Materials Today: Proceedings
Volume 44, Part 6, 2021, Pages 4682-4688

Tribological behaviour of hybrid reinforced vinyl ester based functionally graded materials

Vikash Gautam [a], Ashiwani Kumar [a], Aakash Sharma [a], Ashiwani Kumar [b], Deepak Kumar [a]

[a] MED, Swami Kesvanand Institute of Technology Management & Gramothan, Jaipur 302017, India
[b] MED, Feroz Gandhi Institute of Engineering and Technology, Raebareli 229316, India

Received 3 October 2020, Revised 21 October 2020, Accepted 2 November 2020, Available online 6 January 2021.

https://doi.org/10.1016/j.matpr.2020.11.023

Abstract

This paper focuses on the synthesis and wear behaviour of functionally graded hybrid composites. In this article, Vinyl ester, Milled E-glass fiber and graphite are used as matrix and reinforcing materials, respectively. Functionally graded materials are synthesized by vertical centrifugal casting method. The tribological characteristics of the composites are evaluated according to the ASTM standard. The results of experimental sliding wear tests show that wear rate per unit normal load increase with increasing the applied load and sliding distance, but after the addition of graphite, the reverse trend with the sliding speed is observed. According to the results of the Taguchi analysis, the optimal values for

Materials Today: Proceedings
Volume 44, Part 6, 2021, Pages 4784-4788

Optimization of sliding and mechanical performance Ti/NI metal powder particulate reinforced Al 6061 alloy composite using preference selection index method

Ashiwani Kumar [a], Mukesh Kumar [b], Amar Patnaik [b], M.J. Pawar [c], Akhileshwar Pandey [d], Anil Kumar [e], Vikas Gautam [f]

[a] Mechanical Engg.Dept., Feroze Gandhi Institute of Engg.& Tech., Rae Bareli, U.P. 229316, India
[b] Mechanical Engg. Dept., Malaviya National Institute of Tech., Jaipur, Rajasthan 302017, India
[c] Mechanical Engg. Dept., K.J. SomaiyaCollege of Engineering, Mumbai 400007, India
[d] Mechanical Engg. Dept., Government Engineering College, Bharatpur 321001, India
[e] Mechanical Engg. Dept., Kamla Nehru Institute of Technology, Sultanpur 228118, India
[f] Mechanical Engg. Dept., Swami Keshvanand Institute of Technology Management & Gramothan, 302021, India

Received 21 September 2020, Revised 14 October 2020, Accepted 24 October 2020, Available online 21 January 2021.

https://doi.org/10.1016/j.matpr.2020.10.974

Abstract

In this study, Ti/ Ni reinforced in AA6061 composites were prepared via a high vacuum stir casting method. The fabricated composite specimens are prepared for experimental studies as per ASTM standard and then physical, mechanical, and sliding wear characterization was conducted on different equipment. The higher confidence level (95%) obtained via experimental studies. The experimental results of the specimen have been used for optimization, and the ranking order of composite are computed via using the preference selection index method. Many researchers' results have been reported and easily computed to rank of composite composition using optimization properties such as void contents,density flexural strength, tensile strength, impact strength, wear resistance etc. The resultsreveal that the base matrix included with the equal presence of both particulates exhibits most excellent properties hence to obtained best ranked of

Materials Today: Proceedings
Volume 46, Part 15, 2021, Pages 6552-6557

Computational analysis of aluminium alloy plates against conical-nose steel projectile

M.J. Pawar [a] ✉, Vikash Gautam [b], Ashiwani Kumar [c], Vikas Kukshal [d]

[a] Mechanical Engineering Department, K J Somaiya College of Engineering, Mumbai 400077, India
[b] Mechanical Engineering Department, Swami Kesvanand Institute of Technology Management & Gramothan, Jaipur 302017, India
[c] Mechanical Engineering Department, Feroz Gandhi Institute of Engineering and Technology, Raebareli 229316, India
[d] Mechanical Engineering Department, National Institute of Technology, Uttarakhand, Srinagar (Garhwal) 246174, India

Received 27 February 2021, Revised 20 March 2021, Accepted 1 April 2021, Available online 26 April 2021.

https://doi.org/10.1016/j.matpr.2021.04.017

Abstract

The usage of aluminium alloy in shielding structures is becoming prevalent choice due to its low density. Even then, articles and reports describing the experimental and computational analysis of such problems are still limited. This paper illustrated the computational analysis of AA5058 against impact of hardened steel projectiles with conical nose. The computational analysis was performed using finite element code-ANSYS. The target plate used was in shape of circular disc of 500 mm diameter and fixed at its curved face. However, wide range of thickness of target plate i.e., 15 mm, 20 mm, 25 mm and 30 mm were considered in the work reported. The projectile considered was of 20 mm diameter and 98 mm long. The conical shape was provided on projectile for 30 mm

Materials Today: Proceedings
Volume 46, Part 15, 2021, Pages 6534-6540

Investigation on mechanical and tribological characterization of Gr filled AA7075 alloy composite using Taguchi method

Ashiwani Kumar [a], Mukesh Kumar [b], Vikas Kukshal [c], Akhileshwar Pandey [d], M.J. Pawar [e], Vikash Gautam [f]

[a] Mechanical Engineering Department, Feroze Gandhi Institute of Engineering and Technology, Raebareli 2299316, UP, India
[b] Mechanical Engineering Department, Malaviya National Institute of Technology, Jaipur 302017, Rajasthan, India
[c] Mechanical Engineering Department, National Institute of Technology, Uttarakhand, Srinagar, Garhwal 246174, India
[d] Mechanical Engg. Dept., Government Engineering College, Bharatpur 321001, India
[e] Mechanical Engg. Dept., K J Somaiya College of Engineering, Mumbai 400007, India
[f] Mechanical Engg. Dept., Swami Keshvanand Institute of Technology Management, Gramothan 302021, India

Received 9 March 2021, Revised 25 March 2021, Accepted 31 March 2021, Available online 23 April 2021.

https://doi.org/10.1016/j.matpr.2021.03.734

Abstract

Current research work emphasis on the mechanical and tribological characteristics of the graphite reinforced AA7075 alloy composite. The samples were developed with various proportions (0, 1, 3, 5, and 7 wt%) of Gr particulate in Al alloy matrix using the high vacuum casting machine. The physical and mechanical characterization like density, void content, hardness, impact strength, flexural strength, and compressive strength were experimentally estimated. The dry sliding wear performance of the composite specimens was also estimated. The various samples were ranked based on the wear rate performance using the Taguchi method. The experimental results reveal