

P2X applications would be favored by the high volumetric energy density of aluminum enabling rather easy and low-cost mid- and long-term storage. This study addresses the development ...

The development of the novel transition metal (TM)-aluminide alloys, including the TiAl, FeAl, CoAl and NiAl, has been the subject of intense studies due to their attractive mechanical ...

high silicon levels, the alloy exhibits excellent dimensional stability, surface hardness and wear resistant properties. Introduction Technology Assessment Aluminum-Silicon (Al-Si) alloys are most versatile materials, comprising 85% to 90% of the total aluminum cast parts produced for the automotive industry. Depending on the Si

kinetic energy and the ratio of kinetic energy to internal energy in finite element model are shown in Fig. 3. The figure shows the model has a reliable simulation result when the mass scaling factor is 500. 3 Preliminary analysis of forward spinning of tube is essentially that tube achieves wall thickness and axial extension under spin-

In the present article, the results of an experimental investigation on four different bimetallic heat exchanger tube designs and creeping experiments with an aluminum alloy are presented. The tube designs are developed for the use in latent heat thermal energy storage systems (LHTES) at temperatures up to 340 °C. Overall, the challenge of ...

Many metal alloys (primarily aluminum alloys) can also store latent heat with favorable cycling stability, the thermal conductivity of metal alloys is dozens to hundreds times higher than most salts (Kenisarin, 2010, Gil et al., 2010, Agyenim et al., 2010, Liu et al., 2012, Cheng et al., 2010a), Several studies have been reported on the thermophysical properties of ...

The dynamics of the deformation behavior and deformation control during 6063-T5 aluminum alloy tube free forming by UGMF were studied via simulations and experiments. ... indicating that the rupture occurred before the storage of a large amount of energy. The fracture moved farther from the source of the UV with the increase in the amplitude ...

Abdulqadir et al. [21] simulated the energy absorption properties of aluminum foam-filled thin-walled aluminum alloy tubes under direct and oblique loads, and the results showed that the use of ...

Lightweight and high-strength materials are the significant demand for energy storage applications in recent years. Composite materials have the potential to attain physical, chemical, mechanical, and tribological qualities in the present environment. In this study, graphene (Gr) and biosilica (Bs) nanoparticle extracts from

waste coconut shell and rye grass ...

+1xx.x: Controlled unalloyed (pure) compositions, especially for rotor manufacture +2xx.x: Alloys in which copper is the principal alloying element. Other alloying elements may be specified. +3xx.x: Alloys in which silicon is the principal alloying element. The other alloying elements such as copper and magnesium are specified. The 3xx.x series comprises nearly 90% of all shaped ...

Abstract The structural, mechanical, elastic, electronic and thermoelectric properties of the transition metal aluminides TM-Al (TM = Ti, Fe and Co) using the density functional theory combined with semiclassical Boltzmann transport theory have been investigated. In this study, we have determined the equilibrium lattice parameters, mechanical and elastic ...

A structure for joining thin-walled 6061-T6 aluminum alloy tube (outer tube) and Q195 steel tube (inner tube) by electromagnetic flanging process was proposed. The formation process, mechanical properties, failure modes, and morphology of the joint were investigated. The results showed that the outer tube impacted the inner tube, the flanges of the prefabricated ...

Under the lateral impact, the aluminum alloy tubes mainly consume energy using two plastic hinges at the clamping system and the plastic hinge at the impact position, which generally forms "three plastic hinges" or "two plastic hinges" mechanism. The span length, tube thickness, and tube diameter changed the global and local lateral ...

In this range of temperature, the most studied alloys were proposed by Birchenall and Riechman [27], mainly the Al-Si alloys [72][73][74] [75] [76] and Al-Mg-Zn alloys [77] due to their high heat ...

The results showed that the specific energy absorption of the composite tube was significantly higher than that of a single aluminum tube. Zhu et al. [15,16] conducted quasi-static axial compression tests on an aluminum tube, a CFRP tube and a CFRP/aluminum alloy composite tube. The failure modes under different loading angles were studied and ...

To further quantify the damage degree, the data listed in Table 3 were examined, where w denotes the maximum subsidence deformation of aluminum alloy tube which was measured by a professional profiler for arc structures; r_1 and r_2 represent the axial and radial length of the concave deformation zone under the surface of aluminum alloy tube ...

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