

Adjusting Flow Reading to Standard Flow Rate (SCFM)

To obtain the standard volume flow rate if pressure and temperature are other than 29.92 in.Hg. and 70°F, respectively, multiply the leakage rate flow reading (Q_{reading}) by the temperature and pressure correction factors as shown below:

$$Q_{\text{scfm}} = Q_{\text{reading}} \times C_T \times C_P, \text{ where}$$

$$Q_{\text{scfm}} = \text{standard cfm (cfm at 70°F and 29.92 in. Hg.)},$$

$$Q_{\text{reading}} = Q_{\text{acfm}} = \text{leakage rate from Oriflow chart or equation},$$

$$C_T = \text{temperature correction factor} = \frac{529.67}{459.67 + ^\circ F} \times \frac{181.87}{\mu_{\text{air}}}$$

$$C_P = \text{pressure correction factor} = \frac{\text{Actual Pressure}}{29.92 \text{ in. Hg.}}$$

$$\mu_{\text{air}} = \frac{14.58 \left(\frac{459.67 + ^\circ F}{1.8} \right)^{3/2}}{110.4 + \left(\frac{459.67 + ^\circ F}{1.8} \right)}$$

Note the Q_{reading} is also referred to as the actual flow rate or Q_{acfm} , since it is based on the actual ambient temperature and pressure where the test was done. Therefore, it is adjusted to standard conditions or what we normally encounter (or close to it), which is defined as a temperature of 70°F and 29.92 in.Hg. pressure.