

**DSC STUDY OF FLUOROPLASTIC CONTAINING 20% OF THERMALLY
EXPANDED GRAPHITE**

T. Labii¹, A. Lakel¹, I. Zerrouk², A. Zahaf¹, A. Boubertakh¹, S. Hamamda¹

1- Laboratoire T.T.S.M. Université Constantine1, Algérie

2- Laboratoire des composants actifs et Matériaux, Université d'Oum-El-Bouaghi, Algérie.

Abstract

The expansion of polymer blends for the acquisition of new associations with interesting physical features and minimizing technical sales ratio are current. Many researchers routinely work to improve and make competitive this new class of materials and replace natural products which become scarce and expensive.

The aim of this work is the study of the calorimetry (DSC) behavior according to the variation of the heating rate of fluoroplastic containing thermally expanded graphite.

We have used fluoroplastic with a concentration of thermally expanded graphite of 20% by weight and dispersion between 60-100 μm . Three heating rates 5, 10 and 15°C/min were considered.

The results show that the heating rate greatly affects the behavior of the material. It varies the shape of the DSC curves of the compound when going from 5, 10 and 15°C/min.

The behavior of the mixture presents a calorimetric curve containing a peak located at about 230°C. Its intensity varies from single to double by the heating rate, the temperature also changes its emergence depending on the heating rate. The intensity of the peak is twice large when the heating rate is 15°C/min compared to the other two rates. From either sides of this peak, the DSC values fell sharply.

At 10°C/min, the peak is at around 220°C. In the low temperature range, DSC varies monotonously while on the right of this anomaly, the DSC increases sharply.

At the rate of 5°C/min, the peak is less intense compared to the two other rates and the temperature of its emergence is the lowest at 210°C. In the low temperature range, the values of the DSC reduce from ambient to 200°C. Alternatively, in the interval 220-350°C, the DSC values are almost constant.

Thus the peak intensity depends on the heating rate. It also increases with increasing heating rate. The temperature of the occurrence of the calorimetric anomaly also increases with increasing heating rate.

Keywords: fluoroplastic, expanded graphite, dispersion, DSC.