869-M	F-50	95	2.5	2.5	3.0	1.5	3450	500	-	-	1520 or 1830	60 or 72	White
GM 6006-M	F-51	92	2.5	2.5	4.5	2.5	2070	300	-	-	1520 or 1830	60 or 72	Gray
GM 870-M	F-55	75	4.0	4.0	8.0	3.0	1380	200	-	-	1520 or 1830	60 or 72	Gray or Black

[1] The actual wool content indicates the percent of wool by chemical analysis and is exclusive of traces of other fibers and impurities present in the wool used in fabricating the several grades of felt. For example, GM 863-M, fabricated from 100 percent wool might contain traces of cotton and other fibers, residual wool fats, and oils or soaps used in processing which may reduce the actual wool fiber content on analysis to a minimum of 95 percent.
[2] Not applicable to felts under 4.8 mm (3/16 in.) nominal thickness; for these, breaking strength only is recommended as an indicative test.
[3] Any color except gray or black.

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3.3 When felt is specified for use as ball and roller bearing oil retainers, it shall be sheared on both sides to remove surface fuzz or flock.

4 TEST METHODS. All tests shall be made in accordance with ASTM D461, Standard Methods of Testing Wool Felt. To detect the presence of and identify fibers other than wool, such as animal fibers, vegetable and synthetic fibers, felt shall be tested as described in ASTM D276, Identification of Fibers in Textiles.

5 FORM, SIZE AND QUALITY. Thickness and mass requirements of felt shall be as shown in Table 2 for the GM number specified by the purchaser.

5.1 The thickness tolerances shown in Table 2 vary, depending on the density, thickness and grade or quality of the felt and are expressed as the permissible minimum and maximum thickness for each grade and thickness rather than as a percentage variation from the nominal thickness.

5.2 Felt shall be furnished in standard width shown in Table 1 unless otherwise specified.

5.3 All density or mass determinations shall be based on the thickness of the felt as ordered and no correction shall be made for variations in the thickness of the felt as received. For example, GM863M, back-check felt, in 12.7 mm thickness may, according to Table 2, vary in mass from 4.12 to 4.55 kg/m^2; while the thickness may according to Table 2, vary from 12.22 to 13.18 mm. The combination of mass and thickness tolerances control the degree of felting or matting of the fibers; in other words, the hardness or the density, and conversely, the resiliency of the finished felt. Therefore, to maintain the normal density for each grade or type of felt, no correction in mass is permitted to compensate for a variation from the nominal thickness as specified.

NOTE: The mass or density requirements shown in Table 2 for the number and thickness of felt specified are expressed as the mass in kilogram per square metre for each commercial thickness; the established standard unit of weight employed in the felt industry. Density may also be expressed as the mass in grams per cubic centimeter, specific gravity as compared with water, percentage specific gravity (specific gravity X 100), or as surface density in kilograms per square metre (pounds per square yard) of nominal 25.4 mm thickness. The mass or density of cut parts may be expressed as the mass per one hundred parts based on the nominal mass of the felt in the thickness specified.

6 INITIAL SOURCE APPROVAL. No shipment shall be made by any supplier until representative initial production samples have been approved by engineering as meeting the requirements of this specification.

TABLE 2 - THICKNESS AND MASS

GM Material Number	Corresponding SAE Number	METRIC (SI) UNITS				CUSTOMARY UNITS			
		Thickness, mm		Mass, kg/m^2		Thickness, in.		Mass (weight), lb/yd^2	
		Nominal	Limits	Nominal	Limits	Nominal	Limits	Nominal	Limits
GM 863-M GM 872-M	F-1[1] F-2	3.1	2.87-3.48	1.1	1.03-1.14	1/8	.113-.137	2.0	1.90-2.10
		4.8	4.45-5.11	1.6	1.54-1.71	3/16	.175-.201	3.0	2.85-3.15
		6.4	5.99-6.71	2.2	2.06-2.28	1/4	.236-.264	4.0	3.80-4.20
		8.0	7.57-8.33	2.7	2.57-2.85	5/16	.298-.328	5.0	4.75-5.25
		9.5	9.12-9.93	3.3	3.09-3.41	3/8	.359-.391	6.0	5.70-6.30
		12.7	12.22-13.18	4.3	4.12-4.55	1/2	.481-.519	8.0	7.60-8.40
		15.9	15.32-16.43	5.4	5.15-5.69	5/8	.603-.647	10.0	9.50-10.50
		19.1	18.42-19.69	6.5	6.18-6.83	3/4	.725-.775	12.0	11.40-12.60
		22.2	21.51-22.94	7.6	7.21-7.97	7/8	.847-.903	14.0	13.30-14.70
		25.4	24.61-26.19	8.7	8.24-9.11	1	.969-1.031	16.0	15.20-16.80
GM 864-M (Cont)	F-3[2]	3.1	2.87-3.48	1.1	0.98-1.14	1/8	.113-.137	2.0	1.80-2.10
		4.8	4.45-5.11	1.6	1.47-1.71	3/16	.175-.201	2.9	2.71-3.15
		6.4	5.99-6.71	2.1	1.96-2.27	1/4	.236-.264	3.9	3.61-4.19
		8.0	7.57-8.33	2.6	2.44-2.84	5/16	.298-.328	4.9	4.50-5.24

Notes listed at end of table.

(Table 2 - Continued)

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