CHEMISTRY INDUSTRY ASSOCIATION OF CANADA

CHEMISTRY AND PLASTICS:

Helping Drive Canada's Automotive Sector

The automotive sector is a cornerstone of Canada's economy, driving innovation, employment, and trade. As one of the country's largest manufacturing sectors, it supports over **half a million jobs** and contributes **billions to the national GDP**. At the heart of this dynamic industry lies chemistry—powering advancements in materials, fuels, and technologies.

Chemicals and plastics are fundamental to the automotive sector, underpinning everything from advanced materials and coatings to adhesives, lubricants, and battery components, while also enabling safer, lighter, more fuel-efficient vehicles and innovative manufacturing processes.

CANADA'S AUTOMOTIVE INDUSTRY BY THE NUMBERS

Canada's automotive industry is a key driver of economic growth, employment, and trade. Closely integrated with the United States, the sector benefits from strong cross-border supply chains and shared innovation. This partnership has helped build a competitive industry that supports thousands of jobs and contributes significantly to Canada's GDP and export activity.

$16 Billion
GDP Impact[1]

$43.6B
Export/Trade[2]

603,500
Canadian Jobs[3]

(1) Statistics Canada
(2) Statistics Canada
(3)DesRosiers Automotive Consultants

(1) U.S. Department of Energy
(2) American Chemistry Council

How Plastics and Chemistry Power Modern Automotive Manufacturing

Advanced materials and polymers:
Chemical formulations are used to produce lightweight plastics and composites that improve fuel economy and vehicle performance.

Coatings and surface treatments:
Paints, sealants, and corrosion-protection chemicals enhance durability, appearance, and resistance to weather and road conditions.

Adhesives and sealants:
Specialized chemical adhesives bond components together, improving structural integrity, safety, and noise reduction while allowing for lighter vehicle designs.

Fluids and lubricants:
Engine oils, coolants, brake fluids, and transmission fluids—each the result of precise chemical engineering—ensure reliable operation and long vehicle life.

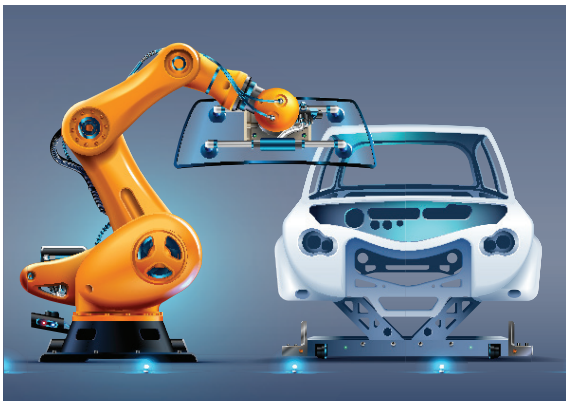
Electronics and batteries:
Chemicals are essential in producing semiconductors, wiring insulation, and battery materials that power modern vehicle electronics and electric vehicles.

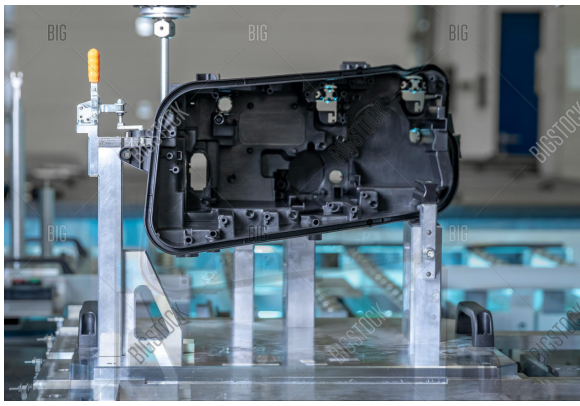
Lightweighting and Fuel Efficiency

- Plastics reduce vehicle weight, improving fuel economy and lowering CO_2 emissions. A 10% weight reduction can lead to a 6–8% improvement in fuel efficiency.(1)
- On average, while 50% of vehicles are plastic it makes up only 10% of the weight by volume.(2)

Safety and Impact Resistance

Chemicals are used to deploy airbags quickly in order to protect people in the event of a crash while plastics are used in the manufacturing of, bumpers, seat belts, and fuel tanks, offering impact resistance and fire safety. Specialized plastics are chosen for their durability and ability to absorb energy.





Interior and Exterior Components

Common automotive applications include dashboards, door panels, seat covers, bumpers, and trim, which are made from complex material complex materials that incorporate polyvinyl chloride, polypropylene, and polyurethane combined with specialized additives to meet stringent durability, safety, performance, and comfort specifications.

Design Flexibility and Aesthetics

Plastics allow for complex shapes and customizable finishes, enabling innovative vehicle designs. They support both functional and aesthetic goals.

Electrical and Electronic Systems

Plastics are used in vehicle electrical and electronic systems to insulate wiring harnesses, in battery casings, sensors, and connectors. Materials like Polybutylene terephthalate (PBT) and polyamide (PA aka. Nylon) offer heat resistance and electrical insulation.

Laminated Windshields and Windows

- Most modern windshields are made using laminated glass, which consists of two layers of glass and one inner layer of plastic. The plastic interlayer holds the glass together in case of impact, preventing shattering.
- Side and rear windows use certain types of plastics to reduce weight and preventing shattering

Noise, Vibration, and Harshness (NVH) Control

Polyurethane foams and other polymer-based materials are integrated between metal and structural components to provide sound insulation and vibration damping, where their bonded and embedded placement improves ride comfort but also makes them difficult to separate or remove.

Sustainability and Recycling

Automakers are increasingly incorporating plastic with recycled-content and bioplastics into vehicle manufacturing, using advanced chemical processes to meet performance and safety requirements while reducing reliance on virgin resources and supporting more sustainable production.