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Permeability Number Formulas

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List of 11 Permeability Number Formulas

Permeability Number ↗

1) Air Pressure during Testing ↗

fx $\rho = \frac{V \cdot h_{sp}}{PN \cdot A \cdot t_p}$

[Open Calculator ↗](#)

ex $0.038461 \text{kgf/m}^2 = \frac{0.002 \text{m}^3 \cdot 5 \text{m}}{4.36 \text{H/m} \cdot 0.002027 \text{m}^2 \cdot 3 \text{s}}$

2) Cross-Sectional Area of Specimen ↗

fx $A = \frac{V \cdot h_{sp}}{PN \cdot \rho \cdot t_p}$

[Open Calculator ↗](#)

ex $0.002025 \text{m}^2 = \frac{0.002 \text{m}^3 \cdot 5 \text{m}}{4.36 \text{H/m} \cdot 0.0385 \text{kgf/m}^2 \cdot 3 \text{s}}$

3) Grain Fineness Number ↗

fx $GFN = \frac{\Sigma FM}{\Sigma fi}$

[Open Calculator ↗](#)

ex $4.010283 = \frac{15.6 \text{g}}{3.89 \text{g}}$



4) Height of Specimen ↗

$$fx \quad h_{sp} = \frac{PN \cdot \rho \cdot A \cdot t_p}{V}$$

Open Calculator ↗

$$ex \quad 5.005102m = \frac{4.36H/m \cdot 0.0385kgf/m^2 \cdot 0.002027m^2 \cdot 3s}{0.002m^3}$$

5) Permeability Number ↗

$$fx \quad PN = \frac{V_{air} \cdot h_s}{\rho \cdot A \cdot t_p}$$

Open Calculator ↗

$$ex \quad 4.361654H/m = \frac{0.001669m^3 \cdot 6m}{0.0385kgf/m^2 \cdot 0.002027m^2 \cdot 3s}$$

6) Permeability Number or Standard Specimen ↗

$$fx \quad PN = \frac{501.28}{p_c \cdot t_p}$$

Open Calculator ↗

$$ex \quad 4.368917H/m = \frac{501.28}{3.9kgf/m^2 \cdot 3s}$$

7) Pressure during Testing or Standard Specimen ↗

$$fx \quad p_c = \frac{501.28}{PN \cdot t_p}$$

Open Calculator ↗

$$ex \quad 3.907977kgf/m^2 = \frac{501.28}{4.36H/m \cdot 3s}$$



8) Ranginess Factor ↗

$$fx \quad R = \frac{M_{cube}}{M_{casting}}$$

Open Calculator ↗

$$ex \quad 1.5 = \frac{15m}{10m}$$

9) Time Taken during Testing ↗

$$fx \quad t_p = \frac{V \cdot h_{sp}}{PN \cdot \rho \cdot A}$$

Open Calculator ↗

$$ex \quad 2.996942s = \frac{0.002m^3 \cdot 5m}{4.36H/m \cdot 0.0385kgf/m^2 \cdot 0.002027m^2}$$

10) Time Taken in Standard Specimen Testing ↗

$$fx \quad t_p = \frac{501.28}{PN \cdot p_c}$$

Open Calculator ↗

$$ex \quad 3.006136s = \frac{501.28}{4.36H/m \cdot 3.9kgf/m^2}$$

11) Volume of Air Passed through Specimen ↗

$$fx \quad V = \frac{PN \cdot \rho \cdot A \cdot t_p}{h_{sp}}$$

Open Calculator ↗

$$ex \quad 0.002002m^3 = \frac{4.36H/m \cdot 0.0385kgf/m^2 \cdot 0.002027m^2 \cdot 3s}{5m}$$



Variables Used

- **A** Cross-sectional area of specimen (*Square Meter*)
- **GFN** Grain Fineness Number
- **h_s** Height of Specimen (*Meter*)
- **h_{sp}** Specimen Height (*Meter*)
- **$M_{casting}$** Modulus of Casting (*Meter*)
- **M_{cube}** Modulus of Cube (*Meter*)
- **p_c** Pressure in Casting (*Kilogram-Force per Square Meter*)
- **PN** Permeability Number (*Henry per Meter*)
- **R** Ranginess Factor
- **t_p** Time (*Second*)
- **V** Volume of Air Flow through Specimen (*Cubic Meter*)
- **V_{air}** Volume of air (*Cubic Meter*)
- **ρ** Air pressure on wall (*Kilogram-Force per Square Meter*)
- **Σf_i** Total Mass of Sand (*Gram*)
- **$\Sigma F M$** Sum of Product of Factor and Grams (*Gram*)



Constants, Functions, Measurements used

- **Measurement:** Length in Meter (m)

Length Unit Conversion 

- **Measurement:** Weight in Gram (g)

Weight Unit Conversion 

- **Measurement:** Time in Second (s)

Time Unit Conversion 

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

Volume Unit Conversion 

- **Measurement:** Area in Square Meter (m^2)

Area Unit Conversion 

- **Measurement:** Pressure in Kilogram-Force per Square Meter (kgf/m^2)

Pressure Unit Conversion 

- **Measurement:** Magnetic Permeability in Henry per Meter (H/m)

Magnetic Permeability Unit Conversion 



Check other formula lists

- Permeability Number
Formulas 

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