

More than value



SILON R&D

member of SILON group



Innovation for your projects

SILON – TRADITION AND INNOVATION IN POLYMERS

SILON has over 70 years of experience in the development and production of plastic compounds and polyester fibres. Since our founding, we have grown into one of Europe's leading manufacturers, operating across numerous industrial sectors. Our products are used in infrastructure—such as water distribution pipes—as well as in the automotive industry, construction, electrical installations, and various other technical applications.

Innovation is the cornerstone of our success – which is why we established our dedicated R&D branch, connecting expertise in chemistry, technology, and industrial practice.

THE MISSION OF OUR R&D DIVISION

SILON's R&D Center is more than just a laboratory. It is a space where:

- **new materials** are developed to meet both current and future market demands,
- ideas are **rapidly transformed into real-world applications**,
- **close collaboration** takes place with both customers and the academic community,
- we continuously seek ways to combine **high performance with sustainability**.

Our ultimate goal is to deliver solutions that help our partners enhance their products, reduce environmental impact, and boost their competitiveness.

TECHNOLOGICAL FACILITIES

Our R&D Infrastructure Includes:

PILOT PLANT DEPARTMENT

enables fast transition from lab-scale trials to pilot-scale testing.

PILOT COMPOUNDING LINE

- Twin-screw extruder
- Throughput: **10 – 20 kg/h**
- Allows testing of formulations on a larger scale before full industrial production
- Flexible parameter settings to simulate various production conditions

LABORATORY MIXER

- Mixer with two kneading arms
- Chamber volume: 50 g
- Designed for testing small material batches in laboratory conditions



LABORATORY DEPARTMENT

Provides access to modern laboratories equipped with analytical instruments for both physical-mechanical and chemical testing.

CHEMICAL LABORATORY

- **FTIR** – Fourier Transform Infrared Spectroscopy
- **HPLC** – High-Performance Liquid Chromatography
- **GC-MS** – Gas Chromatography–Mass Spectrometry
- **DSC** – Differential Scanning Calorimetry
- **TGA** – Thermogravimetric Analysis
- **F Titration** – Fluoride Determination
- **Extraction** – Sample preparation and component separation

MECHANICAL LABORATORY

- **Tensile tester** – Measures tensile strength
- **Plastometer** – Measures melt flow rate
- **Rheometer** – Analyzes rheological properties of materials
- **Charpy Impact Tester** – Impact resistance testing
- **Thermostats** – Simulate material aging under defined conditions

FLAMMABILITY AND CROSSLINKING LABORATORY

- **Combustion chambers** – Flammability and fire resistance tests
- **Crosslinking chambers** – Testing of vulcanization and crosslinking processes

CHEMICAL MIGRATION LABORATORY

- **TOC Analyzer** – Total Organic Carbon measurement

THE ADVANTAGES OF OUR CAPABILITIES

- Complete development under one roof: from laboratory testing to pilot-scale production
- Rapid iteration and adjustment of formulations
- Precise testing and analysis ensuring **safe and reliable materials**
- Technological know-how enabling **special projects and sustainable material solutions**
- High flexibility and the ability to respond to individual partner requirements thanks to our equipment
- Laboratory accreditation by the end of 2025

OUR SERVICES

CUSTOM MATERIAL DEVELOPMENT

- Creation of **new polymer compounds** tailored to specific customer requirements
- Optimization of existing materials for improved **mechanical, physical, and chemical properties**
- Rapid transition from laboratory concepts to **pilot-scale and full-scale production**
- Management and execution of development projects
- Tailor-made projects designed to meet **unique customer needs**
- Close cooperation from concept through to industrial implementation
- Partnerships with universities and research centers to leverage **cutting-edge technologies**.

ANALYSIS AND TESTING

- **Chemical, physical-mechanical, and thermal material analyses**
- Testing of **resistance, stability, and durability** for specific applications
- Benchmarking against competing materials and recommendations for the **most suitable solutions**.

TECHNICAL CONSULTING

- Expert advice on **material selection, processes, and applications**
- Support in **solving production challenges** and optimizing processes
- Consulting aligned with **EU legislation** and standards for recycling and material safety
- Comprehensive testing facilities for simulating real application conditions
- Guidance on manufacturing processes and applications
- Material testing and recommendations for optimal solutions
- Optimization of polymer compound properties

PILOT AND PROTOTYPE PRODUCTION

- **Pilot lines** for validating formulations and simulating production processes
- **Small-scale production and prototypes** for real-world testing
- Fast adjustments and fine-tuning of formulations based on feedback
- **Prototype production** of small series, enabling customers to validate materials in practice before large-scale deployment

SPECIAL EU PROJECTS

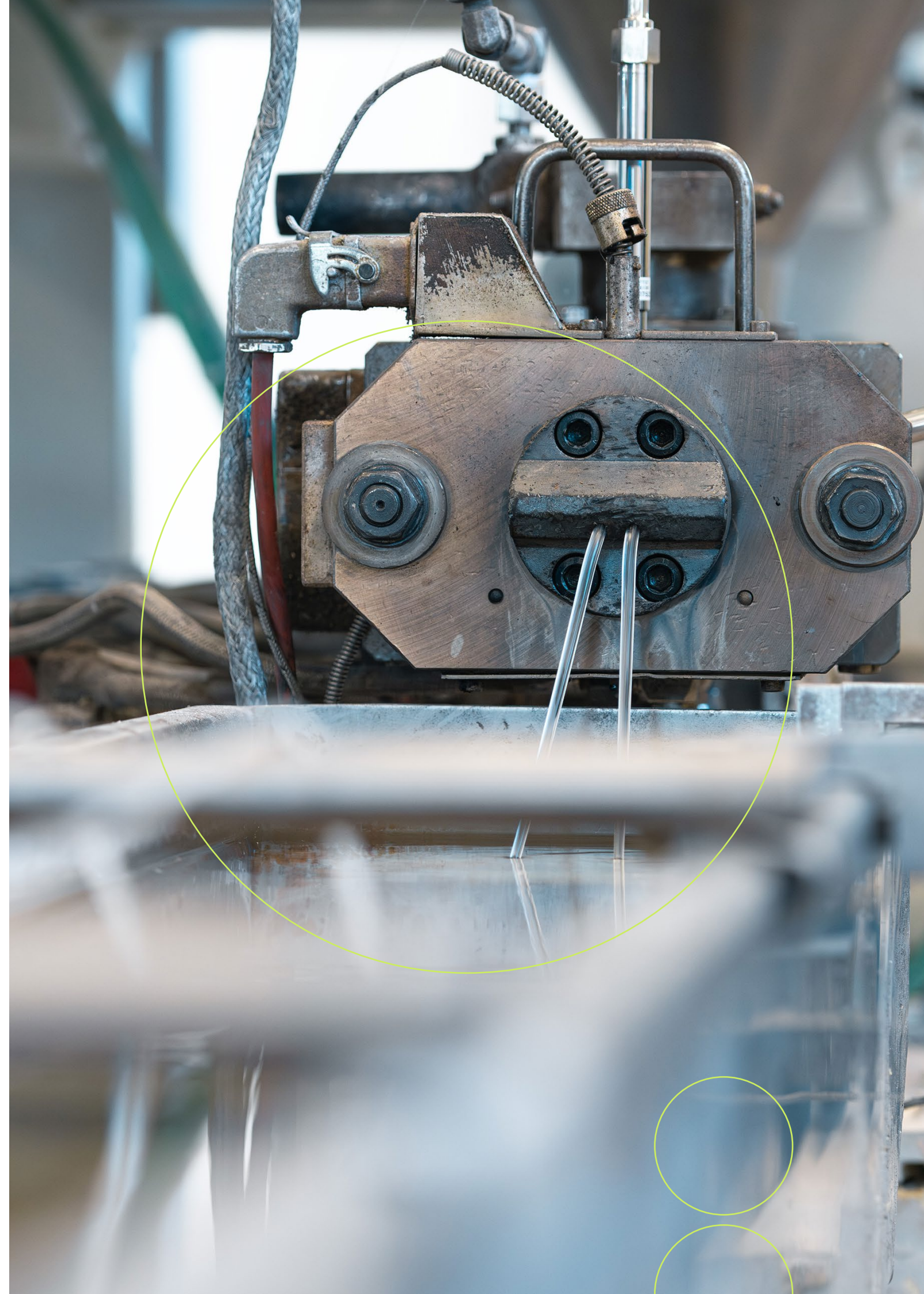
- Development of **sustainable materials** with recycled content
- Materials for **demanding technical applications** (automotive, construction, packaging).

PARTNERSHIPS AND COLLABORATION

At SILON, we believe the **best results come through collaboration**.

- We work closely with customers on the development of tailor-made materials
- We join forces with universities and research institutes
- We participate in **international projects** that push the boundaries of innovation.

Our flexibility allows us to respond to evolving market demands and adapt to the individual needs of our partners.



TEAM OF EXPERTS

Behind the success of our R&D branch is a team of experienced chemists, engineers, and technical specialists.

- They combine deep knowledge of material science with hands-on production experience.
- They keep track of the latest trends and legislative developments within the EU.
- They bring ideas to life, transforming them into concrete products and solutions.

For our customers, this means having not only a manufacturer, but also a **reliable partner with true know-how**.

KEY FOCUS OF RESEARCH & DEVELOPEMENT

POLYOLEFIN COMPOUNDS

We specialize in **PP, PE**, and **EVA**-based compounds, offered in a wide range of modifications. Our goal is to combine high technical performance with easy processability.

SUSTAINABILITY & RECYCLING

European legislation and growing societal pressure demand that materials are not only functional but also **environmentally friendly**. SILON R&D develops formulations containing recycled content and enabling further recyclability.

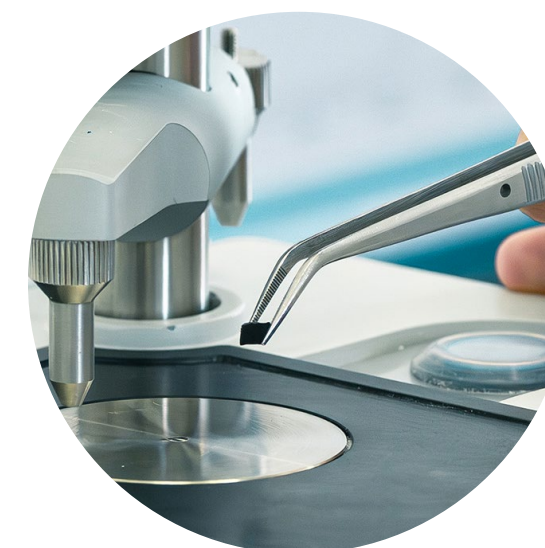
We actively participate in projects supporting the **circular economy** and seek innovative ways to extend the lifecycle of polymer materials.

AUTOMOTIVE

The automotive industry sets exceptionally high standards for **mechanical strength**, **thermal stability**, and **aesthetic qualities**. Our R&D branch develops materials that meet these requirements – from interior components and technical parts to special applications.

CONSTRUCTION & INFRASTRUCTURE

We design crosslinked HDPE compounds for **pipng systems**, crosslinked LLDPE for **insulation**, and HFFR compounds for **cable protection** – all engineered to withstand long-term stress and diverse climatic conditions.





OUR VISION

We see the future in **sustainability, innovation, and partnership.**

SILON R&D aims to be a driver of change – a company that delivers materials meeting not only technical requirements, but also environmental and societal expectations.



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