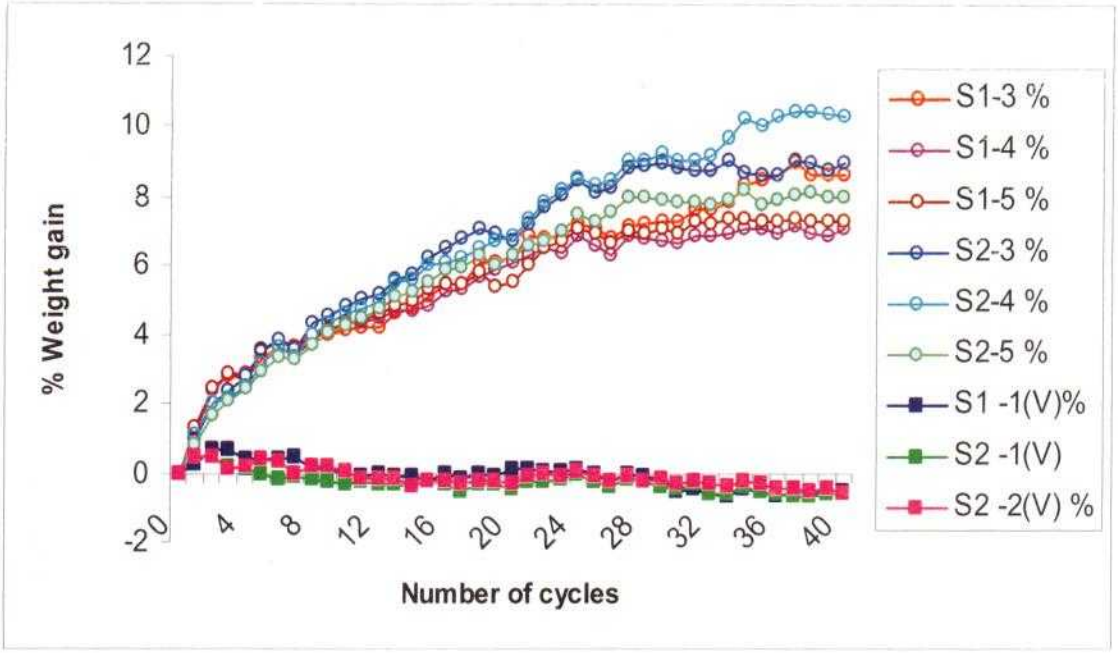


Figure 1. Percentage weight change of specimens taken from solid blocks (Vaseline treated samples contain "V" in the name)

Figure 2 shows the change of weight of the specimens prepared from hollow Benex block during the salt exposure cycles. As with the solid specimens, these specimens also showed a gradual increase in weight with the exposure up to about 35 cycles. No significant change in weight was observed with Vaseline treated specimens (H1 V and H2 V). Also, no solid deposits were found in the solutions.

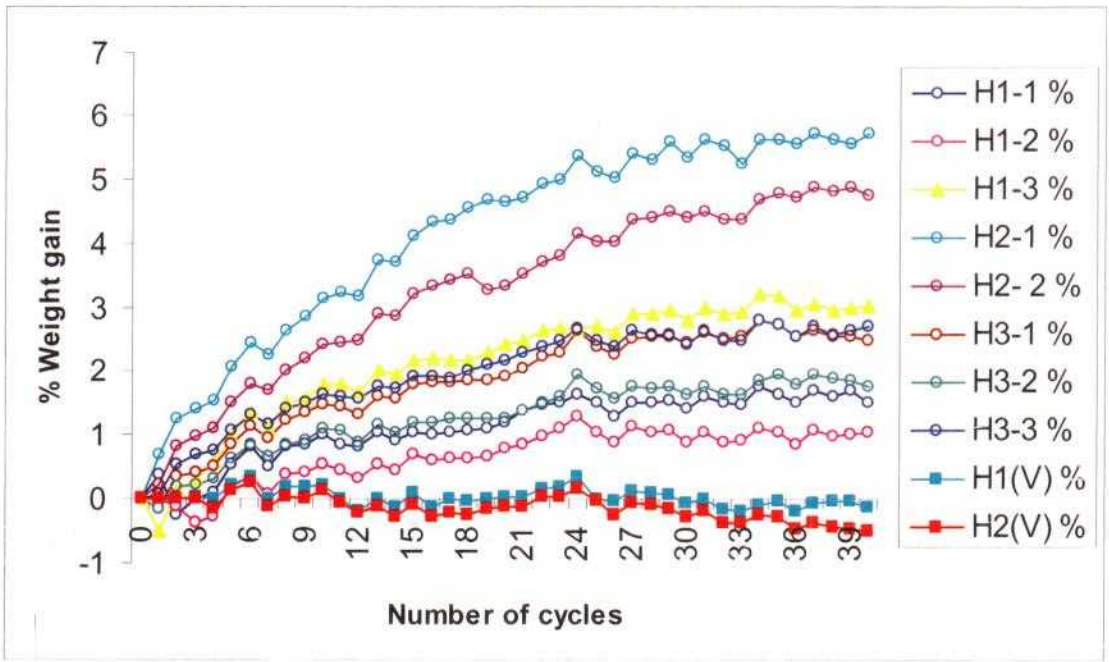


Figure 2. Percentage weight change of specimens taken from hollow blocks (Vaseline treated samples contain "V" in the name)

Discussion

The procedure used in this work is the recommended standard method to determine the resistance to salt attack of materials other than stone (method B). The gradual increase in weight of the non-Vaseline treated samples indicates absorption and diffusion of salt through the specimens. This was also clearly visible by the salt deposits found on the surface, towards the end of the treatment cycles. It is normally believed that salt depositions (crystallization) within the cement phase can lead to expansions and crack formations. However, there was no visible deterioration signs/cracks with any of the specimens studied. Therefore, it is possible that the polystyrene embedded medium in the tested specimens can withstand against any resistance/expansion created by salt deposits. A detailed analysis of the microstructure may help in establishing the mechanism that takes place in these samples.

The results of the Vaseline applied specimens also show that salt absorption does not occur or is minimal through the external surfaces of solid and hollow Benex units, which is the case in real life applications.

As per AS/NZS 4456.10:1997, both solid and hollow Benex blocks can be graded as "exposure" type.

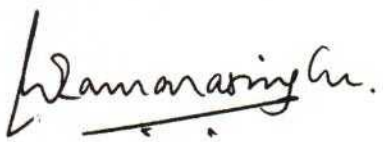
Conclusions

1. As per AS/NZS 4456.10:2003 method B, both solid and hollow samples of Benex blocks seem to be resistant to salt attack.

2. Salt diffusion occurs only through open (cut) surfaces of the specimens. Capped surfaces seem to be impermeable towards salt movement.

3. Both solid and hollow Benex blocks can be categorized as "Exposure Grade" as per AS/NZS 4456.10.1977. Hence, they can be used in aggressive environments such as severe marine environments and aggressive soils; as per Clause 5.2.5 of AS 3700-2001.

Yours sincerely.



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