# Plant Capital Estimate by Lang Factor

Fixed capital cost of a process plant from its delivered equipment cost by Lang's factors for solids, mixed solids–fluids and fluids processing plants.

**Method:** Lang factors for fixed capital

## Input parameters

Unit system: SI

| Parameter | Value | Unit |
|---|---|---|
| Delivered cost of the main equipment (your currency) | 5.0000e+07 | |
| Kind of plant | Fluids processing (4.74) | |
| Own Lang factor (if chosen) | 4.0000 | |

## Calculated results

| Parameter | Value | Unit |
|---|---|---|
| Lang factor used | 4.7400 | |
| Fixed capital estimate | 2.3700e+08 | |
| Installation, piping, instruments, buildings and engineering | 1.8700e+08 | |

### Notes for this case

• Lang found that the fixed capital of a plant is a fairly steady multiple of the delivered cost of its main equipment: about 3.1 for solids processing, 3.6 for mixed solids and fluids and 4.7 for fluids processing. The factor covers installation, piping, instruments, electrical, buildings, services, engineering and contingency. It suits study estimates (±30 %); detailed estimates use separate factors for each item (Hand or Guthrie methods). Working capital is extra.

## Formula and method

$$C_{FC} = f_L \, E$$

### Variables

| | | |
|---|---|---|
| $E$ | Delivered cost of the main equipment (your currency) | - |
| $\mathrm{type}$ | Kind of plant | - |
| $f_L$ | Own Lang factor (if chosen) | - |
| $C_{FC}$ | Fixed capital estimate | - |
| $C_{FC} - E$ | Installation, piping, instruments, buildings and engineering | - |

### Method and standards

Lang factor.

### Assumptions and limits

- Typical plant on a prepared site.

### References

Lang factors for fixed capital

## Report details

| | |
|---|---|
| Report reference | FCC-SSWW-0D9B (the same inputs always give the same reference) |
| Generated | 23 November 2026, 17:51 UTC |
| Calculator | Plant Capital Estimate by Lang Factor |
| Method last reviewed | 17 November 2026 |
| Software release | FireCAD Calc, release of 22 November 2026 |
| Release checks | 3 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/lang-factor-capital-estimate

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.