

Temperature Dependence of ^4He Diffusion through Common Epoxies

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^4He gas at room temperature is known to leak through the epoxies commonly used in various low temperature apparatus, including sample cells, feed-throughs, etc. The helium flux typically decreases with decreasing temperature, but we are not aware of a previous study of the temperature dependence of this decrease. We have therefore measured the flux of ^4He that passes through thin (≈ 1 mm thick) sections of as-cast clear Stycast 1266, black Stycast 2850FT and blue TRA-BOND epoxies as a function of temperature in the range $77\text{K} < T < 300\text{K}$. We analyze the data to create normalized (to constant sample thickness) data for comparison. We will report these temperature dependencies, which show significant differences among the epoxies studied. ¹.

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