Shielding Gas Consumption for Welding

Shielding gas used for a welding job from flow rate, arc time per metre, weld length, arc starts and pre- and post-flow, with the number of cylinders.

Method: V = flow × (arc time + pre/post-flow) × length

Input parameters

Unit system: SI

Parameter	Value	Unit
Gas flow rate	15.000	L/min
Arc time per metre	9.7000	min
Weld length	50.000	m
Arc starts per metre	4.0000	
Pre- plus post-flow per start	3.0000	s
Gas in one cylinder (at atmospheric pressure)	9.0000	m³

Calculated results

Parameter	Value	Unit
Gas used	7.4250	m³
Cylinders (rounded up)	1.0000	

Notes for this case

- Add leaks and purging of long hoses; an over-high flow wastes gas and can draw in air.

Formula and method

$$V = \dot{V} L (t_a + n_s t_p)$$

Variables

$\dot{V}$	Gas flow rate	m³/s
t_a	Arc time per metre	s
L	Weld length	m
n_s	Arc starts per metre	-
t_p	Pre- plus post-flow per start	s
V_c	Gas in one cylinder (at atmospheric pressure)	m³
V	Gas used	m³
N	Cylinders (rounded up)	-

Method and standards

Flow × time.

Assumptions and limits

- Steady flow.
- For a total arc time instead of a time per metre, enter a weld length of 1 m and the total arc time.

References

- V = flow × (arc time + pre/post-flow) × length

Report details

Report reference	FCC-MPR0-K4E3 (the same inputs always give the same reference)
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Release checks	2 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/materials/welding/shielding-gas-consumption

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.