Rifle Stocks

Ready for desert or tundra, space-age "plastic" stocks are now offered by more than a dozen manufacturers. They are also increasing in popularity as options on factory rifles.

By Doug Wiclund

In the recent past synthetic stocks were exotics, used by bench-rest shooters who often painted them in gaudy patterns. They were unlikely to be seen in the hunting field. Yet, despite a well-deserved group reputation for conservative thinking, shooters were quick enough to accept the new man-made materials—if a significant advantage could be gained by their use. Riflemen who had early-on bedded their rifles with fiberglass were vocal proponents, citing that the inert bedding "glass" would not warp under changes in humidity. Some realized that while the bedding materials were inert and stable enough, the real problem lay still with the fluctuations of real wood.

Remington's new Kevlar-stocked 40-X8 Range master and a Ruger Model 77 wearing a Clifton Arms composite stock reflect the many possible applications for synthetic rifle stocks today.

APRIL 1988
Synthetic Rifle Stocks

Manufacturers

Bell & Carlson
Brown Precision
Choate
Clifton Arms
Fiberglas
Garrett Accur-Lite
High Tech
H-S Precision
Gale McMillan
Mitchell
MPI
Ram-Line
Shilen
Shogun
Six Enterprises

stock around the bedding.

But for all this discussion, the “glass-bedded” rifle was still a heavy proposition. During the 1960s, experimenters like Chet Brown and Gale McMillan worked at reducing the weight, and today’s synthetic-stocked rifle can be a matter of pounds, not ounces, lighter than its wood-stocked counterpart. If required, it can be heavier, of course.

In choosing a synthetic stock from the confusing profusion of available compositions, Kevlar/graphite, fiberglass/Kevlar, and other esoteric blends, the modern-day shooter needs to know a little about the properties of each material.

Fiberglass, available usually in either E-glass or S-glass fiber forms, has been the mainstay synthetic. S-glass fibers are stronger, stiffer, and lighter than E-glass fibers and are most commonly used. Graphite, or carbon fiber, generally utilized for rigidity, is lighter than S-glass. Kevlar, the Du Pont material better known as a component in “bulletproof” vests, offers twice the strength by weight of S-glass and generally provides a 4- or 5- oz. weight advantage over a plain fiberglass stock. Older synthetic stocks with trade names like Tenite, Cycolac, or Zytel are usually thermoplastic polymers with some degree of fiberglass reinforcement.

Blending these materials to achieve desired rigidity in a crucial area or to pare critical ounces from a rifle’s total weight is a common option in manufacture, with the production taking either of two approaches. The first, laminating, is similar to the process used in the construction of fiberglass-hulled boats. A stock blank is prepared with two opposing shell halves (made by layering epoxy or resin-laden sheets of fiberglass cloth into the mold and then forcing air into the mold to allow the sheets to conform to its contours), then joining the halves together by epoxy or foam filling. Sections that require additional rigidity can be filled with epoxy or additional fiber sheets can be laminated into the stock.

Steyr-Manlicher’s Model M rifle with its Cycolac stock was among the first plastic-stocked imports.

Clifton Arms produces a composite stock with integral bipod that is easily deployed for shooting use.
Another process coming into wider use is injection molding, where a mold is injected with a polymer mixture, then subjected to high heat and pressure. The resulting stocks can be produced to close tolerances, allowing "drop-in" fitting to a given action without costly hand inletting. Textured surfaces or checkering can be easily incorporated into the molding fixtures.

Despite their lightweight construction with hollow voids in non-stressed areas, many synthetic stocks have surprising attributes of strength and rigidity—as evidenced by advertisements featuring man-made stocks supporting the weight of heavy trucks. Hand in hand with this strength goes another desirable feature, durability. Scratches that might seriously mar a walnut stock might only require touch-up on a synthetic stock. A damped washcloth easily removes surface dirt or dust. With a stock that is strong, lightweight, and impervious to weather, the traveling riflemaster could elect to rely on a single rifle for shooting in Alaska or Africa, confident that the rifle's zero would not change due to changes in the atmosphere.

Admittedly, the matte finish of the first fiberglass stocks or the glass appearance of the early Tenite stock did little to create enthusiasm for their esthetic values, but the advantage of go-anywhere, low-maintenance synthetic stocks began to be weighed by more and more sportsmen, especially when such stocks came to be available on a number of factory-made rifles.

Factory offerings included in the earliest period were the Remington-synched Stevens .22,410 combination gun once carried in the U.S. Army for Corps survival kits, the still-popular Remington Nylon 66, and the Charter Arms AR-7. Modern entries—such as Remington's Model 700—are now available with a reinforced Kevlar-fiberglass stocks. Remington has commissioned Brown Precision to produce laminated stocks for its Model 700 line while simultaneously contracting with Garth Chotko to provide injection-molded stocks. The Remington Custom Shop has his stock around the bedding. But for all this discussion, the "glass-bodied" rifle was still a heavy proposition. During the 1960s, experimenters like Chester Brown and Gale McLinn worked at reducing the weight, and today's synthetic-stocked rifle can be a matter of pounds, not ounces, lighter than its wood-stocked counterpart. If required, it can be heavier, of course.

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Weatherby's Fiberguard rifle, one of the first to sport a synthetic stock, is still offered.

Clifton Arms produces a composite stock with integral bipod that is easily deployed for shooting use.
SYNTHETIC STOCK MANUFACTURERS

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Process</th>
<th>Colors</th>
<th>Options</th>
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</thead>
<tbody>
<tr>
<td>Beil &amp; Carlson</td>
<td>Lamination</td>
<td>Black/Gray/Camo</td>
<td>Survival</td>
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<td>604 North 4th Ave</td>
<td>(F) (K)</td>
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<tr>
<td>Awood, Kan. 67730</td>
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<td>Brown/Camo</td>
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<tr>
<td>Brown Precision Co.</td>
<td>Lamination</td>
<td>Gray/Black/Camo</td>
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<td>7785 Molinos Ave.</td>
<td>(F) (G) (K)</td>
<td>(F)</td>
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</table>
| Los Molinos, Calif. 92101 | Injection molding | Black | Integral |}
| Choate Machine & Tool | Lamination | Black | bipod |}
| P.O. Box 218 | (F) | Brow Mark |                  |
| Bald Knob, Ark. 72010 | Lamination | Black/Brown/Green | Cheekpiece |}
| Clifton Arms, Inc. | Lamination | Brown | Custom epoxy |}
| P.O. Box 531258 | (F) (G) (K) | (S)-2 | stocks |}
| Grand Prairie, Tex. 75053 | Lamination | Black | Molded checkering |}
| Fiberpro | Lamination | Brown | Cheekpiece |}
| 3636 California St. | (F) (G) (K) | (F) | (foil) |}
| San Diego, Calif. 92101 | Injection molding | Brown | Black/Green |}
| Garrett Accur-LT, D.F.S. Co. | Lamination | (F) (G) (K) | Black |}
| P.O. Box 8675 | (F) (G) (K) | (S)-2 | |}
| Fort Collins, Colo. 80524 | Lamination | Brown | Custom epoxy stocks |}
| High Tech Specialties | Lamination | Brown | Black/Green |}
| P.O. Box 321 | (F) (G) (K) | (S)-2 | Black |}
| Janesville, Calif. 92101 | Lamination | Brown/Green/Black | Brown/Green/Black |}
| H-S Precision, Inc. | Lamination | Brown | Black/Green | Cheekpiece |}
| 112 N. Summit Ave. | (F) | (F) | Black |}
| Prescott, Ariz. 86301 | Injection molding | Black | Black |}
| G. McMillon & Co., Inc. | Lamination | Brown | Black/Green | Cheekpiece |}
| 21438 7th Ave., Suite E | Injection molding | Brown | Brown/Green/Black |}
| Phoenix, Ariz. 85027 | (F) | (N) | Black |}
| Mitchell Arms, Inc. | Lamination | Brown/Black | Injection molding |}
| 3411 Lake Center Drive | Black | (F) | Brown/Black |}
| Santa Ana, Calif. 92704 | Injection molding | Brown | Brown/Black |}
| MPI Stocks | Lamination | Brown/Black | Injection molding |}
| P.O. Box 62266 | (F) | (F) | Brown/Black |}
| 7011 N. Reno Ave. | Injection molding | Gray/Black | Injection molding |}
| Portland, Ore. 97203 | (F) | (F) | Gray/Black |}
| Ram-Line, Inc. | Injection molding | Gray/Black | Injection molding |}
| 15511 West 6th Ave. | Black | (F) | Black |}
| Golden, Colo. 80401 | Lamination | Black | Black/Blue/Green |}
| Shilen Rifles, Inc. | Lamination | Brown/Silver/Red | Injection molding |}
| 205 Metro Park Drive | (F) | (N) | Brown/Silver/Red |}
| Ennis, Tex. 75119 | Injection molding | Brown/Black | Injection molding |}
| Shegun Manufacturing, Inc. | Injection molding | Brown | Injection molding |}
| P.O. Box 306 | (F) | (N) | Brown/Black |}
| 904 S. Main St. | Injection molding | Brown/Black | Injection molding |}
| Kirksville, Mo. 63501 | (F) | (N) | Brown/Black |}
| Six Enterprises | Injection molding | Brown/Black | Injection molding |}
| 6564 Hidden Creek Drive | Brown | (N) | Brown/Black |}
| San Jose, Calif. 95120 | Injection molding | Black | Brown/Black |}

While some synthetic stock manufacturers boast a "drop-in" fit for common actions, some inletting or bedding may be needed.

other fiberglass stocks available for additional Remington models, most recently the target Model 40XB rifle, thus pushing Remington to the fore in the synthetic-stocked factory rifle field.

While Chet Brown produces synthetic stocks for Remington, Gale McMillan provides the same service to Sako, Weatherby, and Winchester-USRA. Sako's fiberglass rifle features a resin-bonded laminated stock, vacuum-inpregnated with a permanent dye covered with a "wrinkle" black painted finish. Weatherby, the first domestic marque to offer a synthetic-stocked bolt-action rifle, catalogs both the Fibermark and the Fiberguard, with McMillan stocks, in a wide range of chamberings. The Fibermark, built around Weatherby's Mark V action, offers shooters a close copy of the traditional walnut Mark V stock, duplicated in fiberglass, and then finished with a rough-textured black painted surface. The Weatherby Fiberguard is a synthetic-stocked version of the popular Vanguard series and comes in a forest-green finish.

A recent addition to the Savage rifle offering is its Rynite-stocked Model 110 F, available in standard- and magnum-length actions. Du Pont's Rynite, used by both Savage and Remington, is a 35% fiberglass-reinforced material that can be easily formed into stock blanks by injection molding.
U.S. Repeating Arms’ latest version of the perennial Model 70 is the Win-Lite, made with both standard and magnum actions, but weighing in at just under 6½ lbs. The Win-Lite, dressed out in a black matte-finished fiberglass stock, also features a thermoplastic bedding arrangement designed to augment the triple-plane oriented glass-fiber-filled stock.

One mainstay of the synthetic stock manufacturers has been the military-style sporter market, with Springfield Armory’s Kevlar-stocked M1A, the revised Colt AR-15A2, Beretta’s AR-70, Daewoo’s Max rifles, and the HK assault rifle line—all featuring durable stocks well suited to the hunting field or the battlefield. One bolt-action import that has seen acceptance in law enforcement circles is the Steyr-Mannlicher Model M Professional, first introduced in 1982 as the Model SSG with a synthetic (Cyclo- lac) stock and a matte Parkerized finish on steel components. Presently another major importer, Interarms, is planning to offer the Howa-made line of bolt-action rifles carried in the past by Smith & Wesson and Mossberg, but updating this offering with a synthetic stock produced by Bell & Carlson.

Combining a synthetic stock with a stainless steel action and barrel resulted in the new Browning A-Bolt Stainless Stalker rifle, a companion to the walnut-stocked A-Bolt Medallion series. Custom offerings like McMillan’s Signature Model or Six Enterprises’ Timberliner can also be ordered with weather-resistant electroless nickel or Parkerized finishes for metal parts that might be called upon to withstand climatic extremes.

Ultra Light Arms Model 20 and Model 28 rifles are available in calibers ranging from .17 Rem. to .338 Win. Mag., packaged in a Kevlar/graphite stock for a combination that weighs in at just over 5 lbs., chambered in .243 Win. Ultra Light Arms (as seen in the November 1986 American Rifleman) is a small, West Virginia-based firm manufacturing its own actions and synthetic stocks.

One private company offering a good lineup of synthetic-stocked rifles is FiberLite, cataloging custom rifles for Remington, Ruger, and Winchester actions based on McMillan fiberglass stocks.

A “SWAT” model is offered with a flat black Teflon-based finish.

Even with the recent growth in factory cataloging of fiberglass or Kevlar stocks, aftermarket companies (see chart) still provide the lion’s share of the marketplace’s synthetic stocks. Larger private companies like McMillan and Brown produce synthetic stocks for the individual as well as corporate buyers.

Injection-molded stocks are offered by Choate, H-S Precision, Mitchell Arms, Ram-Line, Shogun Mfg., and Six Enterprises. Choate’s fiberglass-reinforced stocks are available for both rifles and shotguns and feature a 35% fiberglass polymer (Du Pont’s SST-35). H-S Precision’s Fiberthane line uses a fiberglass/foam matrix that can be reinforced with graphite for added rigidity.

Mitchell Arms offers a black fiberglass replacement stock for the Ruger Mini-14, incorporating structural foam as a filler that provides support without increasing stock weight beyond original specifications. Ram-Line’s injection molding process takes place at 600°F and under 20,000 p.s.i., yielding drop-in replacement synthetic stocks for many popular Remington, Ruger, and Winchester bolt-actions. Six Enterprises’ line of man-made stocks is produced from Noryl, a General Electric thermoplastic polymer originally developed for the automotive industry.

Laminated synthetic stocks are available from a number of manufacturers and distributors. Bell & Carlson of Atwood, Kans., produces the synthetic Carbelite line, incorporating hand-laminated panels of Kevlar and fiber bands in stressed areas. While some early fiberglass stocks suffered problems with sling swivels pulling out under stress, Bell & Carlson’s patented sling system even eliminates protruding sling posts, yet provides for convenient sling attachment and use. A hollow “survival stock” option allows sportsmen to stash away wilderness necessities in a buttstock repository.

One of the more innovative synthetic stock designs on the market today is available from Brent Clifton of Clifton Arms. Introducing his classic-style composite stock at the 1988 SHOT Show, Clifton entered the market with a composite stock featuring Kevlar, graphite and fiberglass. But the topper for this stock is the unique, integral bipod that folds away into the fore-end—all this in a stock that weighs in at a very light 24 ozs., bipod included.

Chet Brown’s company, Brown Precision, manufactures both fiberglass and Kevlar stocks to suit a wide range of shooting activities. Brown synthetic stocks with Kevlar usually provide a 3-5 oz. weight advantage over their fiberglass counterparts. Production rifles from Brown Precision include the High Country, a 6½-lb. lightweight built on a Remington 700 action, or the Back Packer, a takedown version of the High Country that can be broken down for pack storage in under a minute. Brown even markets a “how-to-do-it” videotape on bedding and finishing synthetic stocks.

Fiberpro of San Diego, Calif., includes a line of custom sporting rifles in its near-encyclopedic catalog of available synthetic stock applications. Mannlicher, thumbhole sporters, Monte Carlo styles—all can be fitted to the rifle of one’s choice. Fiberpro also offers a custom stock blank service for those hard-to-outfit shooters who may see a need to put a fiberglass/Kevlar stock on a Howa, Remington, or other unusual requests.

Garrett Accur-Lite D.F.S. stocks are available in composites of fiberglass, Kevlar and graphite and feature a foam-filled butt area. Garrett’s catalog is available by mail for $2 and provides a wealth of information on construction, options and available applications. Mark Phipps of Garrett has announced that his staff will work with “armchair engineers” in designing composite synthetic stocks for specialized applications or fit in optional cheekpieces for shooters looking to personalize a given rifle.

High Tech Specialties’ synthetic stocks are available in Kevlar, graphite and S-2 (one of the tougher S-glass fibers), as well as fiberglass composites that are pressure laminated. The average High Tech stock weight runs close to 19 ozs., with hardware, but these 100% injected stocks may require about an ounce of bedding material to accommodate certain rifle actions.

H-S Precision, in addition to a burgeoning business in supplying pressure and ballistic testing barrels, concurrently catalogs both laminated and injection-molded stocks. The hand-laminated Pro-
The new Browning American rifle was designed by the late F. L. Browning, and is now in production.

The Browning American rifle is a semi-automatic rifle designed for high performance in both accuracy and reliability. It features an adjustable gas system, a detachable magazine, and a bolt-action mechanism. The rifle is chambered for a variety of cartridges, including the newly developed Browning .30-06 cartridge.

The Browning American rifle is shown in the accompanying illustrations, which illustrate the rifle's design and construction.