

论文

聚丙烯/POE共混组成对材料断裂行为的影响

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摘要 采用基本断裂功(EWF)方法对聚丙烯(PP)/聚烯烃弹性体(POE)共混物的注射双边缺口拉伸试样的断裂行为进行了研究, 比较了不同POE含量对共混物各断裂参数的影响. 结果表明, PP和用量为5phr POE的共混物都可完全满足EWF方法的要求, 共混物的断裂韧性-比基本断裂功 w_e , 较PP有显著提高; POE用量为10phr以上的共混物则出现明显的成颈现象而限制了EWF方法的应用; PP和各种POE用量的共混物都得到了其屈服所需要的比基本断裂功 $w_{e,y}$ 和比塑性功 $\beta' W_{p,y}$.

关键词 [聚丙烯](#) [聚烯烃弹性体](#) [断裂行为](#) [基本断裂功](#) [塑性变形](#)

分类号

FRACTURE BEHAVIOR OF POLYPROPYLENE/POE BLENDS WITH DIFFERENT MIXED RATIOS

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Abstract The influence of polyolefin elastomer(POE)content of polypropylene(PP) / POE blends on fracture behavior has been studied using the essential work of fracture(EWF)method. Each material was injected for preparing double edge-notched tensile(DENT)specimens of about 1.3 mm thickness. It was established that the essential work of fracture approach worked well for the PP and PP / POE(100 / 5)blend. The specific essential work of fracture, w_e , increased remarkably with adding POE. Some limitations of the EWF method was found with PP / POE (100/10 and 100 / 15) blends, which showed the necking phenomenon with DENT specimens studied. The specific essential work and plastic work of fracture required for yielding, $w_{e,y}$ and $\beta'W_{p,y}$ of each material were obtained. It was found that the $w_{e,y}$ values of the PP / POE blends all increased remarkably, over two times larger than that of pure PP, and the $\beta'W_{p,y}$ values increased gradually with increasing content of POE for the PP/POE blends.

Key words [Polypropylene](#) [Polyolefin elastomer](#) [Fracture behavior](#) [Essential work of fracture](#) [Plastic deformation](#)

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