

PREP mc²

PREPARATIVE FRACTIONATION



Full characterization of Polymers by Preparative Fractionation.

PREP mc² is a preparative instrument intended for fractionating polymers by molar mass or by composition (TREF or CRYSTAF). Samples are put into the vessels and the fractionation is performed automatically according to the selected method conditions in less than 24 hours.

Molar Mass fractionation is based on the solvent interaction with the polymer chains through a solvent/non-solvent combination. Polydispersity of resulting fractions can be very narrow.

Composition fractionation is based on differences in crystallizability of the copolymer resins and can be performed by dissolution (TREF) or by precipitation (CRYSTAF) approaches. A single solvent is used to separate fractions according to their composition by dissolution at different temperatures.

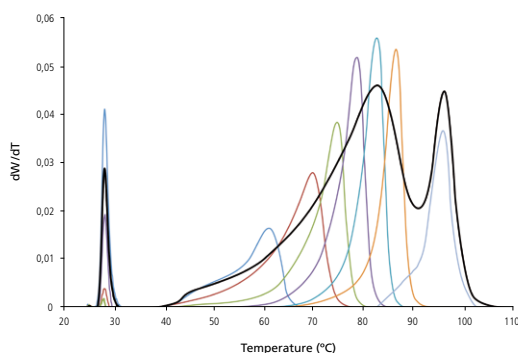
This instrument facilitates the cross-fractionation studies, which have been shown as a needed tool to fully characterize resins.

Find out more at www.polymerchar.com/PREP_mc2

This information is subject to change without notice. ©2025 Polymer Char.

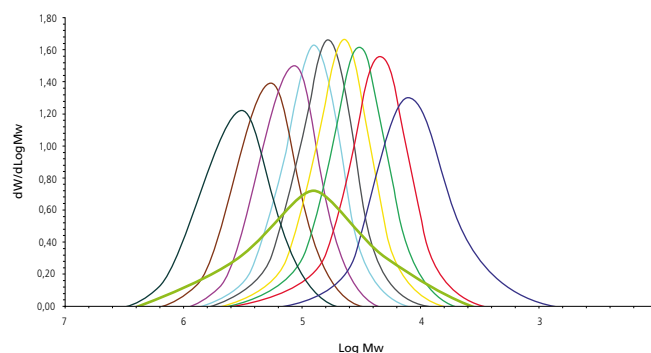
KEY POINTS

- ▶ Fully-automated fractionation process:
 - ▶ Two samples can be fractionated simultaneously and up to 8 fractions can be obtained from each one.
 - ▶ Up to 16 fractions can be obtained when fractionating one single sample.
 - ▶ No hot solvents handling.
 - ▶ Improved capability of fractionation: up to 4 grams of sample with new stirring system.
- ▶ Possibility of subambient operation (down to -20°C) for low crystallinity samples.
- ▶ Flexible hardware and software to carry out different fractionation methods.



— F2 — F4 — F6 — F8
— F3 — F5 — F7 — Parent sample

Composition Fractionation with 8 fractions.



— F1 — F3 — F5 — F7 — F9
— F2 — F4 — F6 — F8 — Parent sample

Molar Mass Fractionation with 9 fractions.

Solutions for Polyolefin Characterization

CRYSTAF: An instrument designed for intensive use in the analysis of the Chemical Composition Distribution in Polyolefins.

TREF: A completely automated apparatus for the analysis of the Chemical Composition Distribution in Polyolefins. It provides complementary information to CRYSTAF data in the analysis of some complex resins.

CRYSTAF-TREF: CRYSTAF and TREF techniques are available in the same equipment for a full Chemical Composition Distribution characterization.

CEF: A high throughput equipment to analyze the Chemical Composition Distribution in Polyolefins, using a new approach combining CRYSTAF and TREF separation mechanisms.

PREP mc²: An automated instrument to perform semipreparative fractionation according to composition by TREF or CRYSTAF, or molar mass.

PREP C20: New column-based preparative fractionation instrument, capable to fractionate up to 20 grams of polymer.

CRYSTEX[®] QC: A truly automated system based on TREF-separation concept for soluble fraction measurement, ethylene content and intrinsic viscosity in PP/PE plants control.

CRYSTEX[®] 42: A high-throughput and easy-to-use system for simultaneous measurement of the soluble fraction, ethylene content and intrinsic viscosity in a fully automated process for up to 42 samples.

IVA: Reliable and automated instrument for Intrinsic Viscosity Analysis of polymers with dissolution temperature up to 200°C.

GPC-IR[®]: Advanced High Temperature GPC for the analysis of Molar Mass Distribution in Polyolefins. Fully automated sample preparation and filtration. Triple detector (IR, VS, LS) plus composition.

GPC-QC: High Temperature GPC instrument for Quality and Process Control in Polyolefin production plants.

CFC: A fully automated Cross Fractionation Chromatograph (TREFxGPC or TGICxGPC) for the analysis of Bivariate distribution.

One Software: The most comprehensive Calculations Software integrating all detectors' signals.

TGIC: An adsorption high temperature HPLC technique for the analysis of low crystallinity Polyolefins.

SGIC 2D: An adsorption high temperature HPLC technique combined with GPC and infrared detection for the analysis of composition and molar mass interdependence of Polyolefin resins.

IR4: Integrated, reliable and simple to use infrared (IR) detector to measure concentration and composition.

IR6: Enhanced sensitivity and stability to analyze molecular weight and chemical composition (SCB/1000TC) and the additional capability of measuring carbonyls group in the band of 1740 cm⁻¹.

Analytical Services: Polymer Char laboratory, a global reference in the field, counts on the latest technologies for Polyolefin Characterization.

Company Profile

Polymer Char is devoted to the development of state-of-the-art instrumentation for Polyolefin Analysis.

The company offers the broadest and most modern range of instruments and services for polymer analysis and more specifically, for the structural characterization of Polyolefins, such as Molar Mass Distribution (GPC-IR[®], GPC-QC, GPC One[®]), Chemical Composition Distribution (CRYSTAF, TREF, CEF), Bivariate Distribution by Cross-Fractionation Chromatography (CFC), High Temperature HPLC (TGIC, SGIC 2D), Soluble Fraction Determination (CRYSTEX[®], CRYSTEX[®] QC and CRYSTEX[®] 42), Preparative Fractionation (PREP mc², PREP C20), Intrinsic Viscosity (IVA, IVA Versa) or integrated Infrared Detection (IR4, IR6).

Polymer Char is also well known for its advanced approach to virtual instrumentation software that, together with excellent remote control capabilities and its strong commitment to Customer success, places the company at the leading edge on instrumentation diagnostics and technical support.

Together with its global network of partners and distributors, Polymer Char supplies, trains and supports Customers worldwide. The company provides analytical services in 35 countries and its instruments are present today in over 20 countries within the Americas, Europe, Africa, Middle East and Asia Pacific, predominantly serving Polymer Producers and Processors, Government and Academic Research Laboratories, Contract Research Organizations, Analytical and Testing Laboratories, and Chemical Instrumentation Manufacturers.

In the last three decades and with an annual investment of up to 20% of its manpower resources on R&D, Polymer Char has played a key role in the development of most of the existing Polyolefin analysis technologies, such as CRYSTAF, CRYSTEX[®], CEF, CFC, and GPC with IR detection. Each new project, each new analysis, underpins Polymer Char as the Polyolefin Characterization Company.



IMPIVA



EUROPEAN UNION
European Regional
Development Funds