

Activity 6 | Glass on the Road

In today's highly connected, high-tech automobiles, glass is everywhere. Beginning with Corning's development of a specialized headlight glass for automobiles at the turn of the 20th century, advanced glass technologies have been making driving safer, cleaner, and more connected, supporting the environment and redefining the on-road experience.

Part 1: Many Uses for Glass

Different types of glass and ceramic technologies are used throughout modern vehicles. We see just some of them in the images below. For a 360° understanding, watch the video at youtube.com/watch?v=g6pFh4J_kZM. Use what you see to complete the chart below by explaining how each of the innovations makes driving safer, cleaner, or more connected. The first one has been started for you.

Technology	Qualities / Benefits For Environment, Experience, Efficiency
Corning® Gorilla® Glass for Automotive Exterior Glazing	<ul style="list-style-type: none"> • 30% lighter than traditional glass means increased fuel efficiency and lower center of gravity for improved performance • 2x tougher against rock strikes and weather and is safer and less costly to repair • Less framing needed allows for larger surface area for viewing clarity and heads-up displays
Corning® Gorilla® Glass for Automotive Interiors	
Corning® Fibrance® Light-Diffusing Fiber	
Corning® DuraTrap® Particulate Filters	
Corning® FLORA® Substrates and Corning® Celcor® Substrates	

Part 2: Supporting the Environment

In 1970, the auto industry approached Corning with a challenge: find a way to reduce vehicle pollution by 90% in five years, to meet the demands of the newly strengthened U.S. Clean Air Act. Corning responded with the cellular ceramic substrate, a honeycomb-like structure with thousands of parallel channels. In substrates, porous linings within the channels allow for catalytic conversions to take place removing harmful toxins too small to trap in a filter, turning them into harmless gases and water vapor. The exhaust then passes through a filter in which alternate channels are plugged to force the exhaust through the pores of cell walls, leaving behind soot particles that are too large. These channels are designed to trap soot, or particulate matter, from diesel or gasoline exhaust emissions.

Discover more about how Corning's environmental technology products are supporting the environment (corning.com/worldwide/en/products/environmental-technologies.html). Test how much you've learned by taking this True/False quiz.

1. Clean-air technology is a new field for Corning.
2. 10% of a vehicle's emissions come out of its tail pipe in the first 30 seconds after it starts.
3. The average person breathes close to 3,000 gallons of air (enough to fill a tanker truck) every day.
4. Without a filter, a typical diesel truck driving from New York City to Los Angeles would release enough soot into the air to fill a 2-liter soda bottle.
5. Corning® DuraTrap® Particulate Filters® for diesel engines remove 99% of the soot leaving the vehicle.
6. Since the Clean Air Act was originally passed in 1963, air pollution has been reduced by 10%.
7. A catalyzed substrate the size of a soft drink can contains the surface area of a basketball court.

Fun Fact! Corning is skilled in glass manufacturing but also in ceramics technology! The ceramics products in your car's engine help clean the air you breathe.



MY LIFE IN THE GLASS AGE

How do you hope glass will enhance your driving experience some day? On the back of this sheet, design the dashboard of your dreams. As an alternative, you can work with your classmates to brainstorm other uses for ceramic particulate filters and substrates. How could they be used, for example, to reduce air pollution from coal-fueled power plants?