DEGRADATION OF POLYMERS BY MICROORGANISMS

Table 1: Brief Summary of Synthetic Polymers

Synthetic Polymer(s)	Degrading Microorganisms	Main Mode of Action	Reference(s)
PVC	Fungi (e.g. Aureobasidiumpullulans) and bacteria (e.g. Pseudomonas aeruginosa)	Increased loss of plasticizers due to microbial degradation	Webb, J. S., Nixon, M., Eastwood, I. M., Greenhalgh, M., Robson, G. D., & Handley, P. S. (2000). Fungal colonization and biodeterioration of plasticized polyvinyl chloride. Appl. Environ. Microbiol., 66(8), 3194-3200.
Polyurethane[a]	Fungi (e.g. Chaetomiumglobosum) and bacteria (e.g. Bacillus subtilis)	Enzymatic activity	Russell, J. R., Huang, J., Anand, P., Kucera, K., Sandoval, A. G., Dantzler, K. W., ... & Marks, D. H. (2011). Biodegradation of polyester polyurethane by endophytic fungi. Appl. Environ. Microbiol., 77(17), 6076-6084. Kerr, N., & Batcheller, J. (1993). Degradation of polyurethanes in 20th-century museum textiles. Saving the Trentieth Century: The Conservation of Modern Materials.(ed Grattan, DW). Ottawa: Canadian Conservation Institute.
Nylon	Wood-degrading fungi (e.g. Bjerkanderaadusta) and bacteria (e.g. Bacillus pallidus)	Physical disruption and enzymatic degradation	Friedrich, J., Zalar, P., Mohorcic, M., Klun, U., & Kržan, A. (2007). Ability of fungi to degrade synthetic polymer nylon-6. Chemosphere, 67(10), 2089-2095. Szostak-Kotowa, J. (2004). Biodeterioration of textiles. Int. Biodeterior. Biodegrad, 53, 165-170.
Acrylics	Melanin-producing fungi	Likely physical disruption	Cappitelli, F., Principi, P., Pedrazzani, R., Toniolo, L., & Sorlini, C. (2007). Bacterial and fungal deterioration of the Milan Cathedral marble treated with protective synthetic resins. Science of the Total Environment, 385(1-3), 172-181. Kigawa, R. (2005). Evaluation of mould resistance of various synthetic resins used in conservation of historic sites [Title and text in Japanese]. Science for conservation= Hozon kagaku, (44), 149-156. Shirakawa, M. A., Gaylarde, C. C., Gaylarde, P. M., John, V., & Gambale, W. (2002). Fungal colonization and succession on newly painted buildings and the effect of biocide. FEMS microbiology ecology, 39(2), 165-173.

THE COMMON REDIAL MEASURES OF REPAIRINGAND WATER LEAKAGE PREVENTION





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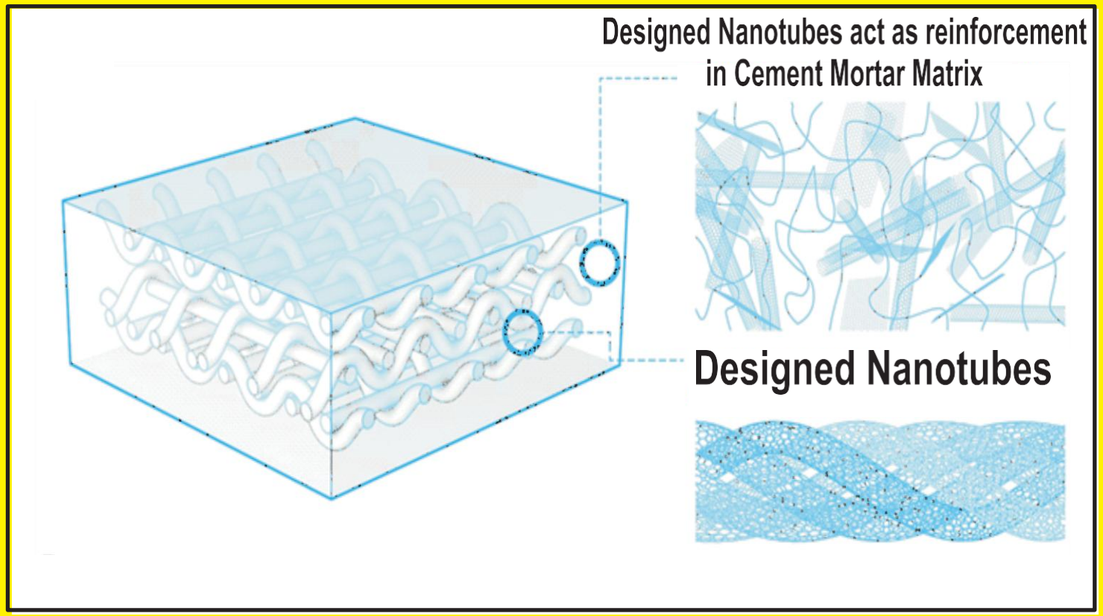
MAKE CONSTRUCTION DURABLE AND WATER RESISTANT BY

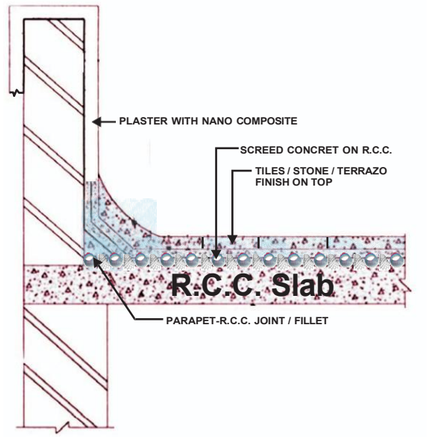
NANO TECHNOLOGY

TECHNICAL COMPARISON BETWEEN NANOTECHNOLOGY BASED SYSTEM AND CONVENTIONAL WATERPROOFING SYSTEM IN R.C.C. WATERPROOFING

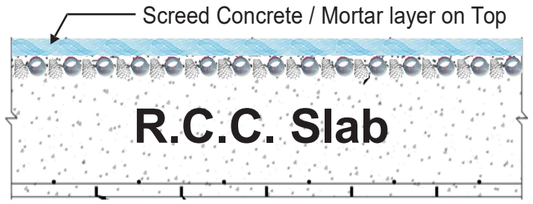
To get a crack free P.C.C. add 1 Ltr. SYLOCON SUPER in one bag cement used to prepare a screed concrete



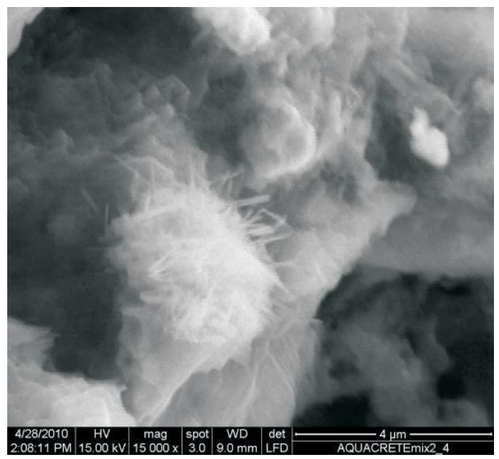
NANOTECHNOLOGY BASED SYSTEM





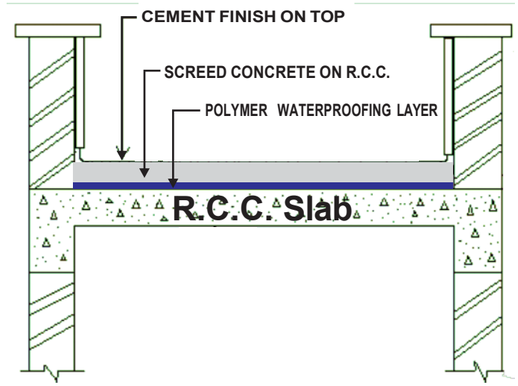


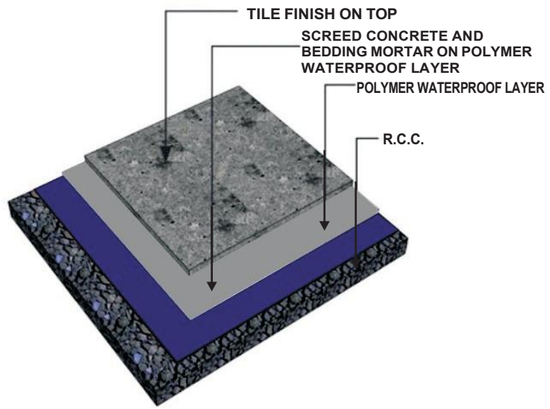
THAT HAPPENS AFTERWARDS



C-S-H Matrix with Nano Composite

POLYMER BASED WATERPROOFING SYSTEM





THAT HAPPENS AFTERWARDS





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Microbial Degradation Of Different Polymers

