

Wipe Test Calibration Work Sheet

1. Standard Source for Calibration

Isotope: _____

Amount (microCuries): _____ (Note: Use less than 0.1 microCuries as standard)

2. Convert to DPM by multiplying Amount in microCuries by 2.22×10^6 dpm/uCi:

$$\frac{\text{_____}}{\text{amount uCi}} \times 2.22 \times 10^6 \text{ dpm/uCi} = \frac{\text{_____}}{\text{amount dpm}} \text{ dpm}$$

Place standard solution in a scintillation vial with the liquid scintillation fluid used for your wipe tests and cap the vial. Run the standard with your wipe test vials and a background vial. Obtain results for the standard vial and background vial in counts per minute (cpm).

3. Calculate the net count rate by subtracting the background (bkg) results from the standard or gross results:

$$\text{Net Count Rate (cpm)} = \text{Gross Count Rate (cpm)} - \text{bkg (cpm)}$$

$$= \frac{\text{_____}}{\text{gross cpm}} - \frac{\text{_____}}{\text{bkg cpm}} = \frac{\text{_____}}{\text{net cpm}} \text{ cpm}$$

4. Calculate the efficiency by dividing the net count rate (cpm) by the activity of the standard in dpm:

$$\text{Efficiency} = \text{Net count rate (cpm)} / \text{Activity (dpm)}$$

$$= \frac{\text{_____}}{\text{net cpm}} / \frac{\text{_____}}{\text{activity}} = \frac{\text{_____}}{\text{efficiency}} \text{ cpm/dpm}$$

5. Use this to calculate activity for wipe tests in dpm by subtracting the background results from the wipe test results and dividing that by the efficiency in cpm/dpm:

$$\text{Wipe Test Activity (dpm)} = \{ \text{Wipe Test Results (cpm)} - \text{bkg (cpm)} \} / \text{Efficiency}$$

$$= \{ \frac{\text{_____}}{\text{cpm}} - \frac{\text{_____}}{\text{bkg cpm}} \} / \frac{\text{_____}}{\text{efficiency}} = \frac{\text{_____}}{\text{activity}} \text{ dpm}$$