



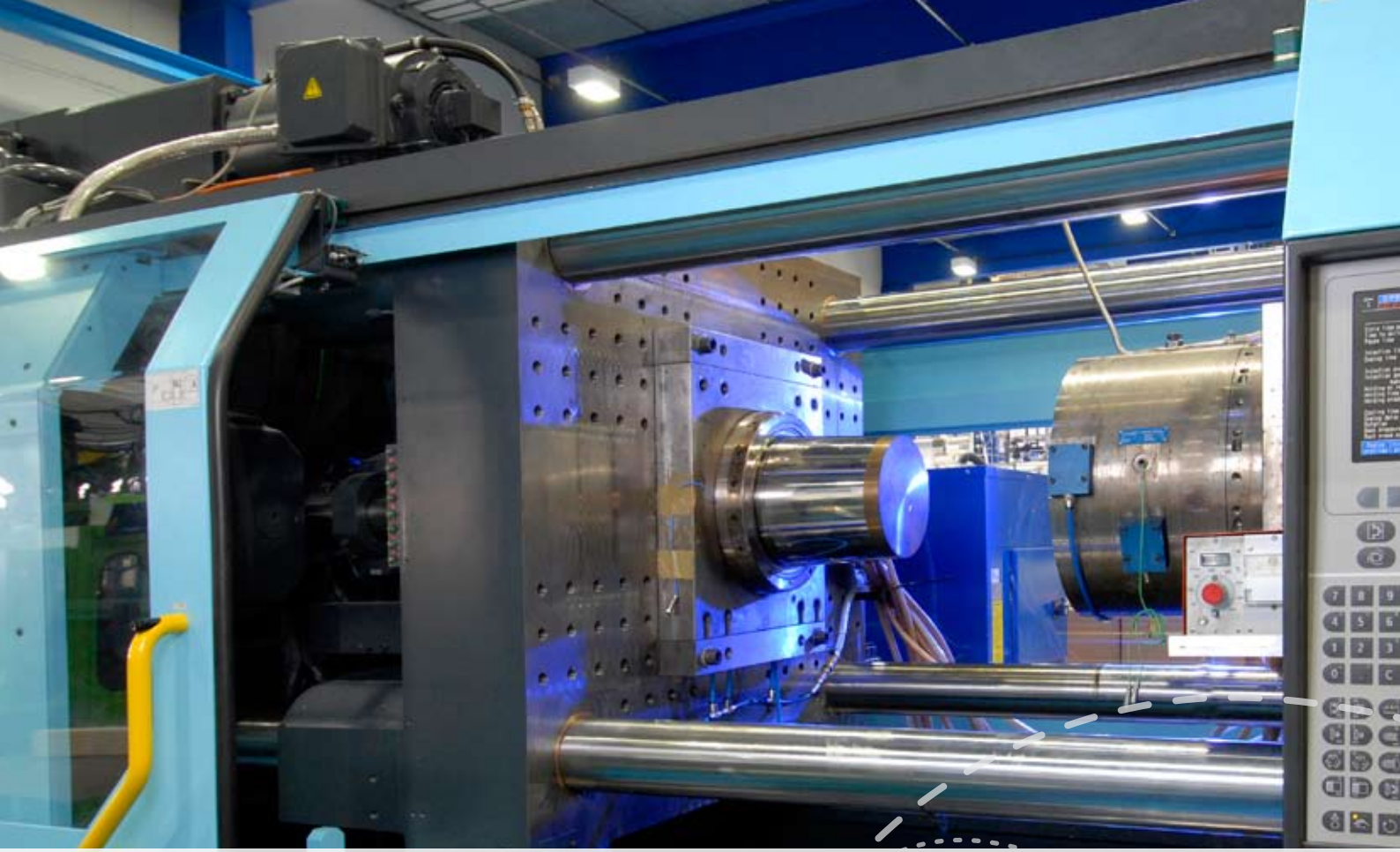
norner™

Innovation through Insight



Industrial plastics and packaging institute

We deliver packaging innovations



Leadership in plastic packaging

Our polymer institute has been a development partner for packaging more than 30 years.

Tine Rørvik, Managing Director





Projects

- Packaging developments and improvements
- Bench marking of alternative concepts
- Barrier technology for injection moulding
- Selecting and optimising packages and processes
- Sustainability like material reduction or replacement
- Material evaluation and selection
- Quality improvement and trouble shooting
- Supplier qualification and specification
- Industrial research projects
- Tailor made seminars and training

Facilities

- Plastics processing centre
- Packaging and product test facilities
- Material test centre
- Chemical and polymer analysis
- Migration and food contact
- Gas barrier properties

Innovation

- Product development
- Project management
- Technology leadership
- Material development
- International network

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Packaging, material functionality development

We contribute in developing new packaging and material solutions beyond your imagination.

Thor Kamfjord, BA Manager Plastic Solutions





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Projects

- Pack functionality improvements
- Packaging harmonisation and cost
- Packaging recipe development
- Material processing trials
- Technology and concept investigations
- Additive optimisation and harmonisation
- Performance verification and consistency
- Quality review and supplier audits
- Problem solving and failure analysis
- Mould flow analysis

Facilities

- Injection moulding
- Extrusion blow moulding
- Film mono and coextrusion
- Rotational moulding
- Compounding lines
- Polymer, material and packaging laboratories

Support

- Processing trials
- Failure analysis
- Mould design
- Packaging test centre
- Scientific laboratory



Sustainable product packaging development

Norner takes an active role in developing more sustainable packaging solutions.

Ole Jan Myhre, Market Manager



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Projects

- Package weight reductions
- Research and testing of new materials
- Plastics by polymerising CO₂
- Advice and benchmarking of materials
- Packaging concept changes
- Package optimisation vs. transport
- Reduced food spoilage by ensuring pack integrity
- Verification and consistency of properties
- Developing appropriate product specifications
- Improving recycled materials performance

Facilities

- Plastics processing centre
- Film orientation line (MDO)
- Package testing equipments
- Scientific laboratories
- Polymerisation laboratory
- Migration testing

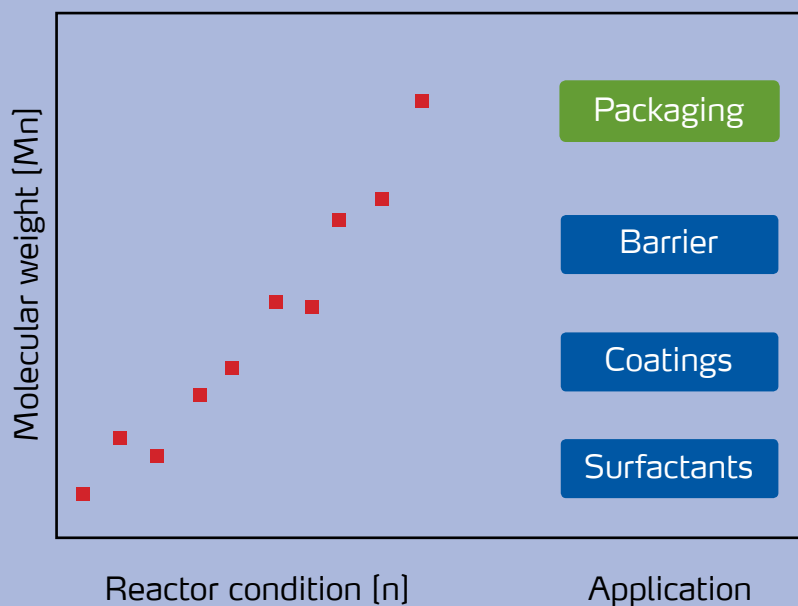
Competence

- Lightweighting
- Simplification
- Material performance
- Re-use and recycle
- Production efficiency

Sustainable plastics from CO₂

Novel polymers made by polymerisation of CO₂ are developed by Norner with the goal to be suitable for standard thermoplastic processing applications.

Polypropylenecarbonate (PPC) is a copolymer of CO₂ and propylene oxide containing 40 wt% CO₂. In order to be used in extrusion or moulding the polymer needs a high molecular weight.



Benefits

- Improved eco-footprint
- Efficient catalyst mapping
- Tailored polymer properties
- PPC polymer for extrusion
- Prepare for scale-up
- Reduce production cost

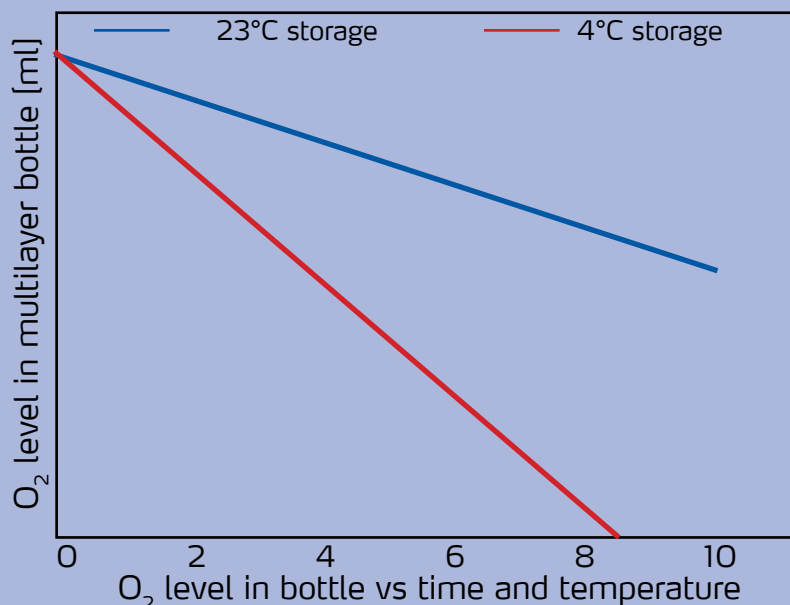
On-line OTR calculator

Being able to calculate and estimate the OTR characteristics of packages provide a valuable tool for designing packages and multilayer structures.

Norner have published an on-line OTR calculator which allows you to calculate the OTR of packaging formats of pouches, bottles and circular and square shaped cups.

Benefits

- Fast screening of structures
- Realistic estimations



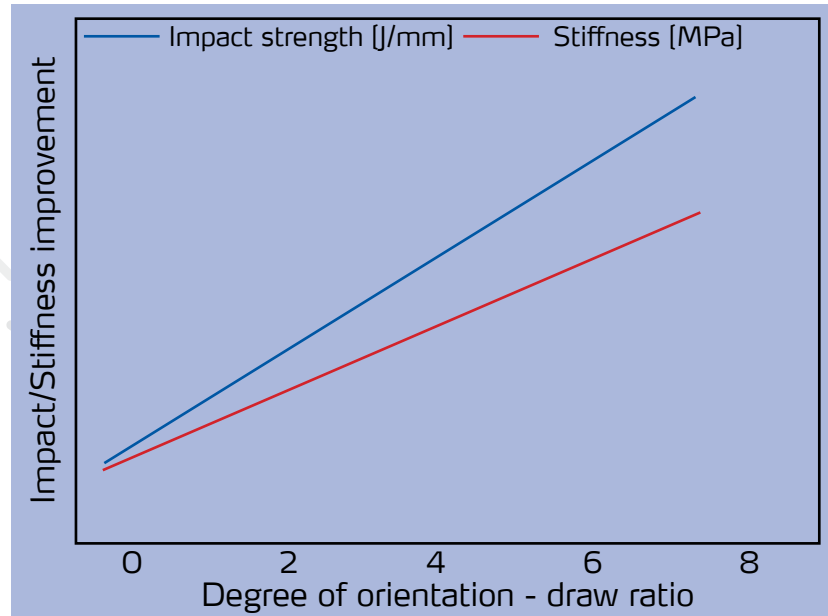
Mono orientated PE/PP films

Modern technology for film converting by stretching and mono orientation enable new application development and capabilities of plastic films.

Norner has a unique technology centre for development of films, film recipes, new applications and improvements including full scale film extrusion and MDO lines.

Benefits

- Higher stiffness and impact
- High creep resistance
- Gloss and display
- Less material consumption
- Converting speed
- New laminate structures



PET Extrusion blow moulding

Recent developments in PET has enhanced the EBM processability of this traditionally low viscosity polymer creating new opportunities for the industry.

Norner has been selected as processing and trial partner by key PET producers and brand owners for making processing demonstrations and development support.



Norner Fischer Müller EBM line

Benefits

- PET recycling system
- High clarity bottles
- High stiffness and top load
- Sustainability
- Competence partner



Packaging and ma test centre

Norner takes an active role in developing more durable plastic solutions.

Henning Baann, Manager Scientific Laboratories





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Projects

- Package testing of functional properties
- Advice and benchmarking of materials
- Verification and consistency of properties
- Developing appropriate package specifications
- Packaging failure analysis and solutions
- Taste and odour problem investigations
- Extraction and migration behaviour of materials
- Quality review and supplier audits
- Third party testing and claim investigations
- Performance testing of plastics

Facilities

- Package test facilities
- Package prototype manufacturing
- Additives performance testing
- Material performance laboratories
- Advanced microscopy laboratory
- Migration analysis

Competence

- Packaging technology
- Material performance
- Material failure investigation
- Food and medical packaging regulations
- ISO 9001:2008 and ISO 17025

Contact us via www.norner.no



Norner Innovation is an international and industrial institute with core competence in the plastics technology and value chain. Norner has leading expertise and advanced facilities to support the needs for product innovation and quality, problem solving and failure analysis, product testing and certification as well as material recipe development. Our focus segments are Packaging, Plastics processing, Offshore, Pipe, Polymers and Additives.



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