



The Institute of Materials, Minerals & Mining

PLASTICS & RUBBER DIVISION

MATERIALS FORESIGHT – RUBBER SECTOR

For the rubber industry the “driver” is the automotive industry where 70% of rubber products are used, this is followed by the latex product range for medical purposes.

BUSINESS DRIVERS ISSUES (EXAMPLES)	TECHNOLOGY AND INNOVATION (EXAMPLES)	NEEDS AS SEEN BY THE RUBBER INDUSTRY
Markets and customers	Globalisation of markets	Globalisation of the vehicle
	Improved quality of life	Closure of R and D centres both in industry and universities will severely hamper UK initiatives of the future. Danger of movement of company base away from UK. (Exampld by polyurethane’s).
	Competitive products	Potential for best in market Restricted by competitor base in UK.
	Time to market	
Technology	Miniaturisation	Minimum weight, minimum heat generation through new design and manufacturing technology. Recycleability of materials, extension of the use of thermoplastic elastomers. (TPE) New materials, combined with fibres or other composites. Need for new curing systems, which are simpler and lower toxicity
	Lightweight	Extended life and performance products, e.g. run flat tyres. Solving the allergy problem. The use of rubbers to store and return energy as appropriate to the system. The use of electronics and sensors to rubber product performance and relate to smart material behaviour. Introduction of a system approach, for example tyre, wheel, brake, suspension coupled with electronics. Smart and intelligent tyres. Continuous monitoring of rubber properties during product manufacture. Manufacture without solvents and volatile additives. Reliable prediction of product performance and life cycle. Simplification of rubber compounding. Development of powdered polymers and improved dispersion techniques. Clean rubber for food and health safety.
	Business practice and Economics	Productivity pressures. Cost reductions. Corporate consolidations Distributed manufacturing

Education/workforce/image	Need for talented people	Need to raise awareness of elastomers in every day use. Need for higher interest in elastomers in younger people, specialist degree and technician courses.
	De-emphasis on manufacturing	Focus on safety issues/tactile qualities and versatile properties of rubbers.
	Loss of skills	Professional development, CAD design skills.
Information technology	Growth of interest	Globalisation leads to better monitoring and policing of patent and copy write infringements.
	Simulation/modelling	Product performance, life cycle and manufacturing cycle model predicted using correct material properties. (Integrated design). Potential for modelling to enhance the design of UK manufactured products.
Regulation and standards	Environmental protection	Electronic specifications, web based marketing, higher level of material and product specification. Need for higher product consistency. Improved health screening. Standardisation of compounds and materials. (E-commerce) Removal of solvents in manufacturing. Development of none destructive product reliability tests.
	Product safety	
	Re-cycling	Reuse of materials and clean burn, depolymerisation processes.
	Certification for safety	
	International standards	International specification and performance standards.
Quality, reliability, and Durability	Fitness for use	Prediction of performance and life prediction. Development of none destructive testing.
	Remaining life	Product disassembly. Health monitoring Repair ability Disassembly.

IOM³/PRD0208/16.10.02/Rubber