

EMC: Relative Humidity and Wood Moisture Content

From the US Dept. of Agriculture Wood Handbook, "Wood as an Engineering Material"
Humidity recommendations range from **30% – 50%** in a building.

Temperature recommendations range from **60°F – 80°F** in a building.

If ambient conditions stay within these recommendations, the moisture content of wood stays between 6% and 9% and the amount of expansion and contraction of wood is limited.

Examples:

(1) Lumber at 7.7% will not change its moisture content if kept at 40% relative humidity and a temperature of 70°F.

(2) Conditions in a warehouse are 60% relative humidity at 50°F. If dry wood is left in the warehouse for an extended period of time, the wood will pick up moisture until a moisture content of 11.2% is reached, regardless of wood species and initial moisture content.

EMC Table

T	Relative Humidity																			
	°C °F	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95
-1	30	1.4	2.6	3.7	4.6	5.5	6.3	7.1	7.8	8.7	9.5	10.4	11.3	12.4	13.5	14.9	16.5	18.5	21.0	24.3
4	40	1.4	2.6	3.7	4.6	5.5	6.3	7.1	7.8	8.7	9.5	10.4	11.3	12.4	13.5	14.9	16.5	18.5	21.0	24.3
10	50	1.4	2.6	3.6	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.3	11.2	12.3	13.4	14.8	16.4	18.4	20.9	24.3
16	60	1.3	2.5	3.6	4.6	5.4	6.2	7.0	7.8	8.6	9.4	10.2	11.1	12.1	13.3	14.6	16.2	18.2	20.7	24.1
21	70	1.3	2.5	3.5	4.5	5.4	6.2	6.9	7.7	8.5	9.2	10.1	11.0	12.0	13.1	14.4	16.0	17.9	20.5	23.9
27	80	1.3	2.4	3.5	4.4	5.3	6.1	6.8	7.6	8.3	9.1	9.6	10.8	11.7	12.9	14.2	15.7	17.7	20.2	23.6
32	90	1.2	2.3	3.4	4.3	5.1	5.9	6.7	7.4	8.1	8.9	9.7	10.5	11.5	12.6	13.9	15.4	17.3	19.8	23.3
38	100	1.2	2.3	3.3	4.2	5.0	5.8	6.5	7.2	7.9	8.7	9.5	10.3	11.2	12.3	13.6	15.1	17.0	19.5	22.9
43	110	1.1	2.2	3.2	4.0	4.9	5.6	6.3	7.0	7.7	8.5	9.2	10.0	11.0	12.0	13.2	14.7	16.6	19.1	22.5
49	120	1.1	2.1	3.0	3.9	4.7	5.4	6.1	6.8	7.5	8.2	8.9	9.8	10.7	11.7	12.9	14.4	16.2	18.6	22.0

The values shown in the table above represent moisture content of wood in %

