

The hardness of a fulled wool felt (fulled felt) is a measure of its resistance to pressure and deformation. This increases with bulk density; however, a comparison is only possible among felts of the same quality. The bulk density itself is determined in accordance with DIN 53855, Sheet 1.

As the bulk density of a felt can be determined more easily and accurately than its hardness, classification based on bulk densities is used instead of classification based on hardnesses when identifying various hardnesses.

Hardness		Bulk density [kg/dm <sup>3</sup> ]	Permitted deviation in [kg/dm <sup>3</sup> ] for felt thicknesses <sup>1)</sup>			
Group	Designation		< 5 mm	≥ 5 mm	≥ 8 mm	≥ 12 mm
Soft	W2	0.10	± 0.026	± 0.026	± 0.024	± 0.020
	W3	0.12	± 0.026	± 0.026	± 0.024	± 0.020
	W4	0.14	± 0.026	± 0.026	± 0.025	± 0.021
	W5	0.16	± 0.026	± 0.026	± 0.025	± 0.021
Medium	M1	0.18	± 0.027	± 0.027	± 0.026	± 0.021
	M2	0.20	± 0.029	± 0.028	± 0.027	± 0.023
	M3	0.22	± 0.031	± 0.029	± 0.028	± 0.023
	M4	0.25	± 0.034	± 0.032	± 0.030	± 0.024
	M5	0.28	± 0.036	± 0.034	± 0.032	± 0.025
	M6	0.30	± 0.037	± 0.035	± 0.032	± 0.025
Firm	F1	0.32	± 0.037	± 0.035	± 0.032	± 0.025
	F2	0.36	± 0.040	± 0.037	± 0.034	± 0.026
	F3	0.40	± 0.044	± 0.039	± 0.035	± 0.027
	F4	0.44	± 0.047	± 0.042	± 0.035	± 0.028
	F5	0.48	± 0.050	± 0.043	± 0.036	± 0.029
Hard	H1	0.52	± 0.052	± 0.045	± 0.037	± 0.030
	H2	0.56	± 0.056	± 0.047	± 0.039	± 0.031
	H3	0.60	± 0.060	± 0.049	± 0.041	± 0.032
	H4	0.64	± 0.064	± 0.052	± 0.043	± 0.033
	H5	0.68	± 0.068	± 0.055	± 0.045	± 0.034

<sup>1)</sup> The permitted deviations listed in the table apply to felt pieces, disks, sheets and block felts. In the case of cut dimensions for felt goods/felt products, a permitted deviation of approx. 10% or else DIN 2768c applies. Additional hardness ranges and material tolerances can be found in DIN 61206.

Designation of the hardness of felts, 'medium' hardness group and bulk density of 0.25 kg/dm<sup>3</sup> in accordance with DIN:

**Felt hardness DIN 61200 – M4**

## Felt, naturally good!