# Calculating the P/A ratio

**Exposed Internal Perimeter / Internal Area**

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by **SOPREMA**

## U-VALUE CALCULATIONS

Divide the exposed internal perimeter by the internal area to calculate the P/A ratio as needed by the U-Value calculator. Use the P/A ratio in your U-Value calculation to find the minimum thickness of insulation needed in a floor.

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The exposed internal perimeter is the total perimeter of the floor minus the length of any walls with a heated area on the other side.

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**EXAMPLE 1** **Detached Dwelling**

Ignoring the internal walls, the overall internal dimensions of the dwelling are: 8.10m x 6.90m

**(P) The exposed perimeter is:**
8.10m + 6.90m + 8.10m + 6.90m = 30.0m

**(A) The area is:**
8.10m x 6.90m = 55.89m$^2$
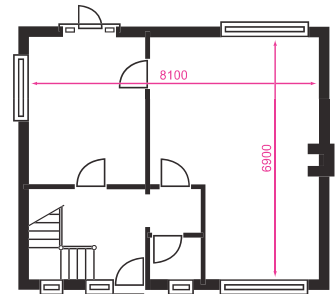The P/A ratio is 30 / 55.89 = 0.54

For this example, with a concrete slab floor, with 65mm screed above the insulation, you will require:

70mm of insulation to achieve 0.22 W/m$^2$.K

75mm of insulation to achieve 0.20 W/m$^2$.K

80mm of insulation to achieve 0.19 W/m$^2$.K

110mm of insulation to achieve 0.15 W/m$^2$.K



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**EXAMPLE 2** **New Extension**

Ignoring the internal walls, the overall internal dimensions of the dwelling are:

3.10m x 2.40m

**(P) The exposed perimeter is:**
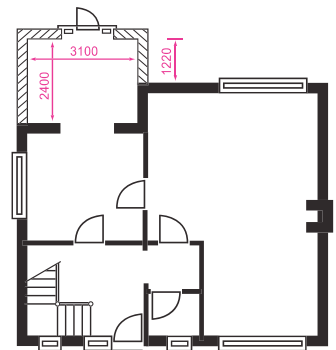2.40m + 3.10m + 1.22m = 6.72m

**(A) The area is:**
3.10m x 2.40m = 7.44m$^2$
The P/A ratio is 6.72 / 7.44 = 0.90

For this example, with a concrete slab floor, with 65mm screed above the insulation, you will require:

75mm of insulation to achieve 0.22 W/m$^2$.K

90mm of insulation to achieve 0.19 W/m$^2$.K

120mm of insulation to achieve 0.15 W/m$^2$.K



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**EXAMPLE 3** **Dwelling with Integral Garage**

Ignoring the internal walls, the overall internal dimensions of the dwelling are: 8.50m x 6.90m

**(P) The exposed perimeter is:**
8.50m + 6.90m + 7.30m + 4.02m + 2.88m + 1.20m = 30.8m

**(A) The area is:**
(8.50m x 6.90m) - (1.20m x 2.88m) = 55.19m$^2$
The P/A ratio is 30.8 / 55.19 = 0.55

For this example, with a concrete slab floor, with 65mm screed above the insulation, you will require:

70mm of insulation to achieve 0.22 W/m$^2$.K

75mm of insulation to achieve 0.20 W/m$^2$.K

80mm of insulation to achieve 0.19 W/m$^2$.K

110mm of insulation to achieve 0.15 W/m$^2$.K



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