# Modified The Iraqi Ordinary Portland Cement (Um-Qaser) Using Aniline Monomer

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*Abstract*—**This study try to modified the concrete mixes by adding the ( monomer of aniline ) to the fresh concrete mixes using two type of cement mortar cubes ( 50 x 50 x50 mm ) with cement : sand ratio 1:3 and concrete cubes with dimension ( 150 x 150 x 150 )mm with concrete mix ( cement: sand: gravel) ( 1:1.5:3). This research includes two important variables factors, the polymer ratio and (monomer of aniline) and the method of curing, (water curing, moist curing, and dry curing (by the air). This research also investigate the compressive strength of Iraqi Ordinary Portland cement manufactured by ( Um Qaser Factory) , this property was modified by using ( Monomer Aniline ) ( impure) with different volume ratio from 1 ml to 5ml ( volumetric quantity) of cement as additive to the mortar and concrete mixes at age 14 days . The cement, sand and gravel were analysis according to the B.S specification. The result show that the water curing (for mortar and concrete cubes immersed in water) is the better than the other method. The maximum compressive strength obtained in this study was 14.49 MPa for mortar with 2 milliliter of monomer, and (15.24) MPa for moist curing. Also the splitting tensile strength, flexural strength were computed at 2 milliliter monomer additive comparing with Kuwait cement (Abraj) and the result appear that Iraqi cement showing better results.**

***Keywords-Monomer Analine, Mortar Cubes , Concrete Cubes , Modified Concrete mixes, compressive strength,Curing Method.***

## I. INTRODUCTION

As known the concrete was used since over 170 years ago , where the cement consider in the main component of the construction projects with a huge quantity , in America the total amount of using cement is more than 800 million ton per year which reflect the human needs for this product and modified it economically and environmentally .at early time the most disadvantage of cement its ( draying shrinkage ) and the week tensile resistance and delaying hardening and it's easy to attacked by the chemical materials causing some corrosion of steel and that make the concrete durability very weak. [1-2].

On the other side the most important cement properties and the concrete it's the workability of mixing giving the mixes significant properties especially in the hot weather (like Iraq). ACI code (American Concrete Institute) defined or describes workability as "that property of freshly mixed concrete or mortar that determines the ease with which it can be mixed, placed, consolidated, and finished to a homogenous condition." After that many research in this field to modified and developed the cement, one of these method was using the polymers where adding the natural and artificial rubber and the insoluble polymers in 1924 [4] in Britain and followed by patents in this field [5-8] the research includes the use of polymers and Neoprene poly acrylic ester latexes and polyvinyl-acetate [9-10]. This kind of researches was carry a great attention in 1950 after published a patents for modified concrete in USSR the previous Soviet Union [11] because of good properties enabled to overcome the disadvantages of commercial cement which expand the application of making t the concrete have very good compressive , tensile, stress resistance, bonding strength , also modified the chemical resistance against different chemical materials where the first research was focusing on polyester , Epoxy and Furan [12-14] due the good effect of these additives in changing the physical, mechanical, electrical and thermal properties .Researches continued in this field especially to know the technique using the additives at the right conditions to obtain the best results.

The aim of this research is studying the changing in compressive strength for concrete cubes and mortar as a function to two variables, first the additives ratio (monomer aniline) and the second.

## II. WORK METHOD

The used cement in this study is Iraqi Portland Cement product by UM QASIR CEMENT FACTORY which analyzed for physical characteristics according to the

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