

MODERN

MAGIC

IN

FIBER

GLASS

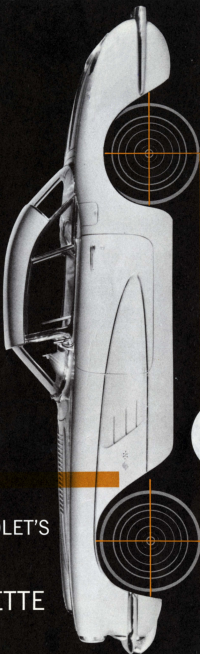
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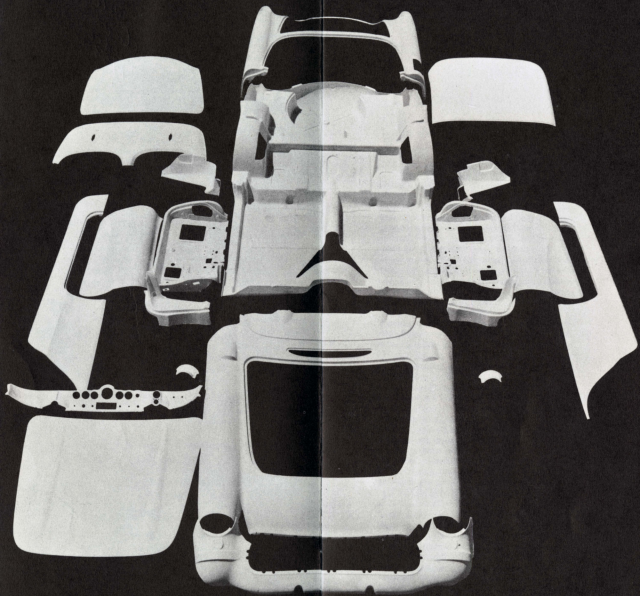
PLASTIC

CHEVROLET'S

CORVETTE

BODY





It's news in the field of body construction—the Corvette body of fiber glass and plastic, developed by Chevrolet engineers to take full advantage of the unusual benefits offered by these unique materials! Ingenious new techniques are successfully employed in the building of this attractive, long-lasting and practical sports car body.

Here are the glass fiber reinforced plastic panels from which the Corvette body is assembled. At the Chevrolet St. Louis assembly plant—the home of the Corvette—these panels are hand-crafted on a modern production line to join them into a distinctive body shell that inspires top craftsmanship from the men who build it.



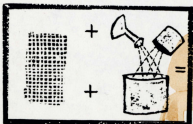
A true sports car body must be very light weight and its styling must be attractive with flowing lines and contours. The glass fiber reinforced plastic body of the Corvette fills these requirements beautifully. Admired for its sculptured shape wherever seen, the body weighs little more than half as much as a comparable steel body. And this low weight contributes much to the Corvette's extra-low center of gravity, impressive stability and superior responsiveness . . . its enviable high horsepower-to-weight ratio is an acknowledged measure of performance potential.

But that's only part of the story! Other characteristics of reinforced plastic are equally desirable in auto bodies. Waterproof and rust-proof, the Corvette plastic body is also impervious to corrosive materials such as road salt. No rusted-out body panels in the Corvette!

There are also many other advantages. Reinforced plastic is unaffected by severe weather, either hot or cold. This means the expansion and contraction of body panels is negligible so the body stays tight longer. Since the material is also a good insulator, the Corvette will stay cooler in the hot sun. In addition, metal-to-metal contacts, the cause of most squeaks and rattles in metal bodies, are eliminated in the Corvette body. And, because of the self-damping properties of the panels, annoying vibration noises are less likely to occur.

Still another advantage, the Corvette body is dent and impact resistant. A blow that would dent or tear steel bounces off without damage. If damage does occur it is usually limited to cracks or localized breaks . . . easily repaired at reasonable cost, employing simplified repair operations.

All these natural advantages of fiber glass and plastic, plus skilled and careful body construction, mean one important thing—every Corvette body is built to give more satisfactory service and last longer!



Glass fiber and plastic in their basic forms are the materials from which Corvette bodies are built. Special processing by heat and pressure molding combines glass fibers and polyester resins into fiber glass reinforced plastic panels. These are assembled into a Corvette body employing methods and techniques almost entirely new to the automotive field. Three types of fiber glass are used:

- (1) *Roving*—an accumulation of strands in loose rope-like form.
- (2) *Mat*—a non-woven accumulation of strands into sheet form.
- (3) *Cloth*—in which glass fibers are woven into a fabric.

The plastic is a mixture of polyester resin and up to 25% suitable bulk filler, an organic peroxide that acts as a catalyst, and other chemicals known as accelerators that speed the curing process. The polyester resin is a light-colored liquid that resembles corn syrup in appearance. When it is mixed with the other materials and combined with fiber glass, the application of heat hardens the resin into a panel that is tough and resilient, yet light and strong.

CONTROLLED QUALITY

Predetermined specifications and diligent checking are the basis of quality control in the auto industry. Since fiber glass reinforced plastic is vastly different from other materials, Chevrolet engineers have developed new specifications and new checking methods to assure high quality of Corvette body parts. Checks include tests for tensile and flexural strength at different temperatures, wet strength, impact resistance, completeness of cure (hardness), and surface finish.



HANDCRAFTED COMPONENTS

In the initial stages of Corvette body manufacture, specialized techniques are employed to actually make the body panels and shape them in a single process. Unique methods are necessitated by properties of the fiber glass and plastic from which the panels are made. Individual handcrafting virtually assures the personal attention to detail so desirable in a quality sports car body.

The first step in body panel construction is illustrated by the rear deck lid preforming operation. Fiber glass roving is fed into a chopping machine and then blown out of a tube onto the preform screen, shaped to conform to the inside of the panel. Simultaneously, resin is sprayed on to bind the fibers.

Next the preform and screen pass through an oven. Here the preform is semi-cured, or baked, in preparation for the matched metal die mold that shapes the actual panel.

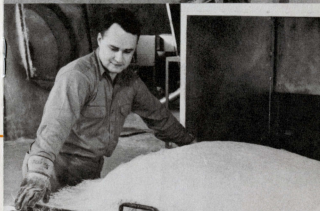
After coming from the oven, the preform is separated from the screen and placed on a fine textured fiber glass mat set in the mold which has been tailored to fit the panel die. A carefully measured amount of resin mixture is spread over the entire surface.

The rear deck lid panel preform is now ready for final forming in this matched metal die mold. The die is closed, pressing and heating the panel for three minutes. The die then opens automatically, the finished panel is removed from the mold and is completed by trimming the edges and carefully inspecting it.

1



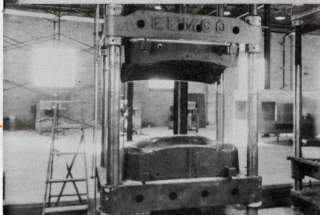
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PLASTIC

BODY

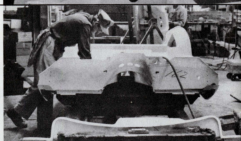
PRODUCTION

At the Chevrolet St. Louis assembly plant, completed body panels are assembled into a Corvette body shell. Here, too, new processes and materials have replaced traditional methods. This sequence of pictures illustrates typical operations in Corvette body assembly.

1



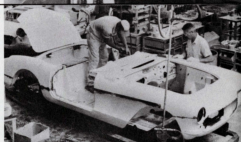
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6



1

Here in an isolation booth, specially dressed workers "shot blast" the edges and joining areas of the plastic body panels with cut wire shot. This surface roughening for good bonding is the first step in body assembly.

2

The underbody panel—largest of the many panels used—starts down the assembly line. Mounted on a supporting dolly for easier handling, underframing plastic and aluminum reinforcements are attached to the panel at this point.

3

For joining panels, a glass fiber and plastic bonding material is applied with a conical tube similar to the common cake decorator tube. Chemical heating action produces a bond even stronger than the panels it joins.

4

As additional panels are fitted into position, bonding material is applied, joining all panels into a unit. Here the Corvette body takes on familiar shape. During these operations, the body progresses slowly along the assembly line to the grinding booth.

5

In the grinding booth, workmen grind bonded panel joints down to smooth contours preparatory to painting the body. Special clothing protects workmen against plastic dust.

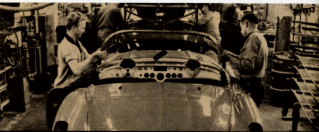
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The exterior finish of the Corvette body is a special acrylic high luster lacquer, applied in much the same manner as Chevrolet's famous multi-step passenger car finish. The smooth surfaced body panels are sanded lightly and a primer coat applied. Then, sanding, spraying, and baking operations repeated over and over produce a durable high-gloss finish that stays bright longer without polishing.



A
PLASTIC
BODIED
CORVETTE
IS
BORN

When the Corvette body shell is finished, next comes the body trim line. Here the body is outfitted with luxurious Corvette appointments. The windshield is carefully fitted into position, instruments are installed, lights go into place, and sparkling chrome trim is added. The completed body is now ready to join the chassis.



With a strong but delicate grip, an overhead crane lowers the finished Corvette body into place on the chassis. Body mounting is completed, final finishing touches are added, water and fuel are pumped in—and another precision-crafted Corvette is ready to take its first eager breath.

But no Corvette is complete until it has undergone rigid checking, testing, and inspection by experts—including thorough water testing. Only then is Chevrolet's quality approval given the new car . . . Corvette, America's only true sports car, custom-built to the special order of some fortunate person soon to know the sheer enjoyment of real sports car ownership.

SIMPLE TO REPAIR
NO WELDING OR BUMPING

Special equipment is not required to repair a damaged plastic body. In fact, fewer tools are required than for steel body work. Damaged areas are filled with plastic solder or glass fiber and resin and allowed to harden. Repaired area is then finished by grinding, sanding, and painting. Chevrolet packaged repair kits contain the necessary materials for the three basic types of damage—cracks, small holes and panel replacement. Chevrolet dealers can perform these operations competently—with personnel trained in procedures developed by Chevrolet engineers.

Easiest to repair is a crack in a body panel. The finish is first removed from around the damaged area. Next a "V" is filed or ground along the crack. A resin mixture is then applied to the damaged area and allowed to cure. Finally, the area is filed or ground to contour, and refinished.



Small breaks or holes in a body panel are repaired by a similar series of operations. However, layers of fiber glass cloth are cut to size and used as laminations to build up and reinforce the damaged area, applying the resin mixture to saturate the cloth and serve as a bond when it cures.



Even large damaged areas are readily repaired by replacement of the damaged section of a body panel. In this procedure, a new section is cut to fit in place of the cutaway damaged section. This new piece is aligned and fastened in position with suitable temporary supports.

Then the new section is joined to the body by bonding the adjacent edges in a manner similar to a crack repair. Small strips of fiber glass cloth bonded over the repair joint add extra strength.



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