

Review of: "The Influence of Hot Extrusion on The Mechanical and Wear Properties of an Al6063 Metal Matrix Composite Reinforced With Silicon Carbide Particulates"

Emmanuel Pacheco Rocha Lima¹

¹ Universidade de Brasília

Potential competing interests: No potential competing interests to declare.

Review:

1. HOW MANY SAMPLES WERE USED FOR EACH TEST CARRIED OUT? WERE THE AVERAGES AND DEVIATIONS OF THE VALUES OBTAINED?
2. THE VALUES FOR THE ELASTICITY MODULUS OBTAINED FOR THE 6063 ALUMINUM ALLOY WITHOUT REINFORCEMENT WERE VERY LOW, ABOUT $\frac{1}{4}$ (15 kN/mm²) OF THE VALUE CONSIDERED NORMAL FOR ALUMINUM OBTAINED BY FUSION (60 kN/mm²) ACCORDING TO THE ASTM METALS HANDBOOK. IS THERE ANY EXPLANATION FOR THIS?
3. BECAUSE THIS IS A POINT PROPERTY, THE SMALL DIFFERENCE FOUND (LESS THAN 20%) FOR THE MICROHARDNESS VALUES BETWEEN THE 6063 ALUMINUM ALLOY AND THE COMPOSITE WITH 8% REINFORCEMENT MAY NOT BE REPRESENTATIVE AND MAY BE THE OWN ERROR MEASUREMENT (particularly when dealing with composite materials). IT WOULD BE IMPORTANT TO SHOW THE ERROR BAR (STANDARD DEVIATION OF THE MEASUREMENTS) ON THE MICROHARDNESS RESULTS GRAPH.
4. WITH REGARD TO THE IMPACT TEST RESULTS, THESE CAN BE JUSTIFIED BY THE INCREASE IN THE RIGIDITY OF THE MATERIAL OBSERVED THROUGH THE INCREASE IN THE ELASTICITY MODULUS WITH THE INCREASE IN THE AMOUNT OF REINFORCEMENT AND NOT BY THE INCREASE IN HARDNESS (WHICH INCREASE WAS VERY SMALL AND POSSIBLY WITHIN THE MARGIN OF ERROR OF THE MEASUREMENTS THEMSELVES).
5. AS FOR THE MICROHARDNESS RESULTS, FOR THE OTHER TEST RESULTS (ALL TEST GRAPHICS), IT WOULD BE INTERESTING TO INSERT THE ERROR BAR (STANDARD DEVIATION OF THE MEASUREMENTS CARRIED OUT).
6. IT WOULD BE INTERESTING TO IMPROVE THE QUALITY OF SEM MICROGRAPHS.
7. A CONCLUSION IS NOT EVIDENCE: "In the hot extruded composite, the grains were noticeably refined, and the reinforcement layers were considerably dissolved, reflecting the effective diffusion and doping of reinforcement atoms into

the AI 6063 matrix.” THERE ARE NO RESULTS THAT PROVE THIS CONCLUSION. IN ACCORDANCE WITH THIS, I SUGGEST THAT THIS CONCLUSION BE WITHDRAWN OR RESULTS THAT PROVE IT BE INSERTED.