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Permeability Number Formulas

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List of 11 Permeability Number Formulas

Permeability Number

1) Air Pressure during Testing

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

[Open Calculator !\[\]\(a870788d6ed9b8fd294b7654a8c8526b_img.jpg\)](#)

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

2) Cross-Sectional Area of Specimen

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

[Open Calculator !\[\]\(c50c8b7b2cc2cf9ff925edec0ee94c0d_img.jpg\)](#)

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

3) Grain Fineness Number

$$\text{fx } \text{GFN} = \frac{\Sigma \text{FM}}{\Sigma F_i}$$

[Open Calculator !\[\]\(f60b7a900783ac3fd531bfd9c111be6d_img.jpg\)](#)

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



4) Height of Specimen

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

[Open Calculator !\[\]\(cbe80b694ebd74fcfe136a095b608235_img.jpg\)](#)

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

5) Permeability Number

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

[Open Calculator !\[\]\(3e2231b1ad3ca8da8658228c00dd08e0_img.jpg\)](#)

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

6) Permeability Number or Standard Specimen

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

[Open Calculator !\[\]\(0d5ec72f61334709c3fc9450209b754f_img.jpg\)](#)

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

7) Pressure during Testing or Standard Specimen

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

[Open Calculator !\[\]\(b64b40baaee5acddc1eab8538ba84754_img.jpg\)](#)

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



8) Ranginess Factor

$$\text{fx } R = \frac{M_{cb}}{M_c}$$

[Open Calculator !\[\]\(e78f798d4ea5c530c9db49e7d26e6b95_img.jpg\)](#)

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

9) Time Taken during Testing

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

[Open Calculator !\[\]\(05be7c7a8995decd503647c99211f7c2_img.jpg\)](#)

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

10) Time Taken in Standard Specimen Testing

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

[Open Calculator !\[\]\(fe3aebe81acea8d45108cd2768939da7_img.jpg\)](#)

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

11) Volume of Air Passed through Specimen

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

[Open Calculator !\[\]\(899d8b7697d64725bf017d3296cfcf1b_img.jpg\)](#)

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










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_c** Modulus of Casting (Meter)
- **M_{cb}** Modulus of Cube of Same Volume (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 in Casting (Cubic Meter)
- **ρ** Air Pressure on Wall (Kilogram-Force per Square Meter)
- **ΣF_i** Total Mass of Sand (Gram)
- **ΣFM** 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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