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Plastics — Thermogravimetry (TG) of polymers —

Part 3: Determination of the activation energy using the Ozawa-Friedman plot and analysis of the reaction kinetics

Plastiques — Thermogravimétrie (TG) des polymères —

*Partie 3: Détermination de l'énergie d'activation à l'aide du
graphique d'Ozawa-Friedman et analyse cinétique de la réaction*



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Foreword

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This document was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 5, *Physical-chemical properties*.

This second edition cancels and replaces the first edition (ISO 11358-3:2013), which has been technically revised.

The changes compared to the previous edition are as follows:

- the term "conversion" has been deleted;
- a corresponding reference to ISO 11358-2 has been added in [Clause 3](#);
- details of the gas atmosphere in [8.1](#) and [8.2](#) have been clarified.

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Introduction

The Ozawa-Friedman plot (logarithm of the rate of mass loss versus the reciprocal of absolute temperature at a given mass loss) is a derivative method that can be applied to data obtained by any mode of temperature change in thermal analysis; e.g. isothermal, constant heating rate, sample-controlled thermal analysis, temperature jump, and repeated temperature scanning.

If controlled rate thermogravimetry (CRTG) is used to study the decomposition of polymers, the Ozawa-Friedman method is typically applied to the analysis of data obtained by CRTG and also to that obtained by the combined use of isothermal thermogravimetry (iso-TG) with conventional linear heating rate thermogravimetry (LHTG), i.e. using a constant heating rate.