**Foamcrete, perlcrete insulation test**

This experiment was conducted to compare the insulating capacity of the two materials.

A 5:1 Portland cement, perlite, water mix was made creating a 160 diam. x 40 mm thick sample, which was sealed and allowed one week to cure.

An identically sized sample using the same mould was made using a 5:1 Portland cement, foam, water mix which was also sealed and allowed to cure for one week.

**Drying**

The mass of each sample was then recorded daily for 10 days, when both samples failed to show any further weight loss so it was determined that both were totally dry.

The mass of both samples was similar after removal from the moulds (foamcrete 489 g perlcrete 472 g) although after drying the foamcrete was significantly denser (foamcrete 380 g, perlcrete 255 g)

After three days drying in the sun the foamcrete had lost 95% of its water content while the perlcrete had only lost 73%. It took the perlcrete sample 8 days to reach 92% water loss.

**Insulation**

Both samples were oven dried for one hour to ensure there was no residual moisture. No additional reduction in mass was observed.

The heat source used was an elec. stove hotplate cranked up pretty high.

Temperatures were measured with an IR gun.

Samples were removed from the heat source after 30 mins,, but readings continued to be recorded up to 180 mins

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| --- | --- | --- |
| Mins | Foamcrete temp C | Perlcrete temp C |
| 0 | 27.0 | 27.0 |
| 5 | 44.6 | 47.5 |
| 10 | 51.0 | 62.3 |
| 15 | 57.1 | 65.8 |
| 20 | 58.7 | 67.4 |
| 25 | 65.3 | 68.9 |
| 30 | 71.7 | 76.3 |
| 40 | 78.4 | 66.1 |
| 50 | 65.4 | 50.8 |
| 60 | 51.3 | 47.5 |
| 120 | 40.3 | 32.4 |
| 180 | 29.2 | 29.5 |
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The results show clearly that the foamcrete out perfomed the perlcrete on both heating and cooling by a small margin.

It also shows the lower quantity of water required and the resulting faster rate of water removal for foamcrete.

**Absorbency**

To test the absorbency of the two samples both the perlcrete and the foamcrete samples were placed in a container containing 200 ml of water. After 10 mins the perlcrete sample had absorbed all the water. When the test was repeated with the foamcrete sample after 10 mins there was still 71 ml of water remaining (the sample had absorbed 129 ml of water compared to 200 ml for the perlcrete.