

Automated analysis of the amorphous fraction in PP resins by a modified TREF technique.

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A new instrument for measuring the amorphous fraction in PP and PE resins (equivalent to the xylene solubles gravimetric method) has been developed, based on an automatic TREF approach. The equipment is aimed at Quality Control laboratories in production plants, and can perform an analysis every 2 hours from a very representative sample of up to 4 grams of material.

The CRYSTEX QC is doing an automatic dissolution-crystallization-elution cycle using a chlorinated solvent combined with an infrared detector, and a dual capillary viscometer with no need of weighing, filtration or solvent handling. Besides the soluble fraction, the equipment measures the ethylene content and intrinsic viscosity in both amorphous and crystalline fractions, as well as in the whole sample. The user only needs to introduce an approximate amount of 2-4 g of sample in the equipment and the analysis proceeds automatically.

Optionally, a 42-vial autosampler is available, which works with 20mL vials processing 400mg of material, allowing a large number of samples to be analyzed sequentially in an unattended manner.

A set of ethylene-propylene resins covering a broad range of amorphous fraction levels have been analyzed. Soluble fraction, intrinsic viscosity and ethylene content have been measured automatically by CRYSTEX QC, and the values obtained have been compared with the results applying standardized ISO methods. The correlations found were very good for all the parameters, while the precision of the CRYSTEX QC approach proved to be superior due to its full automation.