Well and Borewell Shock Chlorination Dose

Water volume in a well or borewell and the chlorine and bleach (or bleaching powder) needed for shock disinfection at a chosen chlorine concentration.

Method: Volume and dose arithmetic for shock disinfection

Input parameters

Unit system: SI

Parameter	Value	Unit
Well or casing inside diameter	150.00	mm
Depth of water in the well	40.000	m
Chlorine concentration wanted	100.00	mg/L
Available chlorine in the product	5.0000	%
Product density (liquids)	1,070.0	kg/m³

Calculated results

Parameter	Value	Unit
Water volume	706.86	L
Chlorine needed	70.686	g
Product mass	1.4137	kg
Product volume (liquids)	1.3212	L

Notes for this case

• Shock chlorination of a new or repaired well, or one with bacterial contamination, uses 50–200 mg/L of chlorine held for 12–24 hours before pumping to waste and retesting. The water volume is that of a cylinder of the well's diameter and water depth; add the volume of the pipework and storage being disinfected. Household bleach has about 5 % available chlorine, liquid sodium hypochlorite 10–12 %, bleaching powder about 30–33 % and calcium hypochlorite 65–70 %. Do not pump chlorinated water to the drinking supply.

Formula and method

$$V = \frac{\pi d^2}{4} h, \quad m_{Cl} = cV, \quad m_p = \frac{m_{Cl}}{s}$$

Variables

d	Well or casing inside diameter	m
h	Depth of water in the well	m
c	Chlorine concentration wanted	kg/m³
s	Available chlorine in the product	-
ρ	Product density (liquids)	kg/m³
V	Water volume	m³
m_{Cl}	Chlorine needed	kg
m_p	Product mass	kg
V_p	Product volume (liquids)	m³

Method and standards

Well chlorination.

Assumptions and limits

- Uniform mixing in the well.

References

Volume and dose arithmetic for shock disinfection

Report details

Report reference	FCC-4D4Z-63GW (the same inputs always give the same reference)
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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/environmental/drinking-water/well-shock-chlorination

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.