Question:

Calculate the volume of hydrogen gas liberated at 25 degree celcius and 735mm when 15.0g of aluminium react with tetraoxosulphate (IV).(R=63.36LITRES-mm/deg.mole)

Solution:

$2Al + 3H_2SO_4 = Al_2(SO_4)_3 + 3H_2$

$pV = nRT$

so:
$V = nRT/p$

$n(H_2) = 3/2\ n(Al)$

$V(H_{2)} = 2/3\ n(Al)\ RT\ / P = 2\ m(Al)\ R\ T/3\ M(Al)\ p = (2 * 15.0 * 63.36 * 298) / (3 * 27 * 735) = 9.51\ (L)$

Answer:

Volume of hydrogen gas is 9.51 L.