Gas Pipeline Blowdown Time (AGA Formula)

Time to blow down a closed section of gas pipeline through a blowdown pipe, from pressure, gas gravity, pipe and blowdown diameters, length and choke factor.

Input parameters

Unit system: SI

Parameter	Value	Unit
Initial pressure (absolute)	1,100.0	psi
Gas gravity (air = 1)	0.58000	
Pipeline inside diameter	34.500	in
Length of the isolated section	12.000	mi
Blowdown pipe inside diameter	7.9810	in
Choke factor of the blowdown valve	Venturi lubricated plug (3.2)	

Calculated results

Parameter	Value	Unit
Blowdown time	331.70	min
Geometric volume of the section	11,647	m³

Notes for this case

• Empirical AGA formula in common practice; the SI form T = 0.0192 P₁^{1/3} G^{1/2} D² L F_c/d² (kPa, mm, km) is identical. Gas exits to atmosphere; noise and the vent stack are not considered.

Formula and method

$$T = 0.0588 \frac{P_1^{1/3} G^{1/2} D^2 L F_c}{d^2} \quad (\text{min};\ \text{psia},\ \text{in},\ \text{mi})$$

Variables

P_1	Initial pressure (absolute)	Pa
G	Gas gravity (air = 1)	-
D	Pipeline inside diameter	m
L	Length of the isolated section	m
d	Blowdown pipe inside diameter	m
F_c	Choke factor of the blowdown valve	-
T	Blowdown time	s
V	Geometric volume of the section	m³

Method and standards

AGA empirical blowdown formula.

Assumptions and limits

- Empirical; choked flow through the blowdown pipe for most of the time.

Report details

Report reference	FCC-1B3R-V0EE (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/chemical/oil-gas/gas-pipeline-blowdown-time

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.