Calculate the mass of 22650 L of oxygen gas at 25.0 C and 1.18 atm pressure.

O_2

* Volume of a 10'x10'x8' room

1 - Convert 22650 L (volume of oxygen gas) to moles using ideal gas equation.

2 - Convert moles oxygen gas to mass using formula weight

① $PV = nRT$

$n = \frac{PV}{RT}$

$P = 1.18\ atm$ $\quad V = 22650\ L$

$R = 0.08206 \frac{L \cdot atm}{mol \cdot K}$ $\quad T = 25.0^\circ C = 298.2\ K$

$$n_{O_2} = \frac{(1.18\ atm)(22650\ L)}{\left(0.08206 \frac{L \cdot atm}{mol \cdot K}\right)(298.2\ K)} = 1092.222357\ mol\ O_2$$

$32.00\ g\ O_2 = mol\ O_2$

$$1092.222357\ mol\ O_2 \times \frac{32.00\ g\ O_2}{mol\ O_2} = \boxed{35000\ g\ O_2}$$

35.0 kg ~77 lb