Total Capital Investment: Fixed Capital, Working Capital and Start-Up

Total capital investment from fixed capital, contingency, working capital and start-up costs as shares of fixed capital (Perry's sec. 9).

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

Input parameters

Unit system: SI

Parameter	Value	Unit
Fixed capital (installed plant)	5.0000e+07	
Contingency share of fixed capital	15.000	%
Working capital share of fixed capital (with contingency)	15.000	%
Start-up cost share of fixed capital (with contingency)	8.0000	%

Calculated results

Parameter	Value	Unit
Fixed capital with contingency	5.7500e+07	
Working capital	8,625,000	
Start-up costs	4,600,000	
Total capital investment	7.0725e+07	

Formula and method

$$TCI = C_{FC}(1 + c)(1 + w + s)$$

Variables

C_{FC}	Fixed capital (installed plant)	-
c	Contingency share of fixed capital	-
w	Working capital share of fixed capital (with contingency)	-
s	Start-up cost share of fixed capital (with contingency)	-
$C_{FC}{}'$	Fixed capital with contingency	-
C_{WC}	Working capital	-
C_{SU}	Start-up costs	-
TCI	Total capital investment	-

Method and standards

Perry's capital structure with shares.

Assumptions and limits

- Working capital and start-up shares are applied to the fixed capital including contingency, C_FC(1 + c), as the formula shows. Shares quoted on fixed capital without contingency should be divided by (1 + c) first.
- Shares of fixed capital.

References

- Perry's Chemical Engineers' Handbook
- 9th ed. (McGraw-Hill, 2019)
- sec. 9 (total capital investment = fixed capital + working capital + start-up)

Report details

Report reference	FCC-36SK-B1CK (the same inputs always give the same reference)
Generated	17 November 2026, 19:50 UTC
Calculator	Total Capital Investment: Fixed Capital, Working Capital and Start-Up
Method last reviewed	13 November 2026
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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/general/economics/total-capital-investment

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.