

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

Formula

$$h = \frac{A_{cs}}{w}$$

Example with Units

$$12227.0742 \text{ mm} = \frac{28 \text{ m}^2}{2.29 \text{ m}}$$

Evaluate Formula

1.2) Height of Settling Zone given Detention Time Formula

Formula

$$h = \frac{T_d \cdot Q}{L \cdot w}$$

Example with Units

$$6615.7205 \text{ mm} = \frac{3 \text{ min} \cdot 1.01 \text{ m}^3/\text{s}}{12 \text{ m} \cdot 2.29 \text{ m}}$$

Evaluate Formula

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

Formula

$$h = H \cdot \frac{Q}{v' \cdot A_{cs}}$$

Example with Units

$$14428.5714 \text{ mm} = 40 \text{ m} \cdot \frac{1.01 \text{ m}^3/\text{s}}{0.1 \text{ m/s} \cdot 28 \text{ m}^2}$$

Evaluate Formula

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

Formula

$$h = H \cdot \frac{Q}{L \cdot w \cdot v'}$$

Example with Units

$$14701.6012 \text{ mm} = 40 \text{ m} \cdot \frac{1.01 \text{ m}^3/\text{s}}{12 \text{ m} \cdot 2.29 \text{ m} \cdot 0.1 \text{ m/s}}$$

Evaluate Formula

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

Formula

$$h = H \cdot \frac{V_s}{v}$$

Example with Units

$$12000 \text{ mm} = 40 \text{ m} \cdot \frac{0.03 \text{ m/s}}{0.1 \text{ m/s}}$$

Evaluate Formula



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

Formula

Formula

$$h = L \cdot \frac{A_{cs}}{A}$$

Example with Units

$$6720 \text{ mm} = 12 \text{ m} \cdot \frac{28 \text{ m}^2}{50 \text{ m}^2}$$

Evaluate Formula 

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

Formula

Formula

$$h = L \cdot \sqrt{\frac{f}{8}}$$

Example with Units

$$3000 \text{ mm} = 12 \text{ m} \cdot \sqrt{\frac{0.5}{8}}$$

Evaluate Formula 

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

Formula

Formula

$$h = \frac{L}{10}$$

Example with Units

$$1200 \text{ mm} = \frac{12 \text{ m}}{10}$$

Evaluate Formula 

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

Formula

$$h = \frac{H}{R_r}$$

Example with Units

$$13333.3333 \text{ mm} = \frac{40 \text{ m}}{3}$$

Evaluate Formula 

2) Length of Settling Zone Formulas

2.1) Length of Settling Zone given Detention Time Formula

Formula

$$L = \frac{T_d \cdot Q}{w \cdot h}$$

Example with Units

$$6.6157 \text{ m} = \frac{3 \text{ min} \cdot 1.01 \text{ m}^3/\text{s}}{2.29 \text{ m} \cdot 12000 \text{ mm}}$$

Evaluate Formula 

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

Formula

$$L = \frac{H \cdot Q}{w \cdot h \cdot v}$$

Example with Units

$$14.7016 \text{ m} = \frac{40 \text{ m} \cdot 1.01 \text{ m}^3/\text{s}}{2.29 \text{ m} \cdot 12000 \text{ mm} \cdot 0.1 \text{ m/s}}$$

Evaluate Formula 

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

Formula

$$L = \frac{A_{cs}}{w}$$

Example with Units

$$12.2271 \text{ m} = \frac{28 \text{ m}^2}{2.29 \text{ m}}$$

Evaluate Formula 



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

Formula

$$L = \frac{Q}{V_s \cdot w}$$

Example with Units

$$14.7016 \text{ m} = \frac{1.01 \text{ m}^3/\text{s}}{0.03 \text{ m/s} \cdot 2.29 \text{ m}}$$

Evaluate Formula 

3) Width of Settling Zone Formulas

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

Formula

$$W = \frac{A_{cs}}{h}$$

Example with Units

$$2.3333 \text{ l/kg} = \frac{28 \text{ m}^2}{12000 \text{ mm}}$$

Evaluate Formula 

3.2) Width of Settling Zone given Detention Time Formula

Formula

$$W = \frac{T_d \cdot Q}{L \cdot h}$$

Example with Units

$$1.2625 \text{ l/kg} = \frac{3 \text{ min} \cdot 1.01 \text{ m}^3/\text{s}}{12 \text{ m} \cdot 12000 \text{ mm}}$$

Evaluate Formula 

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

Formula

$$W = H \cdot \frac{Q}{L \cdot h \cdot v}$$

Example with Units

$$2.8056 \text{ l/kg} = 40 \text{ m} \cdot \frac{1.01 \text{ m}^3/\text{s}}{12 \text{ m} \cdot 12000 \text{ mm} \cdot 0.1 \text{ m/s}}$$

Evaluate Formula 

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

Formula

$$W = \frac{A}{L}$$

Example with Units

$$4.1667 \text{ l/kg} = \frac{50 \text{ m}^2}{12 \text{ m}}$$







Evaluate Formula 



Variables used in list of Settling Zone Formulas above

- **A** Area (Square Meter)
- **A_{CS}** 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_r** Removal Ratio
- **T_d** Detention Time (Minute)
- **V_s** 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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