calculatoratoz.com

unitsconverters.com

Breaker Index Formulas

Calculators! Examples! Conversions!

Bookmark **calculatoratoz.com**, **unitsconverters.com**

Widest Coverage of Calculators and Growing - **30,000+ Calculators!**
Calculate With a Different Unit for Each Variable - **In built Unit Conversion!**
Widest Collection of Measurements and Units - **250+ Measurements!**

Feel free to SHARE this document with your friends!

Please leave your feedback here...

List of 16 Breaker Index Formulas

Breaker Index

1) Breaker Depth Index

Open Calculator

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

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

2) Breaker Depth Index given Wave Period

Open Calculator

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

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

3) Breaker Height Index

Open Calculator

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

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

4) Deepwater Wave Height given Breaker Height Index

Open Calculator

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

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

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

Open Calculator

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

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

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

Open Calculator

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

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

7) Local Depth given Root Mean Square Wave Height

Open Calculator

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

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

8) Local Depth given Zero Moment Wave Height

Open Calculator

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

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

9) Root Mean Square Wave Height at Breaking

Open Calculator

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

ex $$8.4\text{m} = 0.42 \cdot 20.0\text{m}$$

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

Open Calculator

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

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

11) Water Depth at Breaking given Breaker Depth Index

Open Calculator

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

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

12) Wave Height at Incipient Breaking given Breaker Depth Index

Open Calculator

fx $$H_b = \gamma_b \cdot d_b$$

ex $$17.6\text{m} = 0.32 \cdot 55\text{m}$$

13) Wave Height at Incipient Breaking given Breaker Height Index

Open Calculator

fx $$H_b = \Omega_b \cdot \lambda_o$$

ex $$17.85\text{m} = 2.55 \cdot 7\text{m}$$

14) Wave Height at Incipient Breaking using Beach Slope

Open Calculator

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

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

15) Wave Period given Breaker Depth Index

Open Calculator

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

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

Open Calculator

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

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**
- **Irregular Waves Formulas**
- **Energy Flux Method Formulas**

Feel free to SHARE this document with your friends!

PDF Available in

English Spanish French German Russian Italian Portuguese Polish Dutch

5/15/2024 | 5:38:32 AM UTC

Please leave your feedback here...