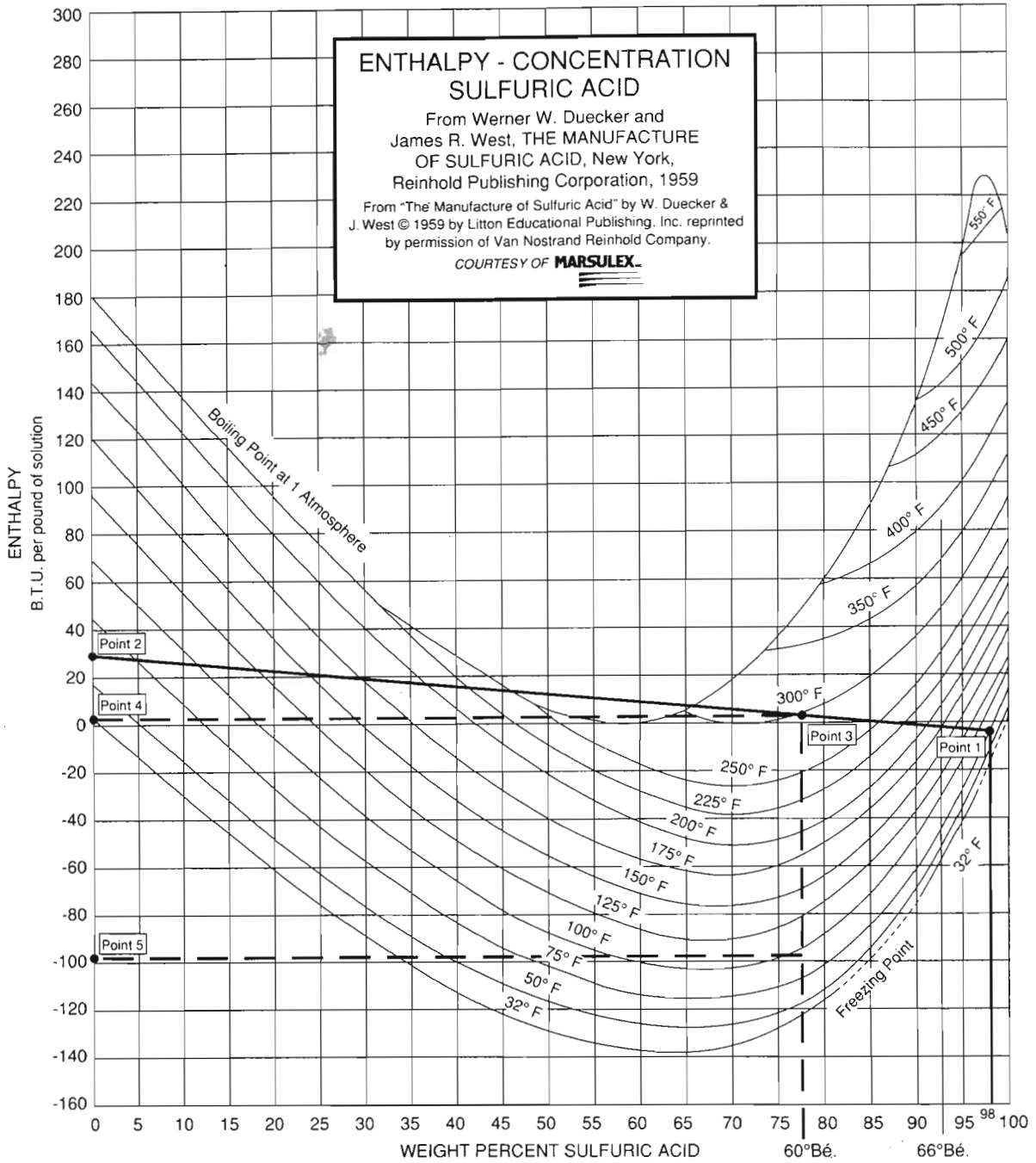


SULFURIC ACID ENTHALPY



EXAMPLE. Solid Bold Lines: 98% acid at 75°F. will be diluted with water at 60°F. to make 60° Bé. acid. What will be the temperature of the 60° Bé. acid?

SOLUTION: Draw a line between Point 1 (the intersection of 98% and 75°F.) and Point 2 (the intersection of 0% (water) and 60° F.) Point 3 (at the intersection of this line and the final strength 60° Bé.) gives the resulting temperature, 298°F.

EXAMPLE. Dotted Bold Lines: How much heat must be removed to cool the 60° Bé. acid to 90°F.?

SOLUTION: The enthalpy of 60° Bé acid at 300°F. is 4 B.T.U. per pound (point 4), and the enthalpy of 60° Bé. acid at 90°F. is -97 B.T.U. per pound (point 5). Subtract algebraically the enthalpy at 90°F. from the enthalpy at 300°F. (4 - (-97) = 101). Therefore, 101 B.T.U. per pound must be removed to cool the acid to 90°F.

Practice Exercise: What is the final temperature if 66° Bé. acid at 100°F. is mixed with enough 50% acid at 95°F. to yield a 68% acid and how much heat must be removed to cool it to 75°F.?

ANSWER: 175°F and 51 B.T.U. per pound