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Differential scanning calorimetry(DSC) study of the effect of concentration and dispersion of thermally expanded graphite on the fluoroplastic material

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It is well Known that the thermally expanded graphite is a high absorbent material, their use in order to obtain new combinations of lightweight, economically viable , in medicine and environmental protection has became unavoidable.

The purpose of this note is the influence of two important parameters which are the dispersion and concentration of thermally expanded graphite on the calorimetric behaviour of fluoroplastic . To do this, we took the fluoroplastic containing thermally expanded graphite (GTD).

We note that the shape of the DSC curves is substantially the same regardless of concentration and dispersion. This behaviour can be attributed to the mechanism which takes place. Each of them exhibits an endothermic peak whose intensity depends on the concentration and the dispersion. On either side of the calorimetric anomalous, the differences between the intensities of the peaks of the DSC are very important. For the same dispersion(less than 60 microns), when the concentration changes from one(01) to four (04) (i.e. 5 to 20%), the peak height of the least loaded sample is two times larger than that of the material containing the large amount of thermally expanded graphite (GTD). At 350 °C, the ratio of the peak intensities I_{20} / I_5 exceeds 370%. Retaining the same dispersion as above, taking 10 to 20% of GTD, the peaks have substantially the same intensity. The differences between the values of the intensities of the DSC are weak. At 350 °C, the ratio is equal to one in the latter case. In the case of the samples containing the same amount of GTD (20%) and having two different dispersions, one is less than 100 microns but the other one is less than 60 microns. The peaks have substantially the same intensity. At low temperatures, the DSC curves are confused. At high temperatures, the calorimetric peak intensities are different. At 350 °C, the ratio of DSC peaks intensities I''_{100} / I'''_{60} is about 180%.