

A dry gas sample analysis is provided in the accompanying Excel file, which includes the composition data. Based on the given information, your task is to calculate the compressibility factor (Z) of the natural gas at **5709 psig** and **293°F**. Follow the outlined steps to complete the project:

Step-by-Step Instructions:

1. **Data Import:** Import the composition data from the provided Excel file.
2. **C7+ Critical Properties:** Estimate the critical properties of the C7+ fraction using equations [B-12, B-13, and B-14].
3. **Pseudo-Critical Property Correction:** Adjust the pseudo-critical properties of the mixture using the Wichert-Aziz method [B-17].
4. **Mixing Rule Application:** Perform mixing rule calculations to determine the parameters required for the Equation of State (EOS).
5. **Compressibility Factor Calculation:** Calculate the compressibility factor (Z) of the natural gas using two EOS approaches:
 - Peng-Robinson (PR) Equation of State
 - Soave-Redlich-Kwong (SRK) Equation of State
6. **Result Comparison:** Compare the calculated results with values obtained from the Standing-Katz chart method, as formulated by Dranchuk and Abou-Kassem [B-10, B-11].