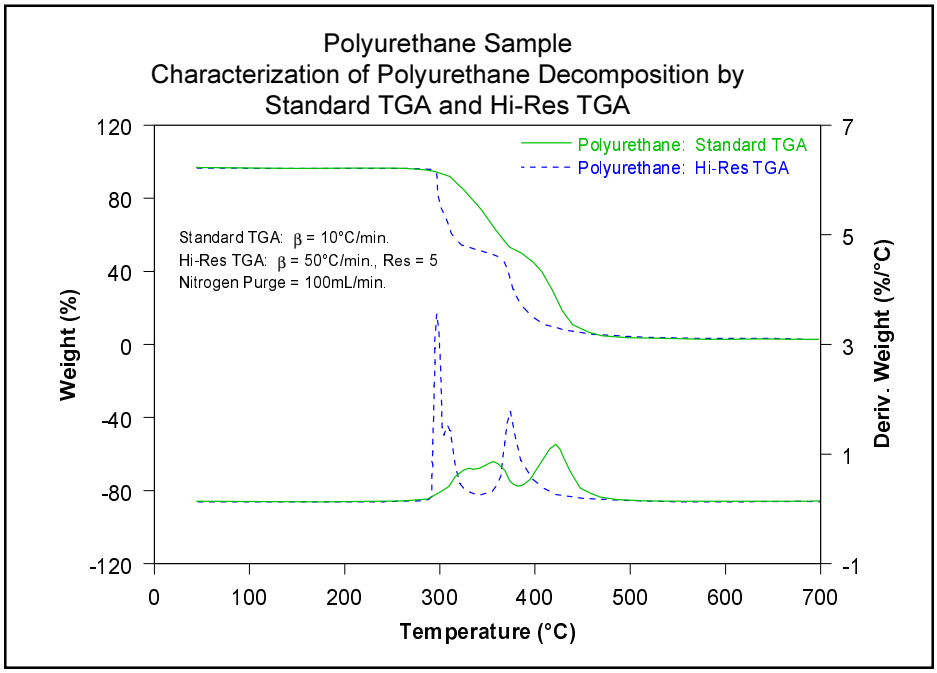
TA Instruments

Thermal Analysis & Rheology

THERMAL SOLUTIONS

Characterization of Polyurethane by TGA and Hi-Res™ TGA



Thermogravimetric Analysis (TGA) measures the amount and rate of change in sample weight as a function of temperature or time. TGA experiments use linear heating rates to detect weight loss events. Overlapping or unresolved weight loss events may not be well resolved using conventional TGA. High Resolution TGA (Hi-Res™) is an extension to conventional TGA whereby the heating rate is varied as a function of sample weight loss rate. This approach allows the use of high heating rates during no weight loss regions, then automatically reduces the heating rate during a weight loss transition. This often yields faster experiment times, improved separation of overlapping or poorly defined weight loss events, and sharper derivative peaks. This thermal curve shows a sample of polyurethane run by both techniques. Note how the Hi-Res TGA scan has increased the separation of the weight loss events and, as expected, improved resolution of the derivative peaks. This example clearly shows how Hi-Res TGA can give better results, often in a shorter amount of time, than a standard TGA experiment.

For more information or to place an order, contact:

TA Instruments, Inc., 109 Lukens Drive, New Castle, DE 19720, Telephone: (302) 427-4000, Fax: (302) 427-4001
TA Instruments S.A.R.L., Paris, France, Telephone: 33-01-30489460, Fax: 33-01-30489451
TA Instruments N.V./S.A., Gent, Belgium, Telephone: 32-9-220-79-89, Fax: 32-9-220-83-21
TA Instruments GmbH, Alzenau, Germany, Telephone: 49-6023-30044, Fax: 49-6023-30823
TA Instruments, Ltd., Leatherhead, England, Telephone: 44-1-372-360363, Fax: 44-1-372-360135
TA Instruments Japan K.K., Tokyo, Japan, Telephone: 813-3450-0981, Fax: 813-3450-1322

Internet: http://www.tainst.com
e-mail: info@tainst.com

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