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Parshall Flume Formulas

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List of 8 Parshall Flume Formulas

Parshall Flume ⤴

1) Depth of Flow in Parshall Flume given Discharge Coefficient 1.5 ⤴

Open Calculator ⤴

fx $$H_a = \left(\frac{Q_e}{1.5} \right)^{\frac{1}{n_p}}$$

ex $$7.762583\text{m} = \left(\frac{39.82\text{m}^3/\text{s}}{1.5} \right)^{\frac{1}{1.6}}$$

2) Depth of Flow in Upstream Leg of Flume at One Third Point given Discharge ⤴

Open Calculator ⤴

fx $$d_f = \left(\frac{Q_e}{2.264 \cdot W_t} \right)^{\frac{2}{3}}$$

ex $$3.25139\text{m} = \left(\frac{39.82\text{m}^3/\text{s}}{2.264 \cdot 3\text{m}} \right)^{\frac{2}{3}}$$

3) Depth of Parshall Flume given Discharge 🔗

fx $d_f = \left(\dfrac{Q_e}{c} \right)^{\frac{1}{n_p}}$

ex $2.990767m = \left(\dfrac{39.82 m^3/s}{6.9} \right)^{\frac{1}{1.6}}$

4) Depth of Parshall Flume given Width 🔗

fx $d_{pf} = (c \cdot w)^{\frac{1}{C_D - 1}}$

ex $0.049575m = (6.9 \cdot 1.299m)^{\frac{1}{0.27 - 1}}$

5) Discharge Passing through Parshall Flume 🔗

fx $Q_e = \left(2.264 \cdot W_t \cdot (d_f)^{\frac{3}{2}} \right)$

ex $40.71633 m^3/s = \left(2.264 \cdot 3m \cdot (3.3m)^{\frac{3}{2}} \right)$

6) Width of Parshall Flume given Depth 🔗

fx $w_p = \dfrac{(d)^{C_D - 1}}{c}$

ex $0.052299m = \dfrac{(4.04m)^{0.27 - 1}}{6.9}$

7) Width of Parshall Flume given Depth of Parshall Flume 🔗

Open Calculator 🔗

$$fx \quad w = \sqrt{\dfrac{d}{c}}$$

$$ex \quad 0.765184m = \sqrt{\dfrac{4.04m}{6.9}}$$

8) Width of Throat given Discharge 🔗

Open Calculator 🔗

$$fx \quad W_t = \dfrac{Q_e}{2.264 \cdot (d_f)^{\frac{3}{2}}}$$

$$ex \quad 2.933958m = \dfrac{39.82m^3/s}{2.264 \cdot (3.3m)^{\frac{3}{2}}}$$

Variables Used

- **c** Integration Constant
- **C$_D$** Discharge Coefficient
- **d** Depth *(Meter)*
- **d$_f$** Depth of Flow *(Meter)*
- **d$_{pf}$** Depth of Parshall Flume given Width *(Meter)*
- **H$_a$** Depth of Flow in Parshall Flume *(Meter)*
- **n$_p$** Constant for a 6-inch Parshall flume
- **Q$_e$** Environmental Discharge *(Cubic Meter per Second)*
- **w** Width *(Meter)*
- **w$_p$** Width of Parshall Flume given Depth *(Meter)*
- **W$_t$** Width of Throat *(Meter)*

Constants, Functions, Measurements used

- Function: **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 Meter (m)
  Length Unit Conversion ⬈
- Measurement: **Volumetric Flow Rate** in Cubic Meter per Second (m³/s)
  Volumetric Flow Rate Unit Conversion ⬈

Check other formula lists

- **Parshall Flume Formulas** ⬀

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