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Capacity of Distribution Reservoir Formulas

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List of 8 Capacity of Distribution Reservoir Formulas

Capacity of Distribution Reservoir

1) Average Domestic Demand given Total Storage Capacity

$$\text{fx } D = \frac{T - \left(\left(\frac{10}{24} \right) \cdot (F - P) \right)}{a + b + \left(\frac{10}{24} \right)}$$

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

$$\text{ex } 134.9953\text{L/d} = \frac{505.08\text{L/d} - \left(\left(\frac{10}{24} \right) \cdot (1100\text{L/d} - 120\text{L/d}) \right)}{0.2 + 0.1 + \left(\frac{10}{24} \right)}$$

2) Fire Demand given Reserve Storage

$$\text{fx } F = \left(\frac{V_R}{t} \right) + P$$

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

$$\text{ex } 1100\text{L/d} = \left(\frac{1960\text{L}}{2\text{d}} \right) + 120\text{L/d}$$

3) Fire Demand given Total Storage Capacity

$$\text{fx } F = \frac{T - \left(\left(a + b + \left(\frac{10}{24} \right) \right) \cdot D \right) + \left(\left(\frac{10}{24} \right) \cdot P \right)}{\frac{10}{24}}$$

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

$$\text{ex } 1099.992\text{L/d} = \frac{505.08\text{L/d} - \left(\left(0.2 + 0.1 + \left(\frac{10}{24} \right) \right) \cdot 135\text{L/d} \right) + \left(\left(\frac{10}{24} \right) \cdot 120\text{L/d} \right)}{\frac{10}{24}}$$



4) Fire Demand given Value of McDonald Coefficient

$$fx \quad F = \frac{T - \left(\left(0.2 + 0.1 + \left(\frac{10}{24} \right) \right) \cdot D \right) + \left(\left(\frac{10}{24} \right) \cdot P \right)}{\frac{10}{24}}$$

Open Calculator 

ex

$$1099.992L/d = \frac{505.08L/d - \left(\left(0.2 + 0.1 + \left(\frac{10}{24} \right) \right) \cdot 135L/d \right) + \left(\left(\frac{10}{24} \right) \cdot 120L/d \right)}{\frac{10}{24}}$$

5) Fire Duration given Reserve Storage

$$fx \quad t = \frac{V_R}{F - P}$$

Open Calculator 

$$ex \quad 2d = \frac{1960L}{1100L/d - 120L/d}$$

6) Reserve Fire Pumping Capacity given Reserve Storage

$$fx \quad P = F - \left(\frac{V_R}{t} \right)$$

Open Calculator 

$$ex \quad 120L/d = 1100L/d - \left(\frac{1960L}{2d} \right)$$

7) Reserve Storage

$$fx \quad V_R = (F - P) \cdot t$$

Open Calculator 

$$ex \quad 1960L = (1100L/d - 120L/d) \cdot 2d$$



8) Total Storage Capacity of Reservoir [Open Calculator](#) 

$$\text{fx } T = \left(a + b + \left(\frac{10}{24} \right) \right) \cdot D + \left(\frac{10}{24} \right) \cdot (F - P)$$

ex

$$505.0833\text{L/d} = \left(0.2 + 0.1 + \left(\frac{10}{24} \right) \right) \cdot 135\text{L/d} + \left(\frac{10}{24} \right) \cdot (1100\text{L/d} - 120\text{L/d})$$



Variables Used

- **a** Numerical Coefficient a
- **b** Numerical Coefficient b
- **D** Average Domestic Demand (*Liter per day*)
- **F** Fire Demand (*Liter per day*)
- **P** Capacity of Pump (*Liter per day*)
- **t** Duration of Fire (*Day*)
- **T** Total Storage Capacity (*Liter per day*)
- **V_R** Reserve Storage (*Liter*)



Constants, Functions, Measurements used

- **Measurement: Time** in Day (d)
Time Unit Conversion 
- **Measurement: Volume** in Liter (L)
Volume Unit Conversion 
- **Measurement: Volumetric Flow Rate** in Liter per day (L/d)
Volumetric Flow Rate Unit Conversion 



Check other formula lists

- **Capacity of Distribution Reservoir Formulas** 

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