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Motorcycle Helmets Product Guide

By *Motorcycle USA Staff*

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When it comes to buying riding gear, no piece of equipment is more important than a good motorcycle helmet. Protecting a rider's head is serious business, but with so many styles and brands on the market, choosing a **motorcycle helmet** can be as difficult as choosing the right motorcycle. Sorting out the helmet basics and what to look for when making the most critical of gear purchases can be tough, but MotorcycleUSA is here to help.

Helmet Design & Materials

While military helmets have been around for thousands of years, the notion of a modern crash helmet is relatively new. The necessity of a new helmet design came once mankind invented two- and four-wheeled vehicles to propel themselves at unnatural states of velocity. The first helmets used in motorsports, like car and motorcycle racing, were constructed out of leather. Similar to the leather caps worn by aviators, these helmets offered little in the way of serious impact protection.

The breakthrough in modern helmet design occurred after World War II, when manufacturers began utilizing an energy-absorbing foam liner to dissipate the force of high-impact trauma. The modern motorcycle helmet in its most basic form is unchanged since this post-war innovation and features four different construction components: The hard outer shell, crushable interior foam lining, comfort lining, and chin strap.



Motorcycle helmets come in various shapes, sizes and colors, but whether you're Valentino Rossi or John Q. Public one thing is certain - wearing a motorcycle helmet is a riding safety must.



Motorcycle helmets are there for the worst case scenario, like this multi-bike crash in the World Superbike series.

The outer shell is a strong, rigid layer designed to provide abrasion resistance and protection from foreign object penetration. Most helmet designs utilize lightweight plastic or fiberglass composites for this shell. Some motorcycle helmets make use of high-end materials like Kevlar or carbon fiber, which are very lightweight and expensive.

The interior foam lining is the most critical ingredient for helmet safety. Most motorcycle helmets use a thick layer of expanded polystyrene (EPS) foam, which has properties which make it ideal for helmet usage. EPS foam is rigid yet lightweight and crushable. During the high-impact traumas of a crash, the foam liner absorbs and disperses energy that would otherwise be transferred directly to the skull and brain.

Many new manufacturers have refined and customized the foam liner in their models, with some designs featuring dual-foam liners of various depth and density.



The modern motorcycle helmet

Inside the top two layers is the padded interior liner, which ensures a comfortable yet snug fit. Many brands feature removable components of various sizes within this liner to fine tune fit. Some liners are also washable.

delivers its life-saving protection via the use of expanded polystyrene (EPS) foam, which dissipates the energy of high-impact trauma.

Keeping all this protective material in place is a chin strap cinched down by a pair of D-rings. The chin strap is a simple yet vital component of a helmet, as it ensures the life-saving protection remains in place during a crash.

Helmet Ratings

With all these technical details, how can a consumer know which helmet is best? Well, there are industrial standards to which **motorcycle helmets** must conform. In the United States these two helmet standards are DOT and Snell.

Developed under the guidelines of the ANSI (American National Standards Institute) in the 70s, the DOT (Department of Transportation) helmet standards are mandatory for all motorcycle helmets sold in the United States.



Finding the DOT stamp of approval is a must for a helmet sold in the United States. Riders will often find helmets which also conform to other standards, like Snell, or in this case, BSI.

The Snell standards are more stringent and require the helmet to undergo a more intensive battery of testing. The Snell story has a tragic beginning, as the non-profit organization emerged after the death of motorsport enthusiast Pete Snell in a 1956 car racing accident. Snell's friend, a doctor named George Snively, undertook a scientific helmet study with the backing of the memorial fund in Snell's name. The Snell Foundation is still at work today and many helmets, often full-face racing designs, bear the Snell stamp of approval.

Other countries have their own helmet rating systems. A common standard riders will see is BSI (British Standards Institution), which is the helmet standard for the United Kingdom.

There is some debate as to whether the DOT or Snell requirements are better in real-world applications. Some critics argue that the high-impact Snell standards are unsuited for the majority of survivable accidents. A rider should research and draw their own conclusions, but at the very least, U.S. helmets must be DOT-compliant.

Full-Face Helmet

Full-face motorcycle helmets deliver the greatest amount of protection to a rider. As its name implies, a full-face helmet provides total coverage to the front and rear of rider's head. An added benefit of the full-face design is built-in eye protection in the form of a visor/faceshield, which can be swapped out with tinted or non-tinted versions. Utilized in road-racing, many full-face designs are replicas of the helmets worn by professional riders in MotoGP and the World and AMA Superbike ranks. Due to their racing application, many full-face designs are Snell approved.

Special full-face helmet features include:



Full-face helmets deliver the optimal protection. Many designs are direct replicas of the helmets worn by professional road-racers - like this AGV helmet worn by MotoGP star Valentino Rossi.

- Removable shield. Some shield removal systems are much easier than others. Ask a sales rep to show you how it works and practice it yourself. Fumbling with a shield replacement for 10 minutes is a frustrating experience.

- Washable, removable liners. After a couple of months of use, the inside of a full-face helmet can get ugly. The ability to freshen things up by tossing liners into the wash is a definite advantage.

- Variable sized cheek pads. Even with the wide variety of brands and styles available, there are some heads that are difficult to fit. Many motorcycle helmets offer different sized cheek pads to fine-tune fit.

- Venting systems. One of the disadvantages of a full-face design is that they can be hot. Many of the latest helmet designs have such good ventilation systems, however, that you can often wear them on a hot summer's day without breaking a sweat. Vents near the visor are also important in keeping it defogged.

- Chin strap fastener. Check out the fasteners on the chin strap. Snaps do a good job of keeping the strap secured rather than flapping around against your neck and are easy to use while wearing gloves.
- Room for glasses. If you wear prescription eyeglasses or sunglasses, make sure your full-face helmet has enough room to accommodate them.
- Extra features: Some motorcycle helmets offer extras like chin skirts, which tuck in underneath and keep wind from blasting up into a helmet - helpful in cold weather. Also a rider might consider room for the installation of speakers for aftermarket communication or sound systems.

Open-Face Helmets

As the name implies, **open-face motorcycle helmets** lack the total coverage of a full-face design. Open-face also has another, more sinister, meaning if you imagine what might happen if a rider is ejected face-first onto the roadway. Within this classification of helmet there are three basic designs: Three-quarter, flip-up and half-helmets.

The open-face three-quarter motorcycle helmet design delivers significant protection for riders who want to feel the wind in their face. The three-quarter helmet incorporates the same construction components as its full-face sibling, sans faceshield and jaw piece - although some open-face designs do incorporate built-in visor/shields for eye protection.



3/4 Helmet

Flip-up motorcycle helmets, also referred to as modular helmets, are a hybrid design that offer the best of the full-face and three-quarter helmet worlds. A rider can opt for full-face coverage or flip up the movable faceshield/jaw piece whenever they feel like going open-face. The flip-up helmet is convenient when stopping for a quick snack or drink, or to snap a photo, as the rider doesn't have to remove their helmet. Modular flip-up designs are growing in popularity, especially amongst touring riders.



Flip-up Helmet

Half-helmet motorcycle helmets, also referred to as beanies, are the bare minimum as far as safety is concerned. Popular in the cruiser market, half-helmets protect the top of the head while leaving the face and critical base of the skull exposed. Rider's need to be extra vigilant that the half-helmet they purchase is DOT-approved and not just a novelty design.

Special open-face helmet features include:

- Secure chin straps. Having secure chin straps on any helmet is critical, but the fact is even more pronounced on an open-face design.
- Eye protection. With the reduced protection of an open-face design, riders are susceptible to airborne objects and the weather. Riders should bulk up with added eye protection in the form of goggles or aftermarket shields.
- Flip-Up opening mechanism. Some open-face designs are easier to open than others. You want easy access but still need the assurance that it will remain in place in case of an accident.
- DOT stamp of approval. Always make sure a helmet is DOT-compliant. Pasting a DOT stamp onto a flimsy novelty helmet won't cut it.



Half-helmet designs are popular amongst the cruiser/custom set, but they offer up far less protection than a full-face design.

Off-road Helmets

Yet another type of motorcycle helmet are those for off-road dirt bike enthusiasts. Most **off-road motorcycle helmets** are full-face

designs, although there are some open-face helmets on the market. Off-road helmets are distinguished from their full-face street cousins by their elongated visors and chin protection, as well as an opening for goggles. Construction materials are similar to street helmets.

Special off-road helmet features include:

- Scratch-resistant, replaceable parts. Off-road helmets are more apt to encounter minor damage from tree branches, kicked-up rocks or roost. Replaceable visors and nose pieces are a bonus.
- Ventilation systems. Off-road riding is often more physically demanding and a well ventilated helmet increases rider comfort.
- Washable, removable cheek pads and liners. The physical exertion of off-road riding means a lot more sweat. Being able to toss a liner into the washing machine is definite plus.



Off-road helmets deliver full-face protection, with an elongated visor, chin guard and a large opening for goggles.

Fit

Motorcycle helmets come in various sizes, from small to extra large. They also come in different shapes as well, in order to fit all the different sized heads out there. Some helmet manufacturers even have different designs for North America and Asia due to the different head shapes of the corresponding populations. The shapes and sizes of different brands vary as well, so it is critical to try on a wide array of models.

When trying on a helmet, the entire interior liner should come into contact with the head. Shaking the head back and forth, the helmet should follow without wiggling. If the helmet can be removed without concerted effort, it is too big. If a rider's nose or chin touches the front of the faceshield, it is too small. The key to an effective helmet fit is finding a design that is snug without being uncomfortable, remembering that the interior comfort liner in a new helmet will break in over time.

Try on a variety of helmets and wear them for a couple minutes. If you feel pressure or discomfort, abandon the helmet for a more comfortable design. Even a cheap helmet brings close to a triple-digit MSRP, so be picky.

Price and Replacement

Helmet prices run the gamut from under \$100 to well past the \$500 mark, but a higher price tag is not necessarily better or safer. A savvy shopper should be able to find a comfortable DOT-approved full-face design for under \$100. Riders with more refined tastes and fat wallets can go nuts, with carbon-fiber and all manner of technological goodies available on some of the higher-end designs. It pays to shop around and do some research.



One nice feature to look for on full-face designs is removable cheek pads, which can be swapped out for different sizes to improve a helmet's fit.

If you already own a lid, remember crash helmets are designed to stem the damage from one major impact and are not reusable. If involved in an accident, a helmet should be replaced and a dropped helmet can have its effectiveness diminished as well. Also, helmets do not improve with age. The general recommendation is that they be replaced within four to five years.

The helmet is there for worst case scenarios. It is a critical life-saving instrument, but its function is to protect the most important safety tool in a rider's arsenal - the human brain. Sound riding decisions and some good luck can reduce the chances of ever having to use the full protective power of the helmet, but riders should always hedge their bets.

Ride safe and keep the rubber side down.

More information about helmets and motorcycle safety can be found in the following links:

Motorcycle Safety Foundation

Also, consider reading *Modern Sports Helmets*, a well-researched, comprehensive treatise on helmets written by James A. Newman, PhD. *Modern Sports Helmets* is available from **Schiffer Publishing** for \$49.95.

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