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FIBER REINFORCED POLYETHYLENE-BASALT COMPOSITES - FABRICATION AND TESTING

Abstract

This paper details the fabrication and testing of composite structures for architectural use on the Martian surface. The structures produced are developed from simulated Martian materials and are tested to validate key requirements for use as structural components of human habitats on Mars. The properties include tensile and compressive loading, impact resistance, and pressure retention. Additionally, methods for application of the structural elements are explored, including the time-based assembly, joining techniques and human integration. The goal of this work is to provide technical validation of ISRU for human rated architectural elements on the surface of Mars.