

Compatibility Observation of LDPE and HDPE using RV-DSC

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Let's make your imagined world visible!

◆ DSC measures the changes of thermal properties of a sample such as melting, glass transition, and crystallization. When the sample is melted, an endothermic peak is observed by DSC.

◆ In case of measuring a sample which is composed of more than one material, the DSC shows more than one melting peak. However, we do not know which part of the sample is melted.

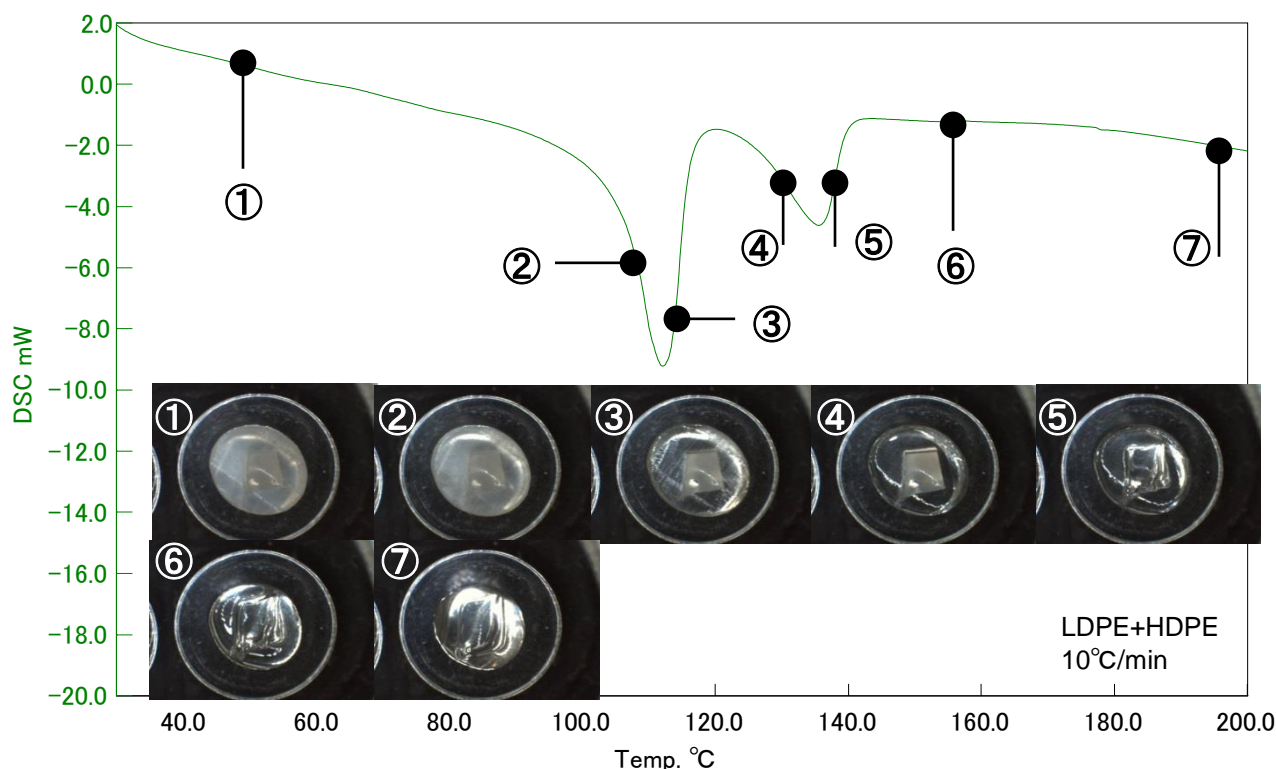
◆ Real-Time Sample Observation DSC system enables an analysis by recorded DSC data linked with pictures. CCD camera captures visible changes of the sample such as deformation or color changes.

As a case study, a sample of two stacked polyethylenes with different densities (LDPE and HDPE) is measured.



RV-DSC

Measurement



Melting Evaluation

Image(1) shows that the sample is composed of two materials since the color at the center and edge of the sample are different. Image(2) and (3) show that the material at the edge melts when the first endothermic peak is observed. The melted material shown in the image (2) and (3) is LDPE because LDPE has normally a lower melting point than HDPE.

Compatibility Evaluation

In the range of temperature higher than around 130°C where another endothermic peak is observed, no further thermal property changes are observed; however, image 6 and 7 shows the beginning of the compatibility between LDPE and HDPE.

Real View DSC enables us to see melting behaviors and compatibility change.