Effect of inserted injection molding on the residual stress and the weld line

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ABSTRACT

When the inserted injection molding that made some cracks, we can not really grasp the reason of cracks, although there have no defect on some products appearances, but they will cause products to be destroyed by the factor of environmental and the stress for a long time. Express with view on the material, namely some plastic products have strength that have exceeded the material strength, so how to strengthen structure and material strength or how to reduce the residual stress, it is a great method to solve them. On the other hand, inserted injection molding often creates weld lines, it is a great factor which weakens the structure strength, too. But the residual stress and the weld line have different methods of control on injection molding, so this experiment use destroy method and no-destroy method and analyse of Moldflow, then try to get the optimization conditions by Taguchi Method. Moreover the inserted injection molding have the other process like ultrasonic plastic welding, thermal welding and interference method. However can the process advantage solve the reasons of injection molding cause cracks on the residual stress and the weld line. So we must research the effect of inserted injection molding on the residual stress and the weld line on the same time, and hope to get the concrete conclusion, let the products have development potentiality even more.

Keywords : residual stress, weld line, inserted injection molding

Table of Contents

REFERENCES

[01]   , "   " ,   ?   .(1997) [02]   , "   CAE
        " ,   .(1998) [03]   , "   " ,
                  .(2004) [04]   , " CAE   " ,   .(1997) [05]   , "
                    " ,   .(2002) [06] F. Boitout, J. F. Agassant and M. Vincent, " Elastic Calculation of Residual Stresses in Injection Molding" ,Intern Polymer Processing, Vol.3 , pg.237~ 242.(1995) [07]   , "
                    " ,   .(1999) [08]   , " CAE   " ,
    21   .(2002) [09] C-Mold Performance Solution Training Workbook.(2000) [10] T. C. Chang and Ernest Faison, " Optimization of Weld Line Quality in Injection Molding Using an Experimental Design Approach" ,Journal of Injection Molding Technology, Vol.3, NO.2, pg.61~ 66.(1999) [11] R. P. Koster, " Importance of Injection Molding Parameters for Mechanical Performance of Cold Flow Weld Lines" ,Journal of Injection Molding Technology, Vol.3, NO.3, pg.154~ 158.(1999) [12]   , "   ?   " ,

? .(1997) [13]   , " ABS   ",   .(2001) [14] J. Lu, " Handbook of Measurement of residual Stress", The Fairmont Press Inc.(1996) [15]   , "   ", .(1990) [16]   , "   ",   .(2004) [17]   , " ? ?   ",   .(2004) [18] Paul So, Lawrence J. and Broutman, " Residual Stress in Polymers and Their Effect on Mechanical Behavior", Polymer Engineering and Science, Vol.15, pg.997~1002.(1981) [19] I. S. Dairanieh, A. Haufe, H. J. Wolf and G. Menning", Computer Simulation of Weld Lines in Injection Molded Poly, " Polymer Engineering and Science, Vol.36, NO.15, pg.2050~2057.(1996)