Petrol–Ethanol Blending (E10, E20)

Ethanol needed for a petrol sale volume at a blend percentage, the blend volume and the absolute ethanol it holds, by a volume balance without contraction.

Method: Volume balance V_e = V_p e/(1 − e) (no contraction)

Input parameters

Unit system: SI

Parameter	Value	Unit
Petrol (gasoline) volume to blend	1,000,000	L
Ethanol share of the blend (% v/v)	20.000	%
Ethanol purity (anhydrous, denatured)	99.500	%

Calculated results

Parameter	Value	Unit
Ethanol needed	250,000	L
Blend volume	1,250,000	L
Absolute ethanol in the blend	248,750	L

Formula and method

$$V_e = V_p \frac{e}{1-e}, \quad V_b = V_p + V_e$$

Variables

V_p	Petrol (gasoline) volume to blend	m³
e	Ethanol share of the blend (% v/v)	-
p	Ethanol purity (anhydrous, denatured)	-
V_e	Ethanol needed	m³
V_b	Blend volume	m³
AL	Absolute ethanol in the blend	m³

Method and standards

Volume balance.

Assumptions and limits

- No contraction.
- For a market's annual ethanol demand, enter the annual petrol sales as the petrol volume.

References

• Volume balance V_e = V_p e/(1 − e) (no contraction)

Report details

Report reference	FCC-GG8M-FHBC (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/sugar-ethanol/ethanol/petrol-ethanol-blending

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.