

diffusion of the heat from the basement. As indicated in the footnote of Table 12, this coefficient is recommended for use whenever it is desirable to make allowance for the small basement floor heat loss, as may be the case with heated basements. Using this coefficient (0.10) the total heat loss per square foot of floor area will amount to only 2.0 Btu per square foot per hour, based on a temperature difference of 20 F between the air in the basement above the floor and the minimum soil temperature below the basement.

The same coefficient (0.10) may be used for calculating the heat loss through basement walls below grade but a somewhat higher temperature

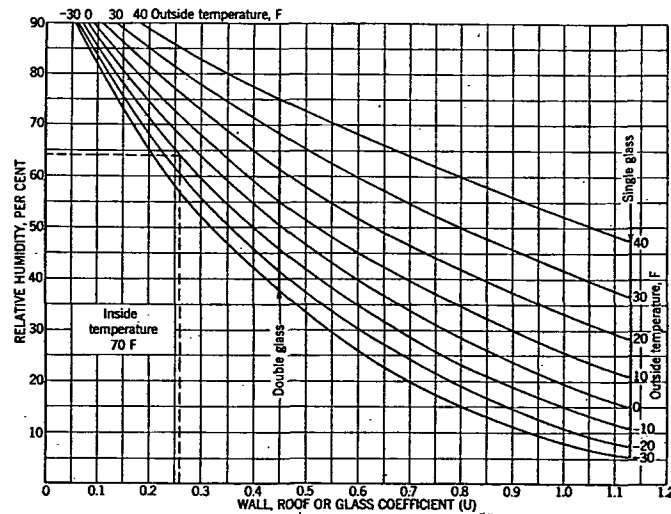


FIG. 2. PERMISSIBLE RELATIVE HUMIDITIES FOR VARIOUS TRANSMISSION COEFFICIENTS

difference should be used for reasons explained in Chapter 6. Thus the total heat loss through basement walls will be greater than that through floors. According to present available data the unit wall heat loss will be approximately twice the floor heat loss under average conditions in northern latitudes or about 4.0 Btu per hour per square foot (total, not per degree temperature difference) between the basement air and the ground at a level corresponding to the mid-height of the basement wall. Until further data are available, this value may be used with reasonable accuracy for calculating heat losses through basement walls of heated basements.

### CONDENSATION IN BUILDINGS

The water vapor in buildings will be transmitted through many types of building construction if there is a difference in the vapor pressures on the two sides of the structure<sup>9</sup> (see Table 11, Chapter 7). Such water

<sup>9</sup>Methods of Moisture Control and Their Application to Building Construction, by F. B. Rowley, A. B. Algren and C. E. Lund. (University of Minnesota Engineering Experiment Station Bulletin No. 17).

TABLE 10. COEFFICIENTS OF TRANSMISSION (U) OF FRAME CONSTRUCTION CEILINGS AND FLOORS

Coefficients are expressed in Btu per hour per square foot per degree Fahrenheit difference in temperature between the air on the two sides and are based on still air (no wind) conditions on both sides.

and are based on still air (no wind) conditions on both sides.

TYPE OF CEILING

No Ceiling

Metal Lath and Plaster<sup>a</sup>

Wood Lath and Plaster<sup>a</sup>

Gypsum Lath (1/4 in.) Plastered<sup>a</sup>

Gypsum Lath (1/2 in.) Plastered<sup>a</sup>

Plywood (1/4 in.) Plain or Decorated

Insulating Board (1/4 in.) Plain or Decorated

Insulating Board Lath (1/4 in.) Plastered<sup>a</sup>

Insulating Board Lath (1/2 in.) Plastered<sup>a</sup>

Insulating Board Lath (1 in.) Plastered<sup>a</sup>

WITH FLOORING<sup>a</sup>  
(On Top of Ceiling Joists)

INSULATION BETWEEN, OR ON TOP OF, JOISTS  
(No Flooring Above)

Insulating Board on Top of Joists

Blanket or Bat Insulation Between Joists

Vermiculite Insulation Between Joists

Mineral Wool Insulation Between Joists

Single Wood Floor<sup>b</sup>

Double Wood Floor<sup>c</sup>

N

1

2

3

4

5

6

7

8

9

0.34

0.45

0.30

0.25

0.24

0.24

0.24

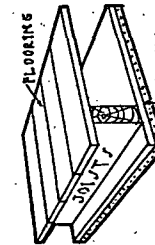
0.28

0.28

0.28

0.28

0.28



<sup>a</sup>Coefficients corrected for framing.

<sup>b</sup>1/4 in. yellow pine or fir.

<sup>c</sup>1/4 in. pine or fir sub-flooring plus 1/4 in. hardwood finish flooring.

<sup>d</sup>Plaster assumed 1/2 in. thick.

<sup>e</sup>Plaster assumed 1/2 in. thick.

<sup>f</sup>Based on insulation in contact with ceiling and consequently no air space between.

<sup>g</sup>For coefficients for constructions in Columns M and N (except No. 1) with insulation between joists, refer to Table 5. Example: The coefficient for No. 3-1 of Table 10 is 0.24. With 2 in. blanket insulation between joists, the coefficient will be 0.094. (See Table 6.) (Column D of Table 6 is applicable only for 3/4 in. joists.)

<sup>h</sup>For 1/4 in. insulating board sheathing applied to the under side of the joists, the coefficient for single wood floor (Column M) is 0.18 and for double wood floor (Column N) is 0.16. For coefficients with insulation between joists, see Table 5.