



UNDERSTANDING CRASH RATINGS

A GUIDE:

Wedges, beam barriers, bollards and security gates keep entrances secure. They minimize both unauthorized access and property damage during an accidental crash. Security measures involving gates and barriers are vital to modern industry and defense. Standardized, unbiased U.S. crash ratings determine the durability of such security barriers.

3 FACTORS THAT DETERMINE CRASH RATINGS:



Weight of the vehicle



Speed at which the vehicle is traveling



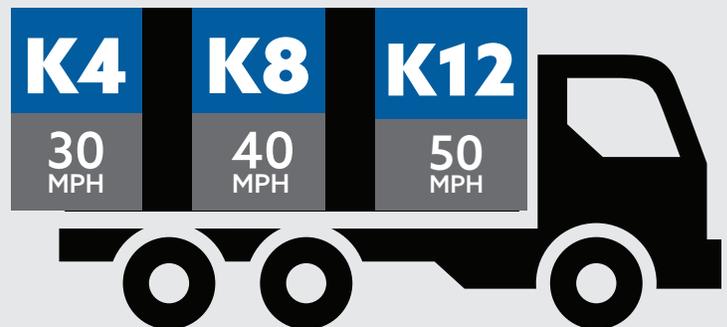
Distance the vehicle travels beyond the barrier

Together, these three factors make up the classification for a barrier's crash rating. You might find crash ratings in terms of K-ratings or M-ratings, so it's important to know the difference.

K-RATINGS:

K-ratings are how the Department of Defense (DOD) & the Department of State (DOS) categorizes their crash ratings. DOS certified Anti Ram Vehicle Barriers are considered to be DOD certified based on how far a 15,000-pound vehicle travels past a barrier at a given speed.

Specific K-ratings on the DOD and DOS anti-ram vehicle barrier test include:



DOD Penetration Rating: Based on how far the front of the truckbed travels beyond the barrier.



The strongest K-rating would be **K12:L3** - A 15,000 lb vehicle moving at 50 miles per hour whose truckbed traveled beyond the barrier 3 feet or less.



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M-RATINGS:

M-ratings are American Society for Testing and Materials (ATSM) crash ratings based on how far the front of the truck bed travels beyond the barrier.

M-ratings are similar to K-ratings in that they are numerically designated.

M30 30 MPH

M40 40 MPH

M50 50 MPH

High Speed M-Ratings are further divided based on how far the vehicle traveled beyond the barrier:

P1 Traveled less than **3'**

P2 Traveled between **3.3'-23'**

P3 Traveled between **23.1'-98.4'**

P4 Traveled further than **98.4'**

The strongest M-rating would be **M50:P1** rating.

DIFFERENT ATSM MODELS & CODES:

Low Speed M-Ratings are further divided based on how far the vehicle traveled beyond the barrier:

P1 Vehicle penetrated the barrier no more than 1 foot

P2 Vehicle penetrated the barrier between 1 and 4 feet

Failure Vehicle penetrated the barrier beyond 4 feet

PU ratings: For pickup trucks of 5,070 pounds

PU40 40 MPH

PU50 50 MPH

PU60 60 MPH



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TESTED VS. CERTIFIED VS. ENGINEERED

The difference between certified, tested and engineered. Be sure to look for terms like “tested,” “certified” and “engineered” as these have different meanings and levels of significance. Learn what each of these terms means in context:



TESTED

Testing does not necessarily mean it passed. It could have failed testing or the penetration rating could be P4. If it has been tested it does not signify that the test was completed per ATSM F2656 standards by an independent testing facility.



ATSM F2656 CERTIFIED

Means that it passed the test, achieved a rating and has been certified by an independent testing facility.



ENGINEERED

Means that it was designed to pass the test based on calculations or computer modes, it may not have actually undergone the test in reality.

STEPS TO TAKE BEFORE CHOOSING A PRODUCT:



Complete a Threat Assessment of your facility.



Select your crash barriers based on the Threat Assessment.



Contact IET Systems to discuss your questions and concerns.



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Wedges, beam barriers, bollards and security gates keep entrances secure and minimize both unauthorized access and property damage during an accidental crash. Security measures involving gates and barriers are vital to modern industries and their defense. Standardized, unbiased U.S. crash ratings determine the durability of such security barriers.

These ratings allow you to determine which barriers will hold up the best against rams and crashes. If you're looking for a secure gate or barrier, pay attention to their crash ratings.

THE 3 FACTORS THAT DETERMINE CRASH RATINGS

Three basic factors determine crash test ratings:

1. The weight of the vehicle
2. The speed at which the vehicle is traveling
3. The distance the vehicle travels beyond the barrier

Some rating systems only award certification up to a certain number of feet beyond the barrier — anything beyond has not earned certification. These three factors make up the classification for a barrier's crash rating. Crash ratings are categorized in terms of K-ratings or M-ratings, so it's important to know the difference.

K-RATINGS: OLD RATINGS

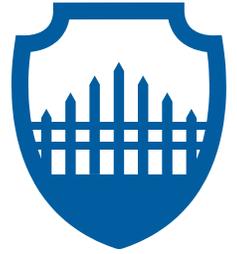
The Department of Defense (DOD) crash ratings, also known as K-ratings, have been around since 1985. Department of Defense ratings are based on how far a 15,000-pound vehicle travels past a barrier at a given speed. When it comes to K-ratings, only vehicles that travel 50 feet or less beyond the barrier earn certification. Increasing K-ratings represent tests at higher speeds, with the same size and type of vehicle. Specific K-ratings on the DOD anti-ram vehicle barrier list include:

- **K4 crash ratings:** These represent tests at 30 miles per hour.
- **K8 crash ratings:** This test speed is 40 miles per hour.
- **K12 crash ratings:** These ratings apply to a test at 50 miles per hour.

K-ratings are further divided into L1, L2, and L3, based on how far the front of the vehicle traveled beyond the barrier.

- **L3 rating:** The vehicle traveled beyond the barrier less than 3 feet.
- **L2 rating:** The vehicle traveled beyond the barrier between 3 and 20 feet.
- **L1 rating:** The vehicle traveled beyond the barrier between 20 and 50 feet.

The strongest barrier, in terms of K-ratings, would be K12: L3 — in this case, a 15,000-pound vehicle moving at 50 miles per hour penetrated the barrier less than 3 feet. When interpreting K-ratings, use the "K" number to determine the test vehicle's speed and the "L" number to determine how far it traveled beyond the barrier.



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M-RATINGS: NEW RATINGS

M-ratings have replaced K-ratings recently, using standards from the American Society for Testing and Materials (ASTM). ASTM crash ratings are different because they're based on how far a vehicle's payload travels beyond a barrier, rather than its front. M-ratings are based on vehicle size, speed & travel distance.

M-ratings are similar to K-ratings in that their numeral designations correspond with test vehicle speeds. You can match K-rated and M-rated tests based on speed. A K4 and M30 rating are equivalent, a K8 rating matches M40, and a K12 rating matches M50. The vehicles in these tests traveled at 30, 40, and 50 miles per hour, in that order. M-ratings and K-ratings are similar enough to be interchangeable.

M-ratings are also divided into P1, P2, P3, and P4 classifications, based on how far the vehicle traveled beyond the barrier:

- **P1 rating:** A vehicle traveled 3.3 feet or less.
- **P2 rating:** A vehicle traveled between 3.31 and 23 feet.
- **P3 rating:** A vehicle traveled between 23.1 and 98.4 feet.
- **P4 rating:** A vehicle traveled farther than 98.4 feet.

M-ratings accommodate for farther distances than K-ratings, which can make for a more accurate measure. The equivalent of a K12: L3 rating would be an M50: P1 rating. Meanwhile, an M50: P2 rated beam could withstand a 15,000-pound vehicle moving at 50 miles per hour without allowing it to travel more than 23 feet.

TESTED VS. CERTIFIED VS. ENGINEERED

It is important to note the difference between certified, tested and engineered because these have different meanings and levels of significance. Learn what each of these terms means in context:

Tested: A barrier labeled as "tested" does not necessarily mean it passed the test or fits the specifications of a label. As misleading as it is, a product labeled "tested" at a certain K- or M-rating may not actually meet that rating.

Certified: "Certified" is a more accurate label. A barrier product is "certified" at a particular rating, that means it passed that test and achieved that rating. Look for "certified" barrier products.

Engineered: If a product is "engineered" to meet a certain label, that means it was designed to pass that test based on calculations or computer models. However, it may not have undergone actual, real-life testing.

You'll want to look for "certified" M-ratings and K-ratings. Inquire further if you see "tested" or "engineered" Ask if tested products met the designated standards, and ask if engineered products ever underwent actual, physical tests. If not, you have little guarantee the products will withstand real-life crashes.



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DIFFERENT ASTM MODELS AND CODES USED

As mentioned above, ASTM uses models and codes to classify anti-ram tests based on vehicle speed, weight, and distance traveled. It's important to be able to understand these codes if you want to understand crash ratings.

An important element is the speed rating, designated as follows:

- **S10:** The minimum test velocity is 10 miles per hour.
- **S20:** The minimum test velocity is 20 miles per hour.
- **S30:** The minimum test velocity is 30 miles per hour.

Next are the ASTM penetration ratings — how far the vehicle was able to travel beyond the barrier. Penetrations ratings for low-speed tests include:

- **P1:** At a low speed, a vehicle penetrated the barrier no more than 1 foot.
- **P2:** At a low speed, a vehicle penetrated the barrier between 1 and 4 feet.
- **Failure:** At a low speed, a vehicle penetrated the barrier beyond 4 feet.

For high-speed tests, the standards are a bit more forgiving. The codes used to designate high-speed penetration ratings include:

- **P1:** At a high speed, a vehicle penetrated the barrier no more than 3.3 feet.
- **P2:** At a high speed, a vehicle penetrated the barrier between 3.31 and 23 feet.
- **P3:** At a high speed, a vehicle penetrated the barrier between 23 and 98.4 feet.