عنوان مقاله:

Dependence of pile-up on elastic deformation, penetration depth and contact friction during sliding indentation

محل انتشار:

دوازدهمین کنفرانس ملی مهندسی ساخت و تولید ایران (سال: 1390)

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خلاصه مقاله:

A three-dimensional finite element model (FEM) for describing the elastic and plastic behavior of coated system during sliding indentation has been developed. Influence of elastic deformation on pile-up and dependence of pile-up on penetration depth, contact friction were analyzed. In this case a wide range of materials with different elastic modulus, yield stresses, strainhardening exponents, and friction coefficients were examined. Results show that during the process, after initially sinking-in at small depths of penetration, the pile-up for many materials evolves and increases gradually as the indenter is driven in to the material. Even when deformation enters the fully developed plastic stage, the pile-up geometry continues to change in manners that can significantly affects the contact area. It is also shown that contact friction affects considerably the pile-up heights. Meanwhile this study develop a comprehensive framework for calculating the elastic-plastic stresses and strains during sliding indentation of coated systems.

کلمات کلیدی:

Scratch indentation; Pile-up; Finite element; coated solids