

Department of Materials and Metallurgical Engineering

South Dakota School of Mines and Technology

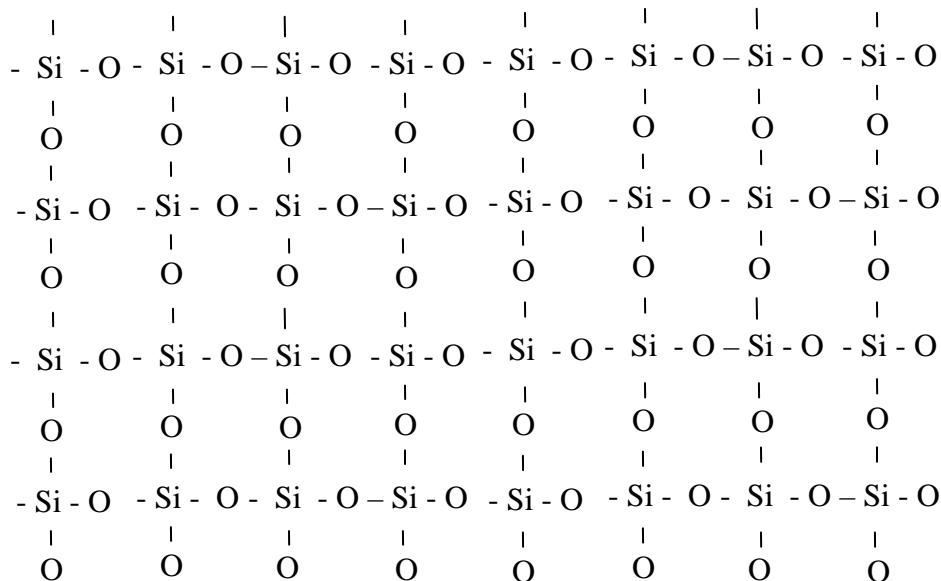
Slag Information

- Acid slags require acid refractories
- Basic slags require basic refractories
- Use basic slags to remove acidic impurities. This means P in steelmaking.
- Use acidic slags to remove basic impurities. Not so important since the driving force (Gibbs energy) for oxidation of basic components is typically very favorable.
- Acid slags are viscous because of the silica network.
- Basic slags are fluid because they are ionic.
- Basic flux added to an acid slag snips the silica network into smaller pieces thereby making it more fluid.
- Acid flux added to a basic slag lowers its melting point to workable temperatures.

In order of Decreasing Basicity – Less O²⁻ (Decreasing ionic bond fraction)

- Basic components: Na₂O, BaO, SrO, CaO
- Neutral components: MnO, FeO, ZnO, MgO, BeO, Cr₂O₃, Fe₂O₃, Al₂O₃, TiO₃
- Acidic components: SiO₂, P₂O₅

The Silica Network:



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The Silica Network Fluxed with CaO:

