Answer on Question #84754 – Chemistry – Other

Task:

A 2.0 L flexible container holds 5.0 moles of oxygen (O_2) gas. An additional 15.0 moles of nitrogen gas (N_2) is added to the container. What is the new volume of the container?

Solution:

$$\text{Total volume} = V(O_2) + V(N_2).$$

$V(O_2)$ = 2.0 L; $V(N_2)$ = X L.

If:

$$2.0 \text{ L} = 5.0 \text{ moles}$$

$$\text{X L} = 15.0 \text{ moles}.$$

Then,

$V(N_2)$ = X L = (15.0 moles) * (2.0 L) / (5.0 moles) = 6.0 L.

Finally,

Total volume = V_{Total} (container) = $V(O_2)$ + $V(N_2)$ = 2.0 L + 6.0 L = 8.0 L.

Total volume = 8.0 L.

Answer: 8.0 L is the new volume of the container.