Important Rainfall Intensity Formulas PDF



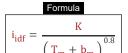
List of 16 Important Rainfall Intensity Formulas

Evaluate Formula (

Evaluate Formula (

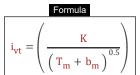
Evaluate Formula (

1) Intensity of Rain for Intensity Duration Curve Formula 🕝



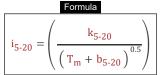


2) Intensity of Rain given Time Varying between 20 to 100 Minutes Formula 🕝



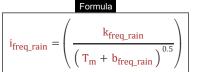


3) Intensity of Rain when Time Varying between 5 to 20 Minutes Formula 🕝



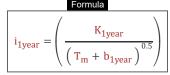


4) Rainfall Intensity for Localities where Rainfall is Frequent Formula C Evaluate Formula 🕝



$$i_{freq_rain} = \left(\frac{k_{freq_rain}}{\left(T_{m} + b_{freq_rain}\right)^{0.5}}\right) = \left(\frac{343 \, \text{mm/h}}{\left(20 \, \text{min} + 18 \, \text{min}\right)^{0.5}}\right)$$

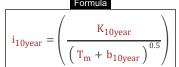
5) Rainfall Intensity for Rain having Frequency of 1 Years Formula C Evaluate Formula (



$$i_{1year} = \left(\frac{K_{1year}}{\left(T_{m} + b_{1year}\right)^{0.5}}\right)$$

$$10.9109 \, \text{mm/h} = \left(\frac{500.0 \, \text{mm/h}}{\left(20 \, \text{min} + 15 \, \text{min}\right)^{0.5}}\right)$$

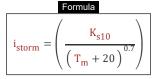
6) Rainfall Intensity for Rain having Frequency of 10 Years Formula C



Formula Example with Units
$$i_{10 year} = \left(\frac{K_{10 year}}{\left(T_m + b_{10 year}\right)^{0.5}}\right) = \left(\frac{500 \text{ mm/h}}{\left(20 \text{ min} + 20.00 \text{ min}\right)^{0.5}}\right)$$

Evaluate Formula (

7) Rainfall Intensity for Storms having Frequency of 10 Years Formula (7)



Formula Example with Units
$$i_{storm} = \left(\frac{K_{s10}}{\left(T_{m} + 20\right)^{0.7}}\right) \begin{bmatrix} 10.3667 \text{ mm/h} & \left(\frac{1500 \text{ mm/h}}{\left(20 \text{ min} + 20\right)^{0.7}}\right) \end{bmatrix}$$

Evaluate Formula (

8) Rainfall Intensity for Storms having Frequency of 15 Years Formula C

Formula
$$i_{st} = \left(\frac{K_{s15}}{\left(T_{m} + 20\right)^{0.65}}\right)$$



9) Time given Intensity of Rain Formula

$$T_{\rm m} = \left(\frac{K}{i_{\rm idf}}\right)^{\frac{1}{0.8}} - b_{5-20}$$



Evaluate Formula 🕝

Evaluate Formula

Evaluate Formula [

Evaluate Formula 🕝

10) Time given Rainfall Intensity for Localities where Rainfall is Frequent Formula 🕝



Formula Example with Units
$$T_{m} = \left(\frac{k_{freq_rain}}{i_{freq_rain}}\right)^{\frac{1}{0.5}} - b_{freq_rain} = \left(\frac{343\,\text{mm/h}}{7.18\,\text{mm/h}}\right)^{\frac{1}{0.5}} - 18\,\text{min}$$

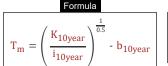
11) Time given Rainfall Intensity for Rain having Frequency of 1 Year Formula C

Formula

Formula Example with Units
$$T_{m} = \left(\frac{K_{1year}}{i_{1year}}\right)^{\frac{1}{0.5}} - b_{1year}$$

$$25.1273 \, \text{min} = \left(\frac{500.0 \, \text{mm/h}}{10.19 \, \text{mm/h}}\right)^{\frac{1}{0.5}} - 15 \, \text{min}$$

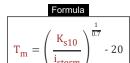
12) Time given Rainfall Intensity for Rain having Frequency of 10 Years Formula 🕝







13) Time given Rainfall Intensity for Storms having Frequency of 10 Years Formula 🕝



$$T_{m} = \left(\frac{K_{s10}}{i_{storm}}\right)^{\frac{1}{0.7}} - 20$$

$$20.0019_{min} = \left(\frac{1500_{mm/h}}{10.366_{mm/h}}\right)^{\frac{1}{0.7}} - 20$$

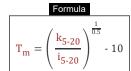
Evaluate Formula (

14) Time given Rainfall Intensity for Storms having Frequency of 15 Years Formula 🕝

$$T_{\rm m} = \left(\frac{K_{\rm s15}}{i_{\rm th}}\right)^{\frac{1}{0.65}} - 20$$



15) Time in Minutes given Intensity of Rain Formula 🕝





Evaluate Formula (

Evaluate Formula (

16) Time Varying between 20 to 100 Minutes given Intensity of Rain Formula 🕝

Formula
$$T_{m} = \left(\left(\frac{K}{i_{20-100}} \right)^{\frac{1}{0.5}} \right) - b_{m}$$

Formula Example with Units
$$T_m = \left(\left(\frac{K}{i_{20\text{-}100}} \right)^{\frac{1}{0.5}} \right) - b_m \qquad 20.8642 \, \text{min} \ = \left(\left(\frac{100 \, \text{mm/h}}{18.0 \, \text{mm/h}} \right)^{\frac{1}{0.5}} \right) - 10 \, \text{min}$$

Variables used in list of Rainfall Intensity Formulas above

- b_{10year} Constant b when Rain having Frequency of 10 Year (Minute)
- b_{1year} Constant b when Rain having Frequency of 1 Year (Minute)
- b₅₋₂₀ Constant b when Time Varying between 5 to 20 Min (Minute)
- b_{freq_rain} Constant b when Rainfall is Frequent (Minute)
- **b**_m Empirical Constant b (Minute)
- **i**₁₀year Rainfall Intensity for Rain Freq of 10 Years (*Millimeter per Hour*)
- i_{1year} Rainfall Intensity for Rain Frequency of 1 Year (Millimeter per Hour)
- i₂₀₋₁₀₀ Intensity of Rain (Time between 20 to 100 Min) (Millimeter per Hour)
- i₅₋₂₀ Intensity of Rain (Time between 5 to 20 Min) (Millimeter per Hour)
- ifreq_rain Intensity of Rainfall where Rainfall is Frequent (Millimeter per Hour)
- i_{idf} Intensity of Rain for Intensity Duration Curve (Millimeter per Hour)
- i_{st} Rainfall Intensity for Storms Freq of 15 Years (Millimeter per Hour)
- i_{storm} Rainfall Intensity for Storms Freq of 10 Years (Millimeter per Hour)
- i_{vt} Intensity of Rain given Varying Time (Millimeter per Hour)
- **K** K Constant (Millimeter per Hour)
- K_{10year} K Constant when Rain having Frequency of 10 Year (Millimeter per Hour)
- K_{1year} K Constant when Rain having Frequency of 1 Year (Millimeter per Hour)
- k₅₋₂₀ K Constant when Time Varying between 5 to 20 Min (Millimeter per Hour)
- k_{freq_rain} K Constant when Rainfall is Frequent (Millimeter per Hour)

Constants, Functions, Measurements used in list of Rainfall Intensity Formulas above

Measurement: Time in Minute (min)
 Time Unit Conversion

 Measurement: Speed in Millimeter per Hour (mm/h)
 Speed Unit Conversion



- K_{s10} K Constant when Storm having Frequency of 10 Year (Millimeter per Hour)
- K_{s15} K Constant when Storm having Frequency of 15 Year (Millimeter per Hour)
- T_m Time in Minutes (Minute)

Download other Important Estimating the Peak Drainage Discharge PDFs

- Important Channel Flow Time and Time
 Important Rainfall Intensity
 of Concentration Formulas Formulas Formulas
- Important Peak Drainage Discharge Formula Formulas (*)

Try our Unique Visual Calculators

- Reverse percentage
- K HCF calculator

Simple fraction

Please SHARE this PDF with someone who needs it!

This PDF can be downloaded in these languages

English Spanish French German Russian Italian Portuguese Polish Dutch

9/18/2024 | 11:15:38 AM UTC