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Rainfall Infiltration Method Formulas

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List of 43 Rainfall Infiltration Method Formulas

Rainfall Infiltration Method

1) Catchment Area when Recharge from Rainfall is Considered

$$\text{fx } A_{\text{cr}} = \frac{R_{\text{rfm}}}{f \cdot P_{\text{nm}}}$$

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

$$\text{ex } 13.25758\text{m}^2 = \frac{7\text{m}^3/\text{s}}{22 \cdot 0.024\text{m}}$$

2) Normal Rainfall in Monsoon Season

$$\text{fx } P_{\text{nm}} = \frac{R_{\text{rfm}}}{f \cdot A_{\text{cr}}}$$

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

$$\text{ex } 0.023923\text{m} = \frac{7\text{m}^3/\text{s}}{22 \cdot 13.3\text{m}^2}$$

3) Rainfall Infiltration Factor when Recharge from Rainfall is Considered

$$\text{fx } f = \frac{R_{\text{rfm}}}{A_{\text{cr}} \cdot P_{\text{nm}}}$$

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

$$\text{ex } 21.92982 = \frac{7\text{m}^3/\text{s}}{13.3\text{m}^2 \cdot 0.024\text{m}}$$



4) Recharge from Rainfall in Monsoon Season by Rainfall Infiltration Method

$$fx \quad R_{rfm} = f \cdot A_{cr} \cdot P_{nm}$$

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

$$ex \quad 7.0224m^3/s = 22 \cdot 13.3m^2 \cdot 0.024m$$

Maximum value of Rainfall Factor for Various Hydrogeologic Conditions based on the Norms

5) Recharge from Rainfall in Alluvial East Coast Areas for Known Maximum Rainfall Factor

$$fx \quad R_{aec} = 18 \cdot A_{cr} \cdot P_{nm}$$

[Open Calculator !\[\]\(5361750c22c4e047a52f4eac1ec2d4cc_img.jpg\)](#)

$$ex \quad 5.7456m^3/s = 18 \cdot 13.3m^2 \cdot 0.024m$$

6) Recharge from Rainfall in Alluvial Indo Gangetic and Inland Areas for Known Max Rainfall Factor

$$fx \quad R_{ai} = 25 \cdot A_{cr} \cdot P_{nm}$$

[Open Calculator !\[\]\(b792654f2cef9719eabeb6c5be00811e_img.jpg\)](#)

$$ex \quad 7.98m^3/s = 25 \cdot 13.3m^2 \cdot 0.024m$$

7) Recharge from Rainfall in Alluvial West Coast Areas for Known Maximum Rainfall Factor

$$fx \quad R_{awc} = 12 \cdot A_{cr} \cdot P_{nm}$$

[Open Calculator !\[\]\(84f47badaad7772cd95667a7c387a639_img.jpg\)](#)

$$ex \quad 3.8304m^3/s = 12 \cdot 13.3m^2 \cdot 0.024m$$



8) Recharge from Rainfall in Hard Rock Areas with Consolidated Sandstone for Maximum Rainfall Factor

$$fx \quad R_{hra} = 8 \cdot A_{cr} \cdot P_{nm}$$

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

$$ex \quad 2.5536m^3/s = 8 \cdot 13.3m^2 \cdot 0.024m$$

9) Recharge from Rainfall in Hard Rock Areas with Granulite Facies for Known Rainfall Factor

$$fx \quad R_{hra} = 6 \cdot A_{cr} \cdot P_{nm}$$

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

$$ex \quad 1.9152m^3/s = 6 \cdot 13.3m^2 \cdot 0.024m$$

10) Recharge from Rainfall in Hard Rock Areas with Laterite for Known Maximum Rainfall Factor

$$fx \quad R_{hrl} = 14 \cdot A_{cr} \cdot P_{nm}$$

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

$$ex \quad 4.4688m^3/s = 14 \cdot 13.3m^2 \cdot 0.024m$$

11) Recharge from Rainfall in Hard Rock Areas with Low Clay Content for Known Rainfall Factor

$$fx \quad R_{hrc} = 12 \cdot A_{cr} \cdot P_{nm}$$

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

$$ex \quad 3.8304m^3/s = 12 \cdot 13.3m^2 \cdot 0.024m$$



12) Recharge from Rainfall in Hard Rock Areas with Massive Poorly Fractured Rocks

$$\text{fx } R_{\text{hra}} = 7 \cdot A_{\text{cr}} \cdot P_{\text{nm}}$$

[Open Calculator !\[\]\(e2376d476d06eb31946dc01a69a4403a_img.jpg\)](#)

$$\text{ex } 2.2344\text{m}^3/\text{s} = 7 \cdot 13.3\text{m}^2 \cdot 0.024\text{m}$$

13) Recharge from Rainfall in Hard Rock Areas with Phyllites, Shales for Known Max Rainfall Factor

$$\text{fx } R_{\text{hrp}} = 14 \cdot A_{\text{cr}} \cdot P_{\text{nm}}$$

[Open Calculator !\[\]\(0b5e7e25e8775f7e7e80906ada4f0021_img.jpg\)](#)

$$\text{ex } 4.4688\text{m}^3/\text{s} = 14 \cdot 13.3\text{m}^2 \cdot 0.024\text{m}$$

14) Recharge from Rainfall in Hard Rock Areas with Semi Consolidated Sandstone for Max Rainfall Factor

$$\text{fx } R_{\text{hra}} = 8 \cdot A_{\text{cr}} \cdot P_{\text{nm}}$$

[Open Calculator !\[\]\(bd3b31712ad9bab5a241210fa6925cdd_img.jpg\)](#)

$$\text{ex } 2.5536\text{m}^3/\text{s} = 8 \cdot 13.3\text{m}^2 \cdot 0.024\text{m}$$

15) Recharge from Rainfall in Hard Rock Areas with Significant Clay Content for Known Rainfall Factor

$$\text{fx } R_{\text{hra}} = 9 \cdot A_{\text{cr}} \cdot P_{\text{nm}}$$

[Open Calculator !\[\]\(7bc43b319a082987e20f7bf78f4bab80_img.jpg\)](#)

$$\text{ex } 2.8728\text{m}^3/\text{s} = 9 \cdot 13.3\text{m}^2 \cdot 0.024\text{m}$$



16) Recharge from Rainfall in Hard Rock Areas with Vesicular and Jointed Basalt for Max Rainfall Factor

$$fx \quad R_{hra} = 9 \cdot A_{cr} \cdot P_{nm}$$

[Open Calculator !\[\]\(d3fb9f94af8b26d1c844efa9a98805b0_img.jpg\)](#)

$$ex \quad 2.8728m^3/s = 9 \cdot 13.3m^2 \cdot 0.024m$$

17) Recharge from Rainfall in Hard Rock Areas with Weathered Basalt for Known Maximum Rainfall Factor

$$fx \quad R_{hra} = 6 \cdot A_{cr} \cdot P_{nm}$$

[Open Calculator !\[\]\(e1d6102fe77919492c04879c8450f1f5_img.jpg\)](#)

$$ex \quad 1.9152m^3/s = 6 \cdot 13.3m^2 \cdot 0.024m$$

Minimum Value of Rainfall Factor for Various Hydrogeologic Conditions based on the Norms

18) Recharge from Rainfall in Hard Rock Areas consisting Vesicular and Jointed Basalt

$$fx \quad R_{hrv} = 5 \cdot A_{cr} \cdot P_{nm}$$

[Open Calculator !\[\]\(104fbf564e2e5a8fbd84f31656d114c7_img.jpg\)](#)

$$ex \quad 1.596m^3/s = 5 \cdot 13.3m^2 \cdot 0.024m$$

19) Recharge from Rainfall in Hard Rock Areas consisting Weathered Basalt

$$fx \quad R_{wvb} = 4 \cdot A_{cr} \cdot P_{nm}$$

[Open Calculator !\[\]\(21226b58c700e5231ab98d27101bac58_img.jpg\)](#)

$$ex \quad 1.2768m^3/s = 4 \cdot 13.3m^2 \cdot 0.024m$$



20) Recharge from Rainfall in Hard Rock Areas of Massive Poorly Fractured Rocks

$$\text{fx } R_{\text{fr}} = 5 \cdot A_{\text{cr}} \cdot P_{\text{nm}}$$

[Open Calculator !\[\]\(9dfdaff1d86ba3c1f8353b4d1b61b8c5_img.jpg\)](#)

$$\text{ex } 1.596\text{m}^3/\text{s} = 5 \cdot 13.3\text{m}^2 \cdot 0.024\text{m}$$

21) Recharge from Rainfall in Hard Rock Areas of Significant Clay content for Known Min Rainfall Factor

$$\text{fx } R_{\text{hra}} = 8 \cdot A_{\text{cr}} \cdot P_{\text{nm}}$$

[Open Calculator !\[\]\(2b376d1a92330ab09dad2665d2f89bf5_img.jpg\)](#)

$$\text{ex } 2.5536\text{m}^3/\text{s} = 8 \cdot 13.3\text{m}^2 \cdot 0.024\text{m}$$

22) Recharge from Rainfall in Hard Rock Areas with Consolidated Sandstone

$$\text{fx } R_{\text{ss}} = 6 \cdot A_{\text{cr}} \cdot P_{\text{nm}}$$

[Open Calculator !\[\]\(c444627dab9fee9a1550c053ffaaaae2_img.jpg\)](#)

$$\text{ex } 1.9152\text{m}^3/\text{s} = 6 \cdot 13.3\text{m}^2 \cdot 0.024\text{m}$$

23) Recharge from Rainfall in Hard Rock Areas with Granulite Facies for Known Minimum Rainfall Factor

$$\text{fx } R_{\text{gf}} = 4 \cdot A_{\text{cr}} \cdot P_{\text{nm}}$$

[Open Calculator !\[\]\(06a315363e7801bba8c7489a6694af19_img.jpg\)](#)

$$\text{ex } 1.2768\text{m}^3/\text{s} = 4 \cdot 13.3\text{m}^2 \cdot 0.024\text{m}$$



24) Recharge from Rainfall in Hard Rock Areas with Laterite for Known Min Rainfall Factor

$$\text{fx } R_{\text{hra}} = 12 \cdot A_{\text{cr}} \cdot P_{\text{nm}}$$

[Open Calculator !\[\]\(6605b201d6f14d9b3bcb8ab5f274d107_img.jpg\)](#)

$$\text{ex } 3.8304\text{m}^3/\text{s} = 12 \cdot 13.3\text{m}^2 \cdot 0.024\text{m}$$

25) Recharge from Rainfall in Hard Rock Areas with Low Clay content for Known Minimum Rainfall Factor

$$\text{fx } R_{\text{hra}} = 10 \cdot A_{\text{cr}} \cdot P_{\text{nm}}$$

[Open Calculator !\[\]\(e8fb589d58dad1692debababa5e928b6_img.jpg\)](#)

$$\text{ex } 3.192\text{m}^3/\text{s} = 10 \cdot 13.3\text{m}^2 \cdot 0.024\text{m}$$

26) Recharge from Rainfall in Hard Rock Areas with Phyllites, Shales given Min Rainfall Factor

$$\text{fx } R_{\text{hra}} = 10 \cdot A_{\text{cr}} \cdot P_{\text{nm}}$$

[Open Calculator !\[\]\(4688aadfd656ded00cd6bdfae55089a9_img.jpg\)](#)

$$\text{ex } 3.192\text{m}^3/\text{s} = 10 \cdot 13.3\text{m}^2 \cdot 0.024\text{m}$$

27) Recharge from Rainfall in Hard Rock Areas with Semi Consolidated Sandstone for Min Rainfall Factor

$$\text{fx } R_{\text{ss}} = 6 \cdot A_{\text{cr}} \cdot P_{\text{nm}}$$

[Open Calculator !\[\]\(4146d17f71dced09c6ad789cacceaa6d_img.jpg\)](#)

$$\text{ex } 1.9152\text{m}^3/\text{s} = 6 \cdot 13.3\text{m}^2 \cdot 0.024\text{m}$$



28) Recharge from Rainfall in Indo Gangetic and Inland Alluvial Areas for Known Minimum Rainfall Factor

$$fx \quad R_{rf} = 20 \cdot A_{cr} \cdot P_{nm}$$

[Open Calculator !\[\]\(c3d993ca47bfe2a953c700506ce31fa0_img.jpg\)](#)

$$ex \quad 6.384m^3/s = 20 \cdot 13.3m^2 \cdot 0.024m$$

29) Recharge from Rainfall in Silty Alluvial Areas for Known Minimum Rainfall Factor

$$fx \quad R_{rf} = 20 \cdot A_{cr} \cdot P_{nm}$$

[Open Calculator !\[\]\(17413706fd4997a1a4bdf85c6864eee1_img.jpg\)](#)

$$ex \quad 6.384m^3/s = 20 \cdot 13.3m^2 \cdot 0.024m$$

30) Recharge from Rainfall in West Coast Alluvial Areas for Known Minimum Rainfall Factor

$$fx \quad R_{awc} = 8 \cdot A_{cr} \cdot P_{nm}$$

[Open Calculator !\[\]\(4b7a79268f6ba26c1471d4232fffa85a_img.jpg\)](#)

$$ex \quad 2.5536m^3/s = 8 \cdot 13.3m^2 \cdot 0.024m$$

Recommended Value for Rainfall Factor for Various Hydrogeologic Conditions based on Norms

31) Recharge from Rainfall in Alluvial Indo Gangetic and Inland Areas

$$fx \quad R_{ai} = 22 \cdot A_{cr} \cdot P_{nm}$$

[Open Calculator !\[\]\(56549452e01ca28bdf2500ced9653143_img.jpg\)](#)

$$ex \quad 7.0224m^3/s = 22 \cdot 13.3m^2 \cdot 0.024m$$



32) Recharge from Rainfall in East Coast Alluvial Areas

$$fx \quad R_{aec} = 16 \cdot A_{cr} \cdot P_{nm}$$

[Open Calculator !\[\]\(0f848bbd71cef6b345273b16f905912a_img.jpg\)](#)

$$ex \quad 5.1072m^3/s = 16 \cdot 13.3m^2 \cdot 0.024m$$

33) Recharge from Rainfall in Hard Rock Areas consisting Massive Poorly Fractured Rocks

$$fx \quad R_{fr} = 6 \cdot A_{cr} \cdot P_{nm}$$

[Open Calculator !\[\]\(3211b5d1d968fc1665909b34f9f16010_img.jpg\)](#)

$$ex \quad 1.9152m^3/s = 6 \cdot 13.3m^2 \cdot 0.024m$$

34) Recharge from Rainfall in Hard Rock Areas of Consolidated Sandstone

$$fx \quad R_{ss} = 7 \cdot A_{cr} \cdot P_{nm}$$

[Open Calculator !\[\]\(9c2e8d1b5bd77cb5c9f83b7a9cff79fd_img.jpg\)](#)

$$ex \quad 2.2344m^3/s = 7 \cdot 13.3m^2 \cdot 0.024m$$

35) Recharge from Rainfall in Hard Rock Areas with Granulite Facies

$$fx \quad R_{gf} = 5 \cdot A_{cr} \cdot P_{nm}$$

[Open Calculator !\[\]\(235bfe13ebf007ce2eea9e689707fac7_img.jpg\)](#)

$$ex \quad 1.596m^3/s = 5 \cdot 13.3m^2 \cdot 0.024m$$

36) Recharge from Rainfall in Hard Rock Areas with Laterite

$$fx \quad R_{hrl} = 13 \cdot A_{cr} \cdot P_{nm}$$

[Open Calculator !\[\]\(291e070cef6c4d5e78fefe4696ef53be_img.jpg\)](#)

$$ex \quad 4.1496m^3/s = 13 \cdot 13.3m^2 \cdot 0.024m$$



37) Recharge from Rainfall in Hard Rock Areas with Low Clay Content

$$fx \quad R_{hrc} = 11 \cdot A_{cr} \cdot P_{nm}$$

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

$$ex \quad 3.5112m^3/s = 11 \cdot 13.3m^2 \cdot 0.024m$$

38) Recharge from Rainfall in Hard Rock Areas with Phyllites, Shales

$$fx \quad R_{hrp} = 12 \cdot A_{cr} \cdot P_{nm}$$

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

$$ex \quad 3.8304m^3/s = 12 \cdot 13.3m^2 \cdot 0.024m$$

39) Recharge from Rainfall in Hard Rock Areas with Semi Consolidated Sandstone

$$fx \quad R_{ss} = 7 \cdot A_{cr} \cdot P_{nm}$$

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

$$ex \quad 2.2344m^3/s = 7 \cdot 13.3m^2 \cdot 0.024m$$

40) Recharge from Rainfall in Hard Rock Areas with Significant Clay Content

$$fx \quad R_{hra} = 8 \cdot A_{cr} \cdot P_{nm}$$

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

$$ex \quad 2.5536m^3/s = 8 \cdot 13.3m^2 \cdot 0.024m$$

41) Recharge from Rainfall in Hard Rock Areas with Vesicular and Jointed Basalt

$$fx \quad R_{hra} = 8 \cdot A_{cr} \cdot P_{nm}$$

[Open Calculator !\[\]\(aff7c69c44a5e015f18c35867ef3f5c3_img.jpg\)](#)

$$ex \quad 2.5536m^3/s = 8 \cdot 13.3m^2 \cdot 0.024m$$




42) Recharge from Rainfall in Hard Rock Areas with Weathered Basalt 

fx $R_{wb} = 5 \cdot A_{cr} \cdot P_{nm}$

Open Calculator 

ex $1.596\text{m}^3/\text{s} = 5 \cdot 13.3\text{m}^2 \cdot 0.024\text{m}$

43) Recharge from Rainfall in West Coast Areas based on Recommended Rainfall Infiltration Factor 

fx $R_{awc} = 10 \cdot A_{cr} \cdot P_{nm}$

Open Calculator 

ex $3.192\text{m}^3/\text{s} = 10 \cdot 13.3\text{m}^2 \cdot 0.024\text{m}$



Variables Used




- **A_{cr}** Area of Computation for Recharge (Square Meter)
- **f** Rainfall Infiltration Factor
- **P_{nm}** Normal Rainfall in Monsoon Season (Meter)
- **R_{aec}** Recharge from Rainfall in Alluvial East Coast (Cubic Meter per Second)
- **R_{ai}** Recharge from Rainfall in Alluvial Indo (Cubic Meter per Second)
- **R_{awc}** Recharge from Rainfall in Alluvial West Coast (Cubic Meter per Second)
- **R_{fr}** Rainfall Recharge in Hard Rock Poorly Fractured (Cubic Meter per Second)
- **R_{gf}** Rainfall Recharge in Hard Rock Granulite Facies (Cubic Meter per Second)
- **R_{hra}** Recharge from Rainfall in Hard Rock Areas (Cubic Meter per Second)
- **R_{hrc}** Recharge from Rainfall in Hard Rock Low Clay (Cubic Meter per Second)
- **R_{hrl}** Recharge from Rainfall in Hard Rock Laterite (Cubic Meter per Second)
- **R_{hrp}** Recharge from Rainfall in Hard Rock Phyllites (Cubic Meter per Second)
- **R_{hrv}** Recharge from Rainfall in Hard Rock Vesicular (Cubic Meter per Second)
- **R_{rf}** Recharge from Rainfall (Cubic Meter per Second)



- **R_{rfm}** Recharge from Rainfall in Monsoon Season (*Cubic Meter per Second*)
- **R_{ss}** Rainfall Recharge in Hard Rock Sandstone (*Cubic Meter per Second*)
- **R_{wb}** Rainfall Recharge in Hard Rock Weathered Basalt (*Cubic Meter per Second*)






Constants, Functions, Measurements used

- **Measurement: Length** in Meter (m)
Length Unit Conversion 
- **Measurement: Area** in Square Meter (m²)
Area Unit Conversion 
- **Measurement: Volumetric Flow Rate** in Cubic Meter per Second (m³/s)
Volumetric Flow Rate Unit Conversion 



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