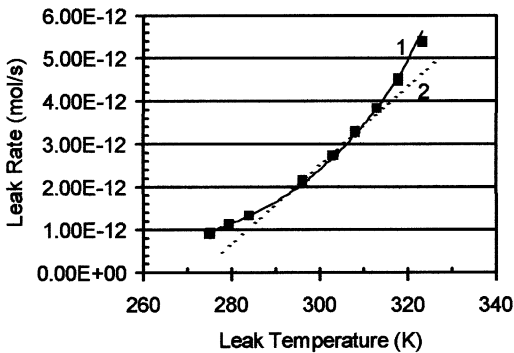


**TABLE 7.1** Some characteristics of leak element types.

Leak Element	Gases	Linear Temperature Coefficient, %/K	Flow Rate Range, mol/s
<b>Permeation</b>			
Glass	Helium	2–7	$10^{-15}$ – $10^{-9}$
Paladium	Hydrogen	3–7	
Plastic	Water	10–20	$10^{-13}$ – $10^{-8}$
	SO <sub>2</sub> , NO <sub>2</sub>		
<b>Physical</b>			
Capillary	Any <sup>A</sup>	<0.5	$10^{-13}$ – $10^{-6}$
Crimped tube		<0.3	
Sintered			
Orifice		<0.3	

<sup>A</sup>Must not coat or react with the leak element.



**FIG. 7.2** Temperature dependence of leakage rate from a helium permeation leak. Line 1—exponential fit to data. Line 2—linear least squares fit from 283 to 308 K. Note: °C = K – 273.15.

**TABLE 7.2** Temperature coefficients (measured by the National Institute of Standards and Technology) and corresponding glass types for helium permeation leaks.

Temperature Coefficient, K	Linear Temperature Coefficient, %/°C	Probable Glass Type
≤2500	3.5	Borosilicate
2700	3.7	Fused Silica
3000	4.1	Pyrex <sup>®</sup> 7740
3600	5.0	Corning <sup>®</sup> 7052