

## **Mechanical Properties and Durability Studies of Cement Mortar using Concrete with Natural Gum viscosity Enhancer**

*M.G.L.Annaamalai \**, *G.Maheswaran \**, *R.YUVARAJA\**

<sup>1</sup>Department of Civil Engineering , VSA School of Engineering & School of Management, Salem- 636010, Tamil Nadu ,India.

Department of Civil Engineering , VSA School of Engineering & School of Management, Salem- 636010, Tamil Nadu ,India.

**Abstract:** To evaluate the influence of natural gum using concrete with enhanced properties for their processing by making them very useful resulting in the superiority of concrete. The dry powder of Welan Gum is called (WLG) crude extract were analyzed for the primary phytochemical constituents. The WLG were evaluated by the various techniques viscosity modifiers, slump test, compacting, Vee Bee, final setting test, mechanical strength, physical properties, weight loss, electrochemical studies and also characterized by FT-IR, SEM, EDX, and XRD. In this study, the effect of WLG as set retarding admixture in cement pastes was studied. The possibility of using WLG powder as water reducing admixture both in cement and mortar concrete was also investigated. The WLG powders with different ratio blank %, 0.2% - 1.6% were studied. The physical properties of durability studies of concrete 7, 28, 56, 90 days in fresh concrete strength was measured there is an increase in hardened concrete strength, both the initial and final setting times and improves the workability of the concrete and reduces its water requirement and the concrete is slightly improves its durability in acidic medium. The initial characterization studies of WLG shows the possible functional group present in the FT-IR spectrum. The phytochemical constituent's alkaloid, saponin, flavanoid, coumarin, cycloglycoside and steroids were present of crude extract of WLG. The Surface morphology studies of SEM confirmed the formation of adsorbed protective layer of the inhibitor on the steel surface. The Elemental analyses EDX studies was confirmed the present and absent of the elements from concrete using natural admixtures. The fingerprint characterization studies of cement mortar using concrete were observed by the major peak from the natural gum compared to maximum concentration of 2 % was confirmed by this study. These findings results are that the crude extract of WLG has an excellent physical and mechanical properties of the concrete are considered as potential sources of industries.

**Keywords:** welan gum, Phytochemical screening, Mechanical properties, FT-IR, SEM, EDX and XRD.

**Corresponding Author:** MGL. Annaamalai, Assistant Professor, Department of Civil Engineering, VSA School of Engineering & School of Management, Salem- 636010, Tamil Nadu, India.

Mobile. No: +919994305237