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### Effect of Changing Weight Percentages of Copper of Aged and Non-Aged for Al-Cu-Mg-Ag alloys on The Mechanical Properties

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Al-Cu-Mg-Ag alloys was suggested to replace the one that was used in Concorde aircraft. This alloys showed good mechanical properties, especially at high temperatures. This special properties arise from combined effect of special precipitates  $\Omega$  and  $\theta'$ . The  $\Omega$  precipitates displayed high stability at high temperature which made it a good candidate for supersonic speed civil transport. Effect of increasing Cu amount was not distinct. This is what stimulated the current investigation. Two alloys of Al-Cu-Mg-Ag, with same weight percentages of Mg and Ag and different of Cu, were cast and hot rolled. The mechanical properties were studied at room temperature for aged and non-aged conditions. Aging process was performed at 190 °C after solution treatment and quenching. Tensile samples of alloy No.1 were taken after aging for 1 h, 8 h, and 32 h, representing underaged, peak-aged, overaged respectively. While in alloy No.2, the samples were taken at 30 min, 2 h, and 32 h, representing different aging conditions. The impact of Cu on non-aged alloys was barely seen. However, for aged conditions Cu has a significance influence on mechanical properties. Increasing Cu improved the mechanical properties with about 40% for yield strength and 37% for ultimate tensile strength (UTS).

#### **Biography:**

Mr. Abdulaleem Alobaisi is a Master Student of Material Engineering in King Saud University, Riyadh, KSA. He got his Bachelor Degree of Mechanical Engineering from King Abdulaziz University, KSA in 2011. He Joined the National Center for Advanced Material in King Abdulaziz City for Science and Technology KACST for four years. Now, He is teaching assistance of Mechanical Engineering in King Abdulaziz University, KSA. His researches are focusing on lightweight alloys