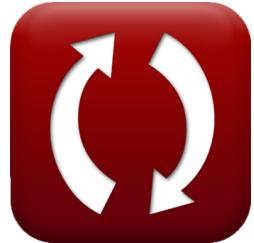




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Breaker Index Formulas

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List of 16 Breaker Index Formulas

Breaker Index ↗

1) Breaker Depth Index ↗

fx

$$\gamma_b = \frac{H_b}{d_b}$$

[Open Calculator ↗](#)

ex

$$0.327273 = \frac{18\text{m}}{55\text{m}}$$

2) Breaker Depth Index given Wave Period ↗

fx

$$\gamma_b = b - a \cdot \left(\frac{H_b}{[g] \cdot T_b^2} \right)$$

[Open Calculator ↗](#)

ex

$$0.303837 = 1.56 - 43.8 \cdot \left(\frac{18\text{m}}{[g] \cdot (8\text{s})^2} \right)$$

3) Breaker Height Index ↗

fx

$$\Omega_b = \frac{H_b}{\lambda_o}$$

[Open Calculator ↗](#)

ex

$$2.571429 = \frac{18\text{m}}{7\text{m}}$$



4) Deepwater Wave Height given Breaker Height Index ↗

$$fx \quad \lambda_o = \frac{H_b}{\Omega_b}$$

[Open Calculator ↗](#)

ex $7.058824m = \frac{18m}{2.55}$

5) Deepwater Wavelength given Breaker Height Index from Linear Wave Theory ↗

$$fx \quad \lambda_o = \frac{H'_o}{\left(\frac{\Omega_b}{0.56}\right)^{-5}}$$

[Open Calculator ↗](#)

ex $7.126268m = \frac{0.00364m}{\left(\frac{2.55}{0.56}\right)^{-5}}$

6) Equivalent Unrefracted Deepwater Wave Height given Breaker Height Index from Linear Wave Theory ↗

$$fx \quad H'_o = \lambda_o \cdot \left(\frac{\Omega_b}{0.56}\right)^{-5}$$

[Open Calculator ↗](#)

ex $0.003576m = 7m \cdot \left(\frac{2.55}{0.56}\right)^{-5}$



7) Local Depth given Root Mean Square Wave Height ↗

fx $d_l = \frac{H_{rms}}{0.42}$

[Open Calculator ↗](#)

ex $20m = \frac{8.4m}{0.42}$

8) Local Depth given Zero Moment Wave Height ↗

fx $d_l = \frac{H_{m0,b}}{0.6}$

[Open Calculator ↗](#)

ex $20m = \frac{12.00m}{0.6}$

9) Root Mean Square Wave Height at Breaking ↗

fx $H_{rms} = 0.42 \cdot d_l$

[Open Calculator ↗](#)

ex $8.4m = 0.42 \cdot 20.0m$

10) Semi-Empirical Relationship for Breaker Height Index from Linear Wave Theory ↗

fx $\Omega_b = 0.56 \cdot \left(\frac{H'_o}{\lambda_o} \right)^{-\frac{1}{5}}$

[Open Calculator ↗](#)

ex $2.540899 = 0.56 \cdot \left(\frac{0.00364m}{7m} \right)^{-\frac{1}{5}}$



11) Water Depth at Breaking given Breaker Depth Index ↗

fx $d_b = \left(\frac{H_b}{\gamma_b} \right)$

[Open Calculator ↗](#)

ex $56.25m = \left(\frac{18m}{0.32} \right)$

12) Wave Height at Incipient Breaking given Breaker Depth Index ↗

fx $H_b = \gamma_b \cdot d_b$

[Open Calculator ↗](#)

ex $17.6m = 0.32 \cdot 55m$

13) Wave Height at Incipient Breaking given Breaker Height Index ↗

fx $H_b = \Omega_b \cdot \lambda_o$

[Open Calculator ↗](#)

ex $17.85m = 2.55 \cdot 7m$

14) Wave Height at Incipient Breaking using Beach Slope ↗

fx $H_b = [g] \cdot T_b^2 \cdot \frac{b - \gamma_b}{a}$

[Open Calculator ↗](#)

ex $17.7684m = [g] \cdot (8s)^2 \cdot \frac{1.56 - 0.32}{43.8}$



15) Wave Period given Breaker Depth Index ↗**fx**

$$T_b = \sqrt{\frac{a \cdot H_b}{[g] \cdot (b - \gamma_b)}}$$

Open Calculator ↗**ex**

$$8.05197\text{s} = \sqrt{\frac{43.8 \cdot 18\text{m}}{[g] \cdot (1.56 - 0.32)}}$$

16) Zero-Moment Wave Height at Breaking ↗**fx**

$$H_{m0,b} = 0.6 \cdot d_1$$

Open Calculator ↗**ex**

$$12\text{m} = 0.6 \cdot 20.0\text{m}$$



Variables Used

- a Functions of Beach Slope A
- b Functions of Beach Slope B
- d_b Water Depth at Breaking (Meter)
- d_l Local Depth (Meter)
- H_b Wave Height at Incipient Breaking (Meter)
- $H_{m0,b}$ Zero-Moment Wave Height (Meter)
- H'_o Equivalent Unrefracted Deepwater Wave Height (Meter)
- H_{rms} Root Mean Square Wave Height (Meter)
- T_b Wave Period for Breaker Index (Second)
- γ_b Breaker Depth Index
- λ_o Deep-Water Wavelength (Meter)
- Ω_b Breaker Height Index



Constants, Functions, Measurements used

- Constant: [g], 9.80665

Gravitational acceleration on Earth

- 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: Time in Second (s)

Time Unit Conversion 



Check other formula lists

- Breaker Index Formulas 

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