Water Storage Tank Capacity for a Building or Plant

Daily water demand and storage tank volume from the number of people and demand per head, with days of storage and fire reserve, and tank plan size.

Method: Per-capita demand method (demand per head from the local code or client)

Input parameters

Unit system: SI

Parameter	Value	Unit
Number of people (or equivalent users)	200.00	
Demand per person per day Take the figure for your building type from your local code or the client.	135.00	L
Days of storage	1.0000	
Fire-fighting reserve	0	m³
Water depth in the tank	2.5000	m

Calculated results

Parameter	Value	Unit
Daily demand	27.000	m³
Storage needed	27.000	m³
Plan area of the tank at that depth	10.800	m²
Diameter of a round tank	3.7082	m
Side of a square tank	3.2863	m

Notes for this case

- Add free board above the water depth and the dead storage below the outlet to get the tank's overall size.

Formula and method

$$V_d = Nq, \quad V = V_d\, d + V_f$$

$$A = V/h, \quad D = \sqrt{4A/\pi}, \quad s = \sqrt{A}$$

Variables

N	Number of people (or equivalent users)	-
q	Demand per person per day	m³
d	Days of storage	-
V_f	Fire-fighting reserve	m³
h	Water depth in the tank	m
V_d	Daily demand	m³
V	Storage needed	m³
A	Plan area of the tank at that depth	m²
D	Diameter of a round tank	m
S	Side of a square tank	m

Method and standards

Daily demand is people times demand per head; storage is the days required plus any fire reserve. The plan area follows from the water depth.

Assumptions and limits

- Average demand; peak pumping sized separately.

References

- Per-capita demand method (demand per head from the local code or client)

Report details

Report reference	FCC-77E1-H9JX (the same inputs always give the same reference)
Generated	17 November 2026, 19:50 UTC
Calculator	Water Storage Tank Capacity for a Building or Plant
Method last reviewed	12 November 2026
Software release	FireCAD Calc, release of 17 November 2026
Release checks	3 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/civil/hydraulics/water-storage-tank-capacity

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.