

Conduit Trade Size Calculator

Calculate required inside diameter and fill margin without embedding NEC tables, nominal trade-size mappings, or manufacturer data.

Generated October 10, 2026

<https://www.elecatrrix.com/wire-raceway-ampacity/conduit-trade-size-calculator/>

Inputs

Input	Value	Unit
Candidate trade size label	1 in	
Conduit inside diameter	1.049	in
Conductor count	3	conductors
Area per conductor	0.05	in ²
Entered fill limit	40	%

Results

Result	Value	Unit
Candidate trade size label	1 in	
Total conductor area	0.15	in ²
Conduit internal area	0.8643	in ²
Calculated fill	17.356	%
Required inside diameter at entered limit	0.691	in
Fill margin	22.644	%

Entered fill-limit status

within_entered_fill_limit

Calculation details

Detail	Value	Unit
Selection boundary	No nominal trade size, code-compliant fill limit, conductor listing, or final raceway selection is made; compare the required inside diameter with adopted project data.	

Formulas

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`total conductor area = conductor count x area per conductor`

`conduit internal area = pi x (inside diameter / 2)^2`

`fill percent = total conductor area / conduit internal area x 100`

`required inside diameter = 2 x sqrt(total conductor area / (fill limit / 100) / pi)`

`fill margin = entered fill limit - calculated fill percent`

Warnings and limitations

This is a high-risk screening worksheet. It does not map a nominal trade-size label, choose a code-compliant fill limit, verify conductor geometry, or approve a raceway installation.