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IN PLASTIC



COMPOSITE

Reinforced plastics or composites allow to obtain lightweight products with optimized mechanical properties for its application in sectors such as, aeronautics, civil construction, automotive, naval, sports, etc.

AIMPLAS is shaping the future of composite's industry through innovation. To achieve this, it provides businesses necessary knowledge and technology to obtain high value-added and differentiated materials, products and processes. They will permit them growing and improving its position in the market.



R&D Lines

- Resin-transfer processes (RTM, RTM-Light and infusion)
- Design of the mould by simulating the resin flow. Implementation of sensors in the mould to optimize the injection process and the extraction of pieces according to specifications.
- Development of microwave technology in RTM.
- Pultrusion

- Design of the product and tooling.
- Implementation of new designs by validating in pilot plant.
- Introduction to new materials such as thermoplastic resin pultrusion.
- Application of UV cured coatings.
- Technology development for the application of Gel-Coat online.
- Development of microwave technology in pultrusion.

Compression moulding

- Development of thermoplastic composite prototypes. Use of hot-platen presses to obtain SMC and Prepegs prototypes.
- An appropriate selection of raw materials to comply with the specifications of the final products.
- Development of SMC-based biocomposites.
- Solid surface
 Development of formulations to improve properties of high inorganic filler products and reduce weight.
- Incorporation of nanoparticles to improve properties.
- Production of polyurethanes
- Non-conventional curing of thermoset resins
 Development of microwave technology for the curing of thermoset resins.

Compounding of thermoset resins with photoinitiations for the curing using UV radiation.

- Fireproof polymeric matrices
- ➔ Biocomposites

Adjusting production process to obtain renewable sources-based composites.

Optimisation of properties from biocomposites. Development of high performance biocomposites.

Recycling

Revalorisation of Unusable Tyres materials (Neumáticos fuera de Uso - NFU) and other thermoset polymers by developing new manufacturing processes.



Chemical characterization of thermoset matrices

Brookfield viscosity Rheological properties Solids content Determination of reaction-curve temperatures and times, enthalpy of reaction and degree of conversion according to ISO 11357-5 Acid Value Reactivity curve (Gel Time, Peak Exothermic Temperature and Time) at 25°C, 80°C and 130°C

Density according to ASTM D 1475: "Standard Test Method for Density of Liquid Coatings, Inks and Related Products"

Physical-mechanical characterization of composites

Physical properties

Density Water Absorption

Mechanical and thermal properties

Tensile properties.

- Three and four point bending, at different temperatures
- Adherence
- Interlaminar shear strength
- Compression
- Charpy and Izod Impact
- Barcol Hardness
- Heat Deflection Temperature

Resistance to external agents

- Horizontal and Vertical Flammability (UL94) Liquid resistance
- Accelerated artificial ageing

Environment and Security

Studies about recyclability and reuse of thermoset waste material.

New technologies and processes to improve job security.

Formación

AIMPLAS has the greatest specialised technical offer in the plastic and composites industry:

- University Specialist in polymeric materials and composites. Technical seminars about composites: RTM, biocomposites, infusion, etc.
- Personalised courses adapted to particular needs of composite companies.

Some courses from our catalogue:

- Composite Materials: reinforced plastics.
- Out of autoclave composites: Prepregs.
- Composite manufacturing processes: RTM, RTM-Light and Infusion.
- Composites: optimization of infusion process.
- Adhesion and adhesives.
- Polyurethanes: type, market and manufacture.
- Thermoset biocomposites: market applications, raw materials and aspects related to its processing .
- Online composite course: RTM, RTM-Light and Infusion.

Competitive Intelligence

Plastics Industry Observatory: technical, informative, technological and legislative innovations.

http://en.observatorioplastico.com