

عنوان مقاله:

Effect of oxygen on transient thermal degradation of polyethylene

محل انتشار:

چهاردهمین کنفرانس سالانه مهندسی مکانیک (سال: 1385)

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خلاصه مقاله:

A transient one dimensional model has been presented to simulate degradation and gasification of Polyethylene (PE), in early time of fire growth. In the present model effect of oxygen on degradation and rate of polymer gasification while the sample is subjected to an external radiative heat source of 40kw/m² is numerically investigated. This model includes different mechanism, which affect the degradation process, such as in depth thermal oxidative decomposition, surface absorption and reflectance of radiation, in depth absorption of radiation, heat transfer, volatiles advection in solid phase and convective heat transfer on surface. The result for 40kw/m² heat source are reported and yielded realistic results, comparing to the published experimental data. The results show that an increase in oxygen concentration lead to considerable increase in gasification rate and also lead to sharp increase of surface temperature.

کلمات کلیدی:

thermal oxidative degradation - PE - reflectivity - absorptivity - in depth absorption

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