

Microstructure Deformation And Cracking Characteristics

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Microstructure Deformation And Cracking Characteristics

Microstructure, deformation and cracking characteristics of thermal spray ferrous coatings A. Rabiei a,* , D.R. Mumm a, J.W. Hutchinson a, R. Schweinfest c, M. Rühle c, ... tural characteristics of these materials and to relate the The analytical mode in the SEM was used to provide

Microstructure, deformation and cracking characteristics ...

The oxide phase present in the material and preferred pathways for local cracking and separation have been determined. Thin intersplat oxide layers emerge as preferential sites. These oxides are amorphous and the cracks extend along the oxide/ α -Fe interfaces with low local fracture toughness, in the range 0.2–1 MPa \sqrt m.

Microstructure, deformation and cracking characteristics ...

Abstract. The microstructure and local mechanical characteristics of thermal spray ferrous coatings have been determined. The emphasis has been on coatings made by the high velocity oxyfuel (HVOF) process, especially the role of Al alloy additives. The oxide phase present in the material and preferred pathways for local cracking and separation have been determined.

Microstructure, deformation and cracking characteristics ...

Microstructure, deformation and cracking characteristics ... Mechanical action in the form of frictional stirring on the base material has modified the microstructure from the coarse grains to very fine grains due to plastic deformation and fast cooling

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Microstructure, deformation and cracking characteristics ...

The microstructure analysis indicates that a small amount of graphite precipitated flaky hard martensite, and lower bainite remains in this area. Deep grooves are induced by the separation of graphite from the fracture. Characteristics of intergranular fracturing are evident in micromorphological analysis.

Microstructure formation and fracturing characteristics of ...

In this paper, the hot deformation behavior of A357 alloy was investigated by hot compression tests. Isothermal hot compression simulation tests for A357 alloy were carried out at the conditions of deformation temperature of 350-470 °C, strain rate of 0.001-10 s⁻¹ and engineering strain of 50%. Based on the Prasad instability criterion and dynamic material model, the hot processing maps of ...

Hot Processing Maps and Microstructural Characteristics of ...

In a comparative study of the deformation characteristics of the shear processes with conventional rolling, two distinct manifestations of workability are observed. For rolling, the relatively diffuse and unconfined deformation zone geometry leads to cracking more » at low strains, with sheet structures characterized by extensive deformation ...

Extreme shear-deformation-induced modification of defect ...

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The paper reports the uniaxial deformation and fracture behavior of two Cr-Mo-V steels used for nuclear structural components. The two steels are - a new member of low alloy steel in the 3Cr-1Mo class and a plain tempered martensitic stainless steel containing 12% Cr. The microstructure investigations were carried out on the 3Cr-1Mo steel by establishing the continuous cooling transformation ...

Microstructure, Deformation and Fracture Behavior of Cr-Mo ...

During elastic deformation, strain mapping revealed a heterogeneous strain distribution in the microstructure, as well as shear bands that formed between graphite particles. The crack was initiated at the stress ranges in which a kink occurred in the tensile curve, indicating the dissipation of energy during both plastic deformation and crack initiation.

On the deformation behavior and cracking of ductile iron ...

Microstructure, deformation and cracking characteristics of thermal spray ferrous coatings

Microstructure, deformation and cracking characteristics ...

in single β region deformation strain, while DRV was the dominated mechanism at the wide temperature range in both ($\alpha+\beta$) and single β regions. Seshacharyulu et al. 11 reported the changing regulation of deformation mechanism with varying deformation parameters of commercial grade Ti-6Al-4V alloy. The material suffered from cracking and

Effect of Processing Parameters on Hot Deformation ...

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Onset Plastic Deformation and Cracking Behavior of Silicon ...

Grain refinement via semi-solid deformation is desired to obtain superior mechanical properties of cast components. Using quantitative in situ synchrotron X-ray tomographic microscopy, we show an additional mechanism for the reduction of grain size, via liquation assisted transgranular cracking of semi-solid globular microstructures. Here we perform localized indentation of Al-15wt.%Cu ...

Transgranular liquation cracking of grains in the semi ...

The present study examines the deformation behavior of ion-irradiated, low-carbon 304L stainless steel to investigate the influence of irradiation microstructure, deformation temperature and strain rate on localized plasticity. Dislocation loop character, size and density are linked to changes in deformation character.

Post-irradiation deformation characteristics of heavy-ion ...

The effects of the package materials on the hot workability and stress-strain characteristics of high-Nb TiAl alloy with a nominal composition of Ti-46Al-8Nb (in at.%) were systematically studied via "sandwich structure" hot compression. TiAl sheet fabrication was conducted by hot pack rolling, and ...

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