

# Mass Flowrate

@wikipedia

Amount of **fluid mass** passing through a certain **area**  $A$  per unit time:

(1) 
$$\dot{m}_A = \left. \frac{dm}{dt} \right|_A = j_m \cdot A$$

where

|       |           |
|-------|-----------|
| $j_m$ | mass flux |
|-------|-----------|

| SI unit | Metric unit | Oilfield units |
|---------|-------------|----------------|
| kg/s    | kg/s        | lb/s           |

**Mass flowrate** is related to **volumetric flowrate**  $q_A$  and **fluid density**  $\rho_A$  as:

(2) 
$$\dot{m}_A = \rho_A \cdot q_A$$

In case of **Volatile Oil Reservoir** the connection with **surface flowrates** will be:

|     |                                |
|-----|--------------------------------|
| (3) | $\dot{m}_O = \rho_O \cdot q_O$ |
| (4) | $\dot{m}_G = \rho_G \cdot q_G$ |
| (5) | $\dot{m}_W = \rho_W \cdot q_W$ |

## See also

Natural Science / Physics / Mechanics / Continuum mechanics / Fluid Mechanics

[ Volumetric Flowrate ] [ Mass Flux ]