



Polymer Extrusion

DEVELOPMENT OF FORMULATIONS AND FUNCTIONAL COMPOUNDS

KEY WORDS

EXTRUSION,
THERMOPLASTICS,
CIRCULAR ECONOMY

DESCRIPTION

The University of Aveiro has advanced extrusion capabilities designed to strengthen technology transfer and support circular economy value chains for plastics. These capabilities enable R&D and pilot-scale (continuous) development of thermoplastic formulations and functional compounds using single- and twin-screw extruders with precise temperature, torque, and screw-speed control. The available equipment allows compounding, reactive extrusion, and formulation of materials with mineral fillers, active additives, or recycled polymers, suitable for injection molding, film casting, or 3D printing. Processing can be performed at laboratory and pilot scale, generating filaments, sheets, films, and thin tubes with validated performance and digital delivery of results together with the produced samples. The outcomes include optimized materials ready for industrial or collaborative validation, ensuring traceability, reproducibility, and industrial scalability.

APPLICATIONS

- Development and optimization of thermoplastic and recycled formulations.
- Reactive extrusion for compatibilization or grafting.
- Processability and thermal stability assessment.
- Production of filaments, sheets, films or thin tubes.
- Scaling from laboratory to pilot validation.

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