

Conservation of Mass

Four questions

1. What is it?

- Amount of "stuff"?
- Resistance to change in motion? (ala Newton)

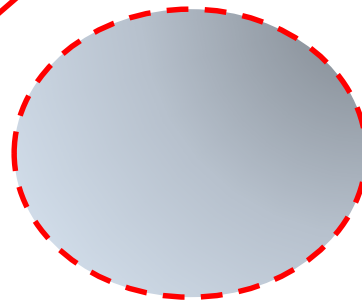
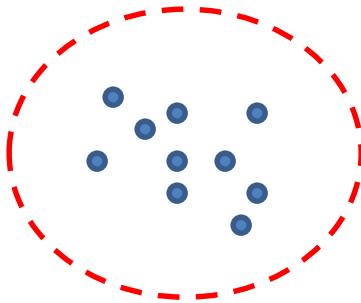
Doesn't matter. (Ha! Matter...) It's a working definition.

2. How can it be stored (What is m_{sys} ?)

System of particles

Continuum

Because mass is an extensive property.



$$m_{sys} = \sum_i m_i$$

$$m_{sys} = \int_{\nabla_{sys}} \rho dV$$

3. How can it be transported? (How does it cross system boundaries?)

- ~~Molecular diffusion~~
- Bulk motion, \dot{m}

$$\dot{m} \neq \frac{dm}{dt}$$

4. How is generated and/or consumed?

It's not! It's conserved.