

An Introduction to Lightweighting



What is Lightweighting?

The reduction of component weight in a product, resulting in lighter overall weighting.



What does it involve?

Change of design and materials with lighter-weight options such as:

- Polyolefins (polypropylene)
- Syntactic foams
- Thermoplastic composites
- Composites

Ab Abrasives											Md Medical Data Management			
Ad Adhesives	Fi Films													
Am Advanced Materials	Fl Fluoro-materials											Ec Energy Components	Mf Mechanical Fasteners	
Ce Ceramics	Nt Nano-technology											Ac Acoustic Control	Fe Flexible Electronics	Mi Microbial Detection & Control
Co Advanced Composites	Nw Nonwoven Materials	Mo Moulding	Pe Predictive Engineering & Modeling	Rp Radiation Processing	An Analytical	Fc Flexible Converting & Packaging	Pr Process Design & Control	Bi Bio-technology	Fs Filtration, Separation & Purification	Op Opto-electronics				
Do Dental & Orthodontic Materials	Po Porous Materials & Membranes	Mr Micro-replication	Pm Polymer Processing	Su Surface Modification	As Application Software	In Inspection & Measurement	Se Sensors	Dd Drug Delivery	Im Imaging	Tt Track and Trace				
Em Electronic Materials	Sm Specialty Materials	Pd Particle & Dispersion Processing	Pp Precision Processing	Vp Vapor Processing	Es Electronics & Software	Is Integrated Systems & Design	We Accelerated Weathering	Di Display	Lm Light Management	Wo Wound Management				

3M technologies used to enable light-weight solutions

“Adhesive bonding is an enabling technology that can give designers and engineers the ability to choose different, lighter materials and combine them in new and innovative ways to assist and create light-weight assemblies.”

Dr. Antonio Pagliuca - 3M Senior Technical Specialist.

Bonding challenges of lightweighting



Bonding dissimilar materials.



Simultaneously bonding & sealing.



Noise, vibration & harshness (NVH).



Thin substrates.



Thermal expansion capability.



Aesthetics.



Next generation of materials can be bonded with tapes and adhesives

Examples: Thermoplastic composites, Fibre reinforced plastic, Engineering plastics.

Benefits



Improves productivity



Improved design/performance



Less environmental impact



Design flexibility