

ALERT beam background simulation with gemc

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Material and geometry - 1

Assume temperature = 300 K.

- He gas at 1 atm: 0.0001642 g/cm³
- He gas at 3 atm: 0.000487 g/cm³
- Al foil: 15 μ m; 2.7 g/cm³
- Kapton foil: 55 μ m; 1.42 g/cm³; (C₁₂ H₁₀ O₅ N₂, mass fraction: C - 0.69, H - 0.026, O - 0.21, N - 0.073)
- DC gas: 0.000487 g/cm³; (vol. fraction: 80% He, 20% CO₂; mass fraction: He - 0.27, C - 0.2, O - 0.53)

Material and geometry - 2

- Target: length = 34 cm, radius = 0.6 cm, material = He at 3 atm
- Target window: Al foil
- Target wall: kapton foil
- DC sensitive volume: length = 30 cm, inner radius = 2.5 cm, outer radius = 8.5 cm, DC gas
- ALERT DC wall and window: kapton foil
- Helium bag: length = 60 cm, radius = 4 cm, He at 1 atm
- Helium bag wall: kapton
- Helium bag window downstream: Al foil

Material and geometry - 3

