Packed Height from HETP and Transfer Units

HETP from the gas-phase transfer unit height and the stripping factor λ, and the packed height for a given number of theoretical stages (Perry's Eq. 13-58).

Method: Perry's Chemical Engineers' Handbook; 9th ed. (McGraw-Hill, 2019); ...

Input parameters

Unit system: SI

Parameter	Value	Unit
Height of an overall gas transfer unit	0.50000	m
Stripping factor mV/L	1.2000	
Theoretical stages	10.000	

Calculated results

Parameter	Value	Unit
Height equivalent to a theoretical plate	0.45580	m
Packed height	4.5580	m
Overall gas transfer units	9.1161	

Formula and method

$$HETP = H_{OG}\frac{\ln\lambda}{\lambda-1}, \quad Z = N\cdot HETP$$

Variables

H_{OG}	Height of an overall gas transfer unit	m
λ	Stripping factor mV/L	-
N	Theoretical stages	-
$HETP$	Height equivalent to a theoretical plate	m
Z	Packed height	m
N_{OG}	Overall gas transfer units	-

Method and standards

Perry's Eq. (13-58).

Assumptions and limits

- Straight equilibrium and operating lines.

References

- Perry's Chemical Engineers' Handbook
- 9th ed. (McGraw-Hill, 2019)
- sec. 13 (distillation)
- Eq. (13-58)

Report details

Report reference	FCC-P8A1-KS1V (the same inputs always give the same reference)
Generated	17 November 2026, 19:44 UTC
Calculator	Packed Height from HETP and Transfer Units
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/chemical/separation/packed-height-hetp

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.