Important Basic Definitions Formulas PDF

Formulas
Examples
with Units

List of 9
Important Basic Definitions Formulas

1) Specific Retention Formulas

1.1) Specific Retention given Porosity Formula

Evaluate Formula

Formula

$$\%S_r = \eta_v - \%S_y$$

Example

$$10 = 25 - 15$$

1.2) Specific Retention given Total Volume Formula

Evaluate Formula

Formula

$$\%S_r = \left(\frac{W_r}{V}\right) \cdot 100$$

Example with Units

$$10 = \left(\frac{2\,\text{m}^3}{20\,\text{m}^3}\right) \cdot 100$$

1.3) Specific Yield given Porosity Formula

Evaluate Formula

Formula

$$\%S_y = \eta_v - \%S_r$$

Example

$$15 = 25 - 10.0$$

1.4) Specific Yield given Total Volume Formula

Evaluate Formula

Formula

$$\%S_y = \left(\frac{W_y}{V}\right) \cdot 100$$

Example with Units

$$50 = \left(\frac{10\,\text{m}^3}{20\,\text{m}^3}\right) \cdot 100$$

1.5) Total Volume given Specific Retention Formula

Evaluate Formula

Formula

$$V = \left(\frac{W_r}{\%S_r}\right) \cdot 100$$

Example with Units

$$20\,\text{m}^3 = \left(\frac{2\,\text{m}^3}{10.0}\right) \cdot 100$$

1.6) Total Volume given Specific Yield Formula

Evaluate Formula

Formula

$$V = \left(\frac{W_y}{\%S_y}\right) \cdot 100$$

Example with Units

$$66.6667\,\text{m}^3 = \left(\frac{10\,\text{m}^3}{15}\right) \cdot 100$$

1.7) Volume of Water Drained by Gravity given Specific Yield Formula

Evaluate Formula

Formula

$$W_y = \frac{\%S_y \cdot V}{100}$$

Example with Units

$$3\,\text{m}^3 = \frac{15 \cdot 20\,\text{m}^3}{100}$$

1.8) Volume of Water Retained given Specific Retention Formula

Evaluate Formula

Formula

$$W_r = \frac{V \cdot \%S_r}{100}$$

Example with Units

$$2\,\text{m}^3 = \frac{20\,\text{m}^3 \cdot 10.0}{100}$$

1.9) Volume Percent of Porosity Specific Yield and Specific Retention Formula

Evaluate Formula

Formula

$$\eta_v = \%S_y + \%S_r$$

Example

$$25 = 15 + 10.0$$

Variables used in list of Basic Definitions Formulas above

- $\%S_r$ Specific Retention Percentage
- $\%S_y$ Specific Yield Percentage
- **V** Total Volume *(Cubic Meter)*
- W_r Volume of Water Retained *(Cubic Meter)*
- W_y Volume of Water Drained by Gravity *(Cubic Meter)*
- η_v Volume Percent of Porosity

Constants, Functions, Measurements used in list of Basic Definitions Formulas above

- Measurement: **Volume** in Cubic Meter (m^3)
  Volume Unit Conversion

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