Ethanol Yield: Gallons per Bushel ↔ Litres per Tonne

Converts ethanol yield in US gallons per distiller's bushel (56 lb, any grain) to litres per tonne of grain as received and per tonne of dry grain.

Method: Jacques; Lyons and Kelsall (eds.); ...

Input parameters

Unit system: SI

Parameter	Value	Unit
Yield in US gallons per bushel	2.8000	
Grain moisture (as received)	15.000	%

Calculated results

Parameter	Value	Unit
Yield per tonne as received	417.27	L/t
Yield per tonne of dry grain	490.91	L/t
Ethanol mass per tonne as received (at 789.24 kg/m³)	329.33	kg/t

Formula and method

$$Y_t = \frac{Y_{bu} \times 3.785\,411\,784}{56 \times 0.453\,592\,37} \times 1000, \quad Y_{td} = \frac{Y_t}{1 - w}$$

Variables

Y_{bu}	Yield in US gallons per bushel	-
w	Grain moisture (as received)	-
Y_t	Litres per tonne as received	-
Y_{td}	Litres per tonne of dry grain	-
Y_m	Kilograms of ethanol per tonne as received (at 789.24 kg/m³)	-

Method and standards

Unit definitions.

Assumptions and limits

- Gallons of ethanol at the plant's reporting basis (denatured or not). The mass output uses pure-ethanol density, so it is the ethanol mass only for undenatured gallons; for denatured gallons it includes the denaturant's volume at ethanol density.
- Outputs are computed in SI (m³/kg and kg/kg) and shown in L/t and kg/t, with other units available.

References

• Jacques
• Lyons and Kelsall (eds.)
• The Alcohol Textbook
• 4th ed. (2003)
• ch. 4: a distiller's bushel is always 56 lb
• US gallon 3.785 411 784 L and pound 0.453 592 37 kg (exact)

Report details

Report reference	FCC-KNHC-X3FN (the same inputs always give the same reference)
Generated	17 November 2026, 19:46 UTC
Calculator	Ethanol Yield: Gallons per Bushel ↔ Litres per Tonne
Method last reviewed	13 November 2026
Software release	FireCAD Calc, release of 17 November 2026
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/grain-yield-gallons-per-bushel

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.