Bund (Dike) Capacity and Wall Height around Tanks

Required bund capacity from the largest tank and total stored volume, and the bund wall height for a bund area after deducting tanks standing inside it.

Method: Secondary containment volume with tank displacement; Common secondary-containment practice

Input parameters

Unit system: SI

Parameter	Value	Unit
Largest tank volume	1,000.0	m³
Total volume of all tanks in the bund	2,500.0	m³
Factor on largest tank	110.00	%
Factor on total volume	25.000	%
Bund length (inside)	40.000	m
Bund width (inside)	30.000	m
Other tanks standing in the bund	2.0000	
Diameter of the other tanks	10.000	m
Freeboard	200.00	mm

Calculated results

Parameter	Value	Unit
Required bund capacity	1,100.0	m³
Effective bund area	1,042.9	m²
Liquid height needed	1.0547	m
Bund wall height with freeboard	1.2547	m

Notes for this case

- Capacity = max(f₁·largest tank, f₂·total); tanks other than the largest displace bund volume up to the liquid height. Take f₁, f₂, freeboard and wall height limits from the regulation that applies; allow for rainwater and firefighting water where required.

Formula and method

$$V_{req} = \max(f_1 V_{max}, f_2 V_{tot}), \quad h = \frac{V_{req}}{LW - n\pi D_o^2/4}$$

Variables

V_{max}	Largest tank volume	m³
V_{tot}	Total volume of all tanks in the bund	m³
f_1	Factor on largest tank	-
f_2	Factor on total volume	-
L	Bund length (inside)	m
W	Bund width (inside)	m
n	Other tanks standing in the bund	-
D_o	Diameter of the other tanks	m
h_{fb}	Freeboard	m
V_{req}	Required bund capacity	m³
A_e	Effective bund area	m²

h	Liquid height needed	m
h_w	Bund wall height with freeboard	m

Method and standards

Bund sizing.

Assumptions and limits

- Flat bund floor; vertical walls.

References

Secondary containment volume with tank displacement, Common secondary-containment practice

Report details

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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/mechanical/vessels/bund-capacity-height

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.