



**AIMPLAS**

PLASTICS TECHNOLOGY  
CENTRE

# SUSTAINABLE MOBILITY

FEB 2024

**INNOVATION**  
in PLASTICS



**At AIMPLAS, we work to meet the main challenges of companies in the mobility sector, including the automotive, aeronautics, navigation, rail, aerospace and defence industries.**



## **SPECIFIC AUTOMOTIVE SOLUTIONS**

Development of **efficient heating** systems based on Joule heating (resistive heating).

**Weight reduction:** long-fibre thermoplastic (pellets and tapes) and thermoset composites.

Electronics integrated into plastic parts and **in-mould electronics**.

**Autonomous vehicles:** sensor integration, materials for electromagnetic shielding and RADAR/LIDAR transparency.

Development of **self-cleaning surfaces** (hydrophobicity and photocatalysis), odour control and reduced maintenance in shared vehicles.



## **AERONAUTICS, NAVIGATION, RAIL, AEROSPACE AND DEFENCE INDUSTRIES**

Active and passive **anti-icing coatings**.

Mechanical and **chemical recycling**.

**Flame-retardant** solutions: development of new flame-retardant composites and additives.

Development of **thermoplastic composites:** AIMPLAS has a pilot plant line to produce long-fibre reinforced tapes and pellets.

**Sensor** integration.



## **MINIMIZING ENVIRONMENTAL IMPACT**

**Ecodesign** to develop easily recyclable products and carry out product recyclability studies.

Incorporation and compatibilization of **recycled plastic** materials.

Chemical and **mechanical recycling**.

Development of new polymer matrices based on **biomaterials**.

Development of plastics with natural-fibre **fillers and reinforcements**.

**Environmental impact** assessment (carbon footprint and life cycle assessment).





## REDUCING VEHICLE WEIGHT AND CO<sub>2</sub>

**Nano-coatings** that help reduce vehicle weight.

Replacement of metal parts with plastic parts.

Development of **long-fibre** thermoplastic and thermoset composites.



## DEVELOPMENT OF MATERIALS WITH ADVANCED PROPERTIES

**Flame-resistant** materials and smoke dampers: synthesis of new additives and inherently flame-retardant polymers and development of customized formulations.

Development of materials with **electrical conductivity**.

Parts with **thermal conductivity** properties.

Integration of electronic plastic materials (**plastronics**): flexible electronics and in-mould electronics.

Development of **dissimilar material** systems (polymer-metal and two different kinds of polymers).

Development of materials for **lightweight battery** housings for transport electrification.



## PROCESS IMPROVEMENT AND OPTIMIZATION

Additive manufacturing and **3D printing**: new materials for printing; manufacture of short and customized production cycles.

Monitoring the **curing process**.

Development of fast-curing systems in composites: microwave and UV.

Simulation and optimization of the **compounding** process.



## ANALYSIS AND TESTING

Analysis and testing according to car manufacturers' specifications:

Determination of thermal, physical, mechanical and optical properties of material or product.

**Flame resistance** (horizontal burning, cone calorimeter, UL 94).

**Identification and characterization** of polymers, fillers and additives.

Climatic and vibration tests.

Accelerated artificial aging (xenon arc, UV and **Solar Simulation**).

Emissions of volatile organic compounds (VOC's, VOC-FOG), **fogging**, odor, **Emissions chamber 1m<sup>3</sup>**.

Tests on **painted parts** (Stone-chip, Steam-jet, Car Wash).

Laboratories approved by **Volkswagen, Renault** and **Daimler**, and accredited in UNE-EN ISO 17025 in a huge range of tests for the control and characterization of materials in the automotive industry.







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