2. Draw line *2* vertically downward from the intersection located as per paragraph 1.

3. Locate on scale *D* the temperature difference of 95 deg. between the ceiling temperature of 85 deg. and the lowest outside temperature of −10 deg., and draw a line horizontally until it intersects with line *2*.

4. From the point of intersection of lines *2* and *3*, draw a line to the point *P*.

5. From the intersection of lines *4* and *AB*, draw a line horizontally until it intersects with the diagonal line corresponding to a coefficient of transmission of the roof of 0.485, located on scale *F*.

6. From the intersection found as per paragraph 5, draw line *6* vertically downward.

7. Locate the conductivity of 0.30 B.t.u. per hour per square foot per degree fahrenheit of the insulation on scale *G* and draw a line to point *Q*.

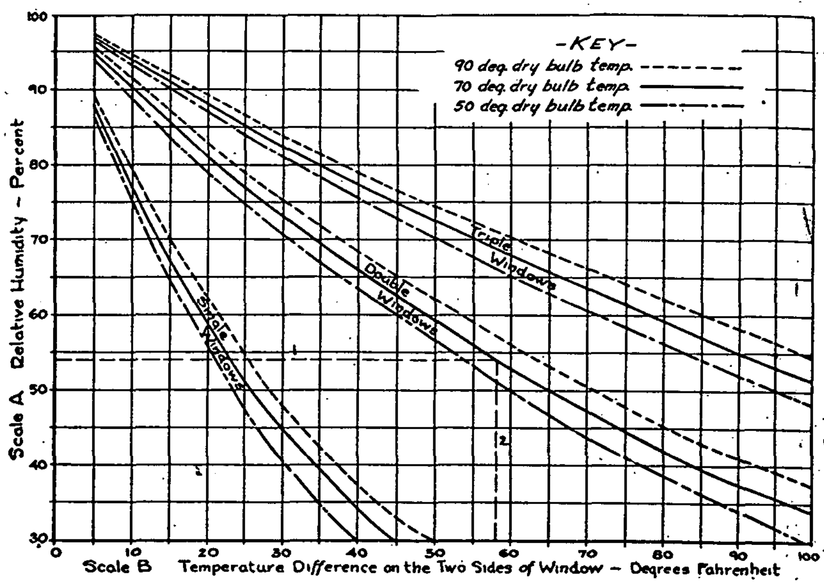


FIG. 12. SATURATION CURVES SHOWING RELATIONSHIP BETWEEN RELATIVE HUMIDITY AND TEMPERATURE DIFFERENCE FOR SINGLE, DOUBLE AND TRIPLE WINDOWS

8. From the intersection of lines *6* and *7*, draw a line horizontally to scale *H*, on which the thickness of insulation of this conductivity is indicated, which is 1.3 in. The nearest commercial thickness above 1.3 in. would, of course, be selected.

### Condensation on Windows

Fundamentally, the problem of preventing condensation on windows is no different than that of preventing condensation on walls and windows. However, it is not economical to decrease the inside surface resistance by blowing air against the window, as this increases the overall transmission. Hence, if it is necessary that a high relative humidity be maintained, the only practical method by which condensation can be prevented or reduced on windows is to increase the overall resistance by using two or more air spaces.





### Window Condensation Chart

The chart (Fig. 12) is intended to be used for determining the number of panes of glass required to prevent condensation for certain temperature and humidity conditions, or for determining the outside temperature at which condensation will take place on the inside surface of single, double or triple glass for the humidity and temperature conditions involved.

To determine the type of glass required to prevent condensation, locate the relative humidity on scale *A*; and then locate the difference in temperature between the air on the two sides of the glass on scale *B*. The curve corresponding to the inside temperature conditions immediately above the intersection of the lines drawn from these two scales indicates the type of glass required. For example: If the relative humidity is 60 per cent (scale *A*) and the inside and outside temperatures are 70 deg. and 0 deg. respectively, the temperature difference (scale *B*) will be 70 deg. and triple-pane glass will be required to prevent condensation, as indicated by the curve immediately above the intersection of the lines drawn from scales *A* and *B*.

Because the transmission of even triple glass, with two air spaces, is relatively high as compared with a well-insulated wall or roof, and consequently the resistance small, the relative humidity that can exist in a building without condensation taking place on the glass is low. For this reason, and also because window condensation in many cases is not objectionable, no effort is made to prevent the condensation, the only precaution taken being to provide gutters under the windows to drain the water.

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