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# F-13 Specification and Uses

These data were obtained by ASTM D-461 Test Methods, ASTM D-2475 Standards, and NTA Wool Felt Specifications.



Commercial Standard Grade	9R4
SAE Number	F-13
NTA Number	18R3
<b>GENERAL PROPERTIES</b>	
Wool Content (fiber basis)	min. 75%
Density (1")	8.48 lbs/sq yd
Standard Thickness Range	1/8" to 1"
Standard Width	72"
Color	Gray
<b>PHYSICAL PROPERTIES</b>	
Specific Gravity	18%
Therm. Cond. (70F)	0.24 btu / hr / sq ft / °F / in.
Thermal Expansion	0
Air Perm (1/16")	75-150 cfm/sq ft/0.5" H2O
Liquid Absorption by volume	>350% by weight (1.0 sp gr) 88
Capillarity (wicking height, 575 SSU, 70F)	2.50
Coefficient of Friction (1)	0.37
** Vibration Absorption (2) static load bearing cap/unit area Dynamic stress endurance	Low Low
Noise Reduction Coef (1")	0.64
<b>MECHANICAL PROPERTIES</b>	
Tensile Strength (min)	75 psi
Elongation (100 psi)	37 %
Mullen Bursting Strength (1/8")	50 psi
Split Resistance (min)	2 lb/2" width
Hardness Range	15-25 Shore A
Compressibility (10% defl)	3 psi
Recovery (within 1 min after 10% defl)	99%
Abrasion Resistance (3)	Fair
<b>CHEMICAL AND ENVIRONMENTAL PROPERTIES</b>	
Effect of Sunlight and Oxidation	None
Solvent Resistance and Stability in Oil	Excellent
Acid Resistance, dilute Concentrated	Fair Fair
Alkali Resistance, dilute Concentrated	Fair Low
Temperature Range	-80 to +200°F
<b>TYPICAL USES</b>	
Grease and oil retention, protective lining and insulation for freight cars, trucks, dunnage, uses similar to 9R2 and 9R3 where less durability and lower grade felt is acceptable.	



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## F-13 Density and Thickness



S.A.E. Specification Number	F-13
A.S.T.M. Federal and Felt Association Type and Grade Number	9R4
Density Percent Specific Gravity	18.1
Actual (1) Wool Content (Min.) Percent	75
Carbon Tetrachloride Soluble (Max.) Percent	4.0
Water Soluble (Max.) Percent	4.0
Carbon Tetrachloride & Water Soluble (Max.) Percent	8.0
Ash (Max.) Percent	3.5
Tensile Strength (Min.) PSI	75
Splitting Resistance (Min.) Lbs. Per 2" Width	2
Trade Designation	Firm Pad
Color	Gray
Standard Width Inches	72



THICKNESS		WEIGHT	
Nominal (inch)	Limits (inch)	Nominal (lbs/sq. yd.)	Limits (lbs/sq. yd.)
1/8	0.105 - 0.145	1.06	0.98 - 1.14
3/16	0.165 - 0.211	1.59	1.47 - 1.71
1/4	0.224 - 0.276	2.12	1.96 - 2.28
5/16	0.284 - 0.342	2.65	2.45 - 2.85
3/8	0.343 - 0.407	3.18	2.94 - 3.42
1/2	0.462 - 0.538	4.24	3.92 - 4.56
5/8	0.581 - 0.669	5.30	4.90 - 5.70
3/4	0.700 - 0.800	6.36	5.88 - 6.84
7/8	0.819 - 0.931	7.42	6.86 - 7.98
1	0.938 - 1.062	8.48	7.84 - 9.12