

## عنوان مقاله:

Determination of the critical J integral in thin-walled aluminum sections

## محل انتشار:

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## خلاصه مقاله:

Critical J integral is the value of fracture toughness for crack initiation and is one of the key input variables to compute critical load of the structural components. There are several techniques to determine critical J integral of thin plates (i.e. JC). Begley and Landes were the first who calculated critical J integral under plane strain conditions (i.e. JIC) experimentally, using the basic concepts of fracture mechanics. Later, James P. Hickerson, JR calculated JC of thin flat sections in cases where the plane stress conditions was dominated. In the present study a similar investigation has been conducted for thin-walled sections. In the present work, a simple procedure based on load–displacement curves are used to find JC , using CC and DEC specimens of the thin-walled sections for different crack sizes. In order to investigate the effect of specimen size on the measured JC , some smaller DEC specimens are used. Considering the correlation between the obtained results for larger specimens and smaller ones, a simple experimental method to determine JC is proposed using smaller DEC specimens, which has great effect on reducing the experimental costs

## کلمات کلیدی:

Fracture toughness; Critical J integral; Load–Displacement curves; thin-walled sections

## لینک ثابت مقاله در پایگاه سیویلیکا:

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