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Physical and chemical properties of magnesia-base pulping solutions

Scope

The Specific Gravity, Viscosity (cp), Surface Tension, Vapor Pressure, and Monosulfite Solubility are presented for aqueous magnesium based sulfite solutions, including both bisulfite and monosulfite solutions as well as mixtures of the two. The ranges of the graphs vary with the contents, generally from properties of pure water to those of concentrated solutions of magnesia bisulfite and monosulfite liquors, and temperatures from $\approx 20^{\circ}\text{C}$ to $\approx 100^{\circ}\text{C}$.

Safety precautions

Sulfur dioxide is a toxic gas that can cause suffocation and death. Gas masks and other safety devices, as prescribed by industrial and governmental agencies, should be available at all times when dealing with SO_2 and its various compounds. Various chemicals that are used for testing SO_2 may be toxic and should not be inhaled nor ingested.

Content

The various properties of the magnesia sulfite solutions [MgSO_3 and $\text{Mg}(\text{HSO}_3)_2$] are presented in a series of seven graphs.

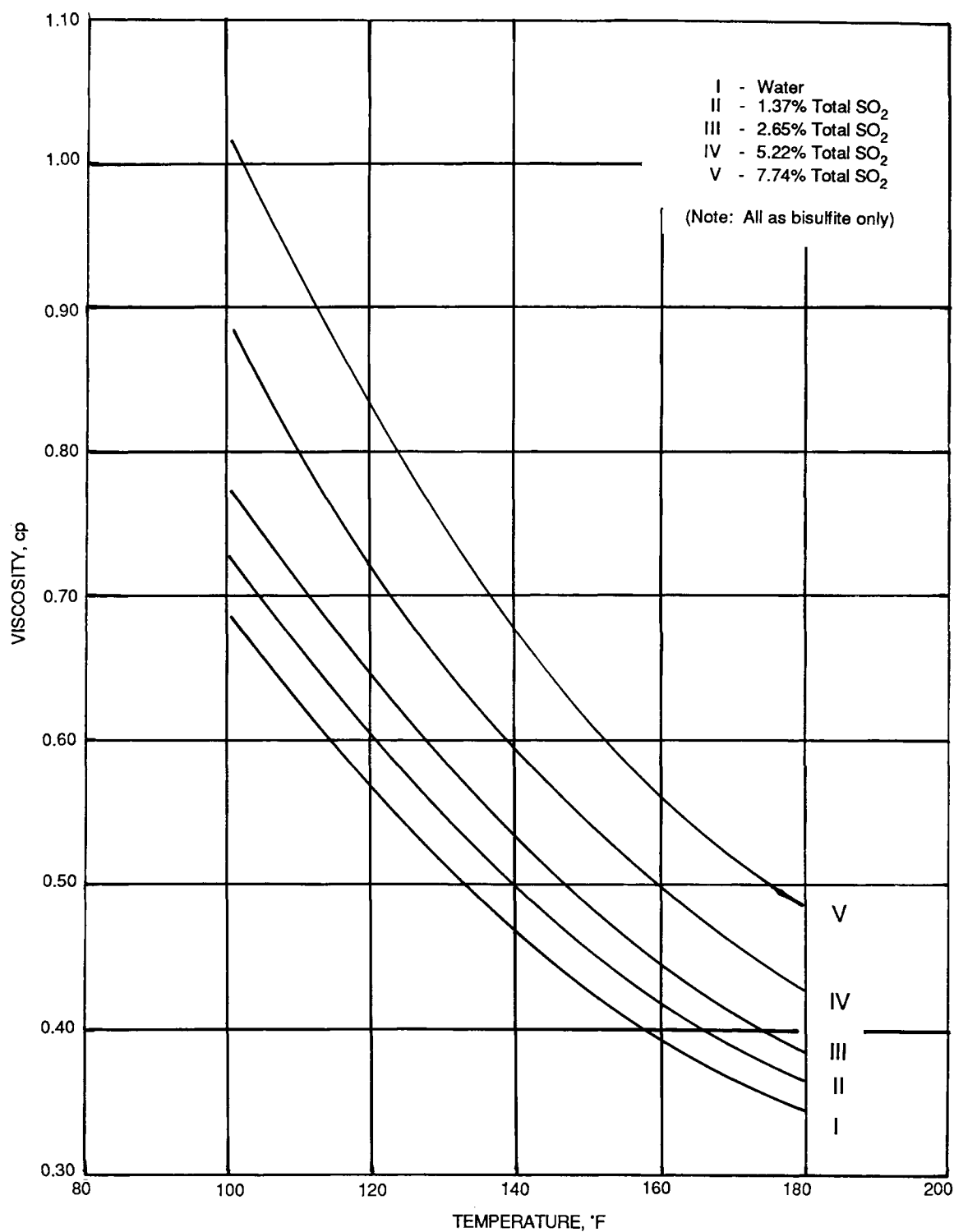


Fig. 2. Absolute viscosity of magnesium bisulfite solutions. To convert °F to °C = $\frac{(^{\circ}\text{F}-32)}{1.8}$

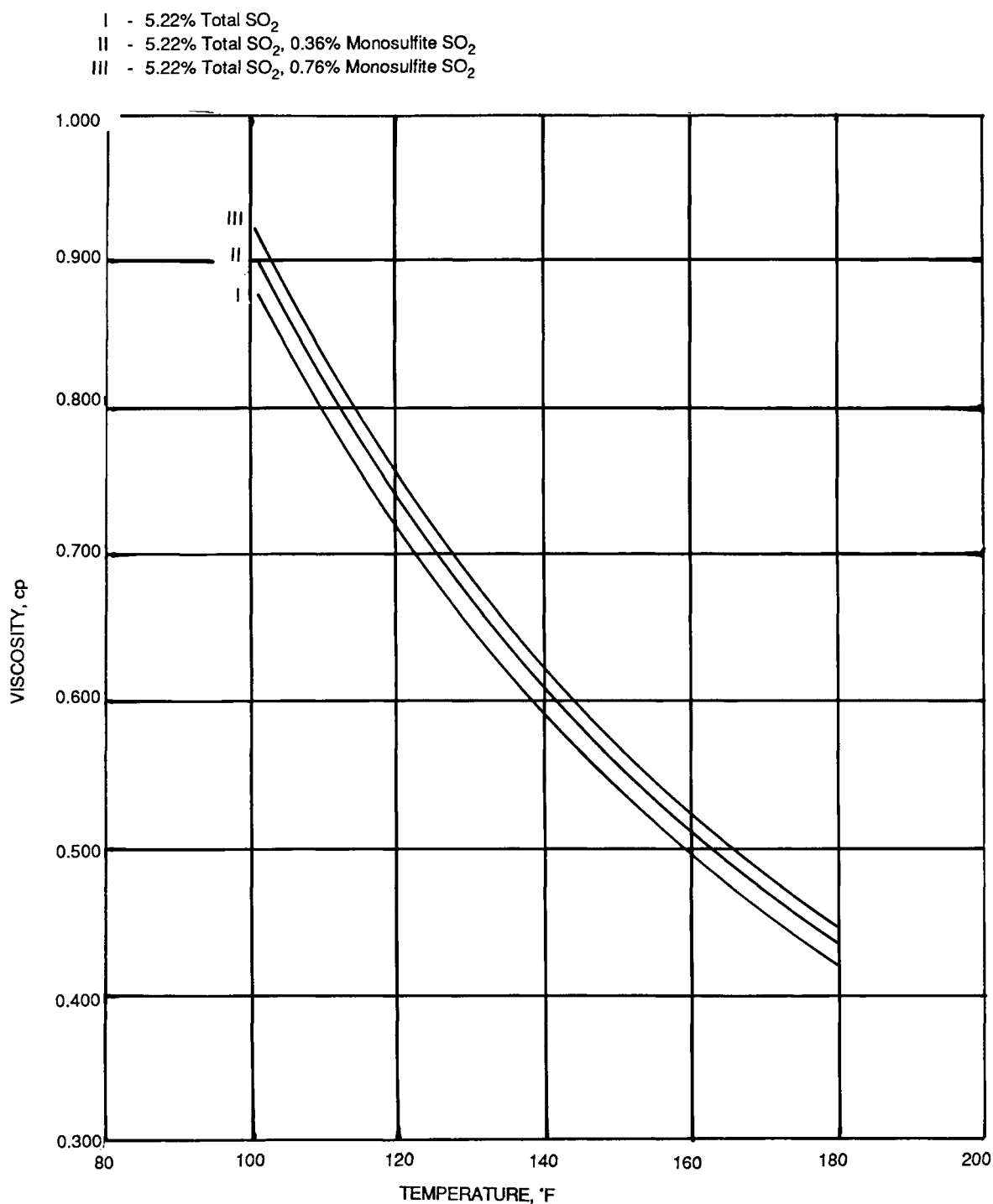


Fig. 3. Absolute viscosity of $\text{Mg}(\text{HSO}_3)_2$ solutions with MgSO_3 present. To convert °F to °C = $\frac{(\text{°F}-32)}{1.8}$