## Important Settling Zone Formulas PDF



**Formulas Examples** with Units

## List of 17

Important Settling Zone Formulas

### 1) Height of Settling Zone Formulas

1.1) Height of Settling Zone given Cross-section Area of Sedimentation Tank Formula 🕝



Example with Units 

1.2) Height of Settling Zone given Detention Time Formula [7]



Formula Example with Units  $h = \frac{T_d \cdot Q}{L \cdot w} \qquad \qquad 6615.7205 \, \text{mm} = \frac{3 \, \text{min} \, \cdot 1.01 \, \text{m}^3/\text{s}}{12 \, \text{m} \, \cdot 2.29 \, \text{m}}$ 

1.3) Height of Settling Zone given Height at Outlet Zone with respect to Area of Tank Formula



Example with Units  $h = H \cdot \frac{Q}{v \cdot A_{cs}} \left[ 14428.5714_{mm} = 40_{m} \cdot \frac{1.01_{m^{3}/s}}{0.1_{m/s} \cdot 28_{m^{2}}} \right]$ 

1.4) Height of Settling Zone given Height at Outlet Zone with respect to Discharge Formula 🕝



Example with Units  $h = H \cdot \frac{Q}{L \cdot w \cdot v'} \qquad 14701.6012 \, \text{mm} = 40 \, \text{m} \cdot \frac{1.01 \, \text{m}^3 / \text{s}}{12 \, \text{m} \cdot 2.29 \, \text{m} \cdot 0.1 \, \text{m/s}}$ 

1.5) Height of Settling Zone given Height at Outlet Zone with respect to Settling Velocity Formula 🕝



Formula Example with Units  $h = H \cdot \frac{V_S}{v} \qquad 12000 \, \text{mm} = 40 \, \text{m} \cdot \frac{0.03 \, \text{m/s}}{0.1 \, \text{m/s}}$ 

Evaluate Formula (

Evaluate Formula (

Evaluate Formula (

Evaluate Formula C

## 1.6) Height of Settling Zone given Length of Sedimentation Tank with respect to Surface Area Formula

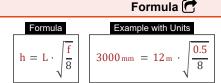
$$\begin{array}{|c|c|c|} \hline \text{Formula} & \hline \\ h = L \cdot \frac{A_{cs}}{A} & \hline \\ \hline \\ 6720_{mm} = 12_m \cdot \frac{28_{m^2}}{50_{m^2}} \\ \hline \end{array}$$

1.7) Height of Settling Zone given Length of Tank with respect to Darcy Weishbach Factor

Evaluate Formula (

Evaluate Formula

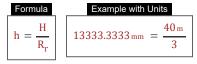
Evaluate Formula



1.8) Height of Settling Zone given Length of Tank with respect to Height for Practical Purpose Formula



1.9) Height of Settling Zone given Ratio of Removal with respect to Tank Height Formula



## 2) Length of Settling Zone Formulas 🕝

2.1) Length of Settling Zone given Detention Time Formula [7]

Formula Example with Units 
$$L = \frac{T_d \cdot Q}{w \cdot h} \qquad \qquad 6.6157 \, \text{m} = \frac{3 \, \text{min} \, \cdot \, 1.01 \, \text{m}^3 / \text{s}}{2.29 \, \text{m} \, \cdot \, 12000 \, \text{mm}}$$

2.2) Length of Settling Zone given Height at Outlet Zone with respect to Discharge Formula

Formula Example with Units 
$$L = \frac{H \cdot Q}{w \cdot h \cdot v} = \frac{40 \, \text{m} \cdot 1.01 \, \text{m}^3 / \text{s}}{2.29 \, \text{m} \cdot 12000 \, \text{mm} \cdot 0.1 \, \text{m} / \text{s}}$$

2.3) Length of Settling Zone given Surface Area of Sedimentation Tank Formula



2.4) Length of Settling Zone given Vertical Falling Speed in Sedimentation Tank Formula 🗗

Formula 
$$L = \frac{Q}{}$$

Evaluate Formula (

### 3) Width of Settling Zone Formulas (

3.1) Width of Settling Zone given Cross-section Area of Sedimentation Tank Formula 🕝 Evaluate Formula [



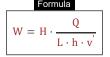
3.2) Width of Settling Zone given Detention Time Formula 🗂





$$W = \frac{T_{d} \cdot Q}{L \cdot h}$$
 1.2625 J/kg =  $\frac{3 \min \cdot 1.01 \, \text{m}^{3}/\text{s}}{12 \, \text{m} \cdot 12000 \, \text{mm}}$ 

3.3) Width of Settling Zone given Height at Outlet Zone with respect to Discharge Formula 🕝





Evaluate Formula

$$W = H \cdot \frac{Q}{L \cdot h \cdot v^{'}} \qquad 2.8056 \, \text{J/kg} \, = \, 40 \, \text{m} \, \cdot \frac{1.01 \, \text{m}^{3}/\text{s}}{12 \, \text{m} \, \cdot 12000 \, \text{mm} \, \cdot 0.1 \, \text{m/s}}$$

3.4) Width of Settling Zone given Surface Area of Sedimentation Tank Formula 🕝



Evaluate Formula (

# Variables used in list of Settling Zone Formulas above

- A Area (Square Meter)
- A<sub>cs</sub> Cross-Sectional Area (Square Meter)
- f Darcy Friction Factor
- **h** Height of Crack (Millimeter)
- **H** Outer Height (Meter)
- L Length (Meter)
- Q Discharge (Cubic Meter per Second)
- R<sub>r</sub> Removal Ratio
- T<sub>d</sub> Detention Time (Minute)
- **V**<sub>S</sub> Settling Velocity (Meter per Second)
- v Falling Speed (Meter per Second)
- w Width (Meter)
- **W** Width of Settling Zone (Joule per Kilogram)

### Constants, Functions, Measurements used in list of Settling Zone Formulas above

- Functions: sqrt, sqrt(Number)
   A square root function is a function that takes a non-negative number as an input and returns the square root of the given input number.
- Measurement: Length in Millimeter (mm), Meter (m)
  - Length Unit Conversion
- Measurement: Time in Minute (min)

  Time Unit Conversion
- Measurement: Area in Square Meter (m²)
   Area Unit Conversion
- Measurement: Speed in Meter per Second (m/s)
   Speed Unit Conversion
- Measurement: Volumetric Flow Rate in Cubic Meter per Second (m³/s)
   Volumetric Flow Rate Unit Conversion
- Measurement: Latent Heat in Joule per Kilogram (J/kg)

Latent Heat Unit Conversion

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HCF of two numbers

• 🌆 Improper fraction 🕝

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