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# TECHNICAL REPORT

## WATER ABSORPTION REDUCTION OF AAC USING SAAVYSIL TREATMENT

### OBJECTIVE

To evaluate the effectiveness of Saavysil penetrating treatment in reducing water absorption of Autoclaved Aerated Concrete (AAC) under controlled immersion conditions using ASTM C642-based comparative methodology.

### TEST METHOD

Water absorption was evaluated using a **modified ASTM C642 immersion procedure**.

**Procedure:**

- AAC specimen dried at **110°C for 24 hours** to constant mass
- Oven-dry weight recorded (reference weight)
- Specimen immersed in water for **24 hours** (untreated condition)
- Specimen re-dried at **110°C**
- Treatment applied to dried specimen
- Specimen cured for **7 days (ambient conditions)**
- Treated specimen immersed in water for **24 hours**
- Water absorption determined from mass gain relative to oven-dry weight

### TEST DATA

| PARAMETER | VALUE(g) |
|---|---|
| As-supplied weight | 679.80 |
| Oven-dry weight (A) | 554.43 |
| Untreated soaked weight | 915.08 |
| Treated soaked weight | 625.40 |

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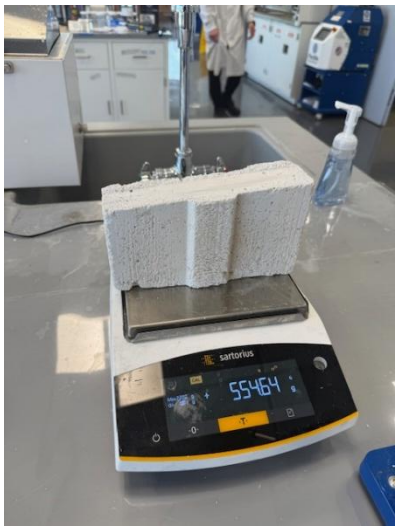


110$^{O}$C 24 Hours Dry


No Sealer
-24 Hours Water Immersion


Sealer Applied
-24 Hours Water Immersion

## CALCULATIONS

- **Untreated Water Absorption**
  - $915.08 - 554.43 = 360.65$ g
- **Treated Water Absorption**
  - $625.40 - 554.43 = 70.97$ g
- **Reduction in Water Absorption**
  - $\frac{360.65-70.97}{360.65} \times 100 = 80.3\%$

## RESULTS

**Treated AAC exhibited approximately 80% reduction in 24-hour water absorption compared to untreated AAC.**

## OBSERVATIONS

- Untreated AAC demonstrated high water uptake consistent with its porous structure
- Treated AAC showed significantly reduced water absorption
- Water repellency is attributed to penetration and internal pore modification
- No visible surface film formation observed

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## DICUSSION

The substantial reduction in water absorption indicates effective **penetration and hydrophobic modification** of AAC pore structure.

This performance may contribute to:

- Reduced moisture ingress
- Improved durability
- Enhanced performance of plaster, coatings, and finishes
- Lower risk of cracking and efflorescence

## CONCLUSION

Under a modified ASTM C642 immersion test, the treatment achieved **~80% reduction in water absorption** of AAC.

This demonstrates strong performance for **highly porous substrates** where water ingress is a primary concern.

## METHOD STATEMENT

This evaluation is based on ASTM C642 principles using oven-dry reference weight. The procedure is modified to assess **comparative performance of treated vs untreated AAC** under identical immersion conditions.