

Cv FLOW RATE CALCULATIONS FOR VALVE SIZING

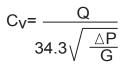
The rate of flow of a liquid or gas through a valve depends upon numerous factors such as gravity, the temperature, and pressure drop of the liquid or gas through the valve. The valves design style and flow path affects the rate of flow volume through the valve differently. A "Factor" to account for the relationship of temperature, gravity, and pressure drop through a valve enables the theoretical flow volume through that valve to be calculated. This factor is called 'C_V' (Flow Co-efficient) and it has been developed by the manufacturer through flow tests. Approximate flow capacity can be determined for valves by using the given C_V factor for a valve and applying them to the following formulae's.

Liquids:	Gas:
$Q = 34.3 C_v \sqrt{\frac{\Delta P}{G}}$	$Q = 0.234 C_v \sqrt{\frac{\Delta P(P_1 + P_2)}{G T}}$
Equation Abbreviations - Liquids:	Equation Abbreviations - Gas:
Q = Flow (Barrels/Day)	Q = Flow (MMSCFD)
Cv = Flow Factor	Cv = Flow Factor
$\triangle P$ = Pressure Drop Across Valve	P1 = Inlet Pressure (psia)
G = Specific Gravity (Water=1.0)	P2 = Outlet Pressure (psia)
	$\triangle P$ = Pressure drop (P1-P2). When P2 is less
	than 1/2 P1, use 1/3 P1, for P2 in formula.
	G = Specific Gravity (air=1.0)
	T = Flowing Temperature Absolute
	(°F + 460)

If flow capacity required is known and valve selection is desired, to calculate C_V with the following formulaes and select appropriate valve from the manufacturers C_V factor chart

Gas:

Liquids:



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