Travel Crates - Recommendations and Final Thoughts

This is part three, the final part of a study that makes an extensive investigatoin of the safety of pet travel crates and 'crash testing'. Here I look at the CPS test reults, give my crate recommendations and conclude with a pointed critique of the CPS test process.. The entire study is available as a single white paper in our research section.

CPS 2015 Study Test Results

ProLine Milan

So lets look at what CPS found out in their testing of the ProLine Milan and MIM Variocage crates.

CPS tested a ProLine Milan model - there is no mention of sizing (S, M or L). The ProLine Condor I had selected is in the same product line as the Milan but is slightly taller and not quite as long.

Test run #1, where the crate is tied down about two feet behind the simulated seatback, is about as extreme a result as you can expect to see - it is akin to putting the crate in the back of an empty SUV with both the 2nd and 3rd row seating turned down. The back of the ProLine was destroyed and the test dog emerged partially out of the back. The door required significant force to open.

The more realistic second test run stows the crate directly behind the seatback. In this case, the back of the crate did not completely break but the damage was still severe. The front door was slightly mangled, became stuck and would not open without the use of a crow bar.

My concerns about the ProLine crate were confirmed. The panels, per CPS are wood, probably made of one of the many available composites (like MDF). There is no assurance that in an actual crash the rear panel would behave more like run #2 than run #1. Likewise, impact from other cargo into the side panels could result in complete failure and put the pet inside at substantial risk of injury.

Being able to extract the pet from the crate in an emergency is of very high importance and the ProLine failed here as well. In my opinion this, combined with the wood paneling issue, disqualifies the ProLine from further consideration as a safe travel crate.

MIM Variocage

The MIM Variocage was also subjected to two test runs. In run #1, the tie down straps failed and the crate crushed an average of 10" on impact. Though there was also minor deformation of the top and sides, the front door remained locked and was easily opened. The test dog remained inside the crate.

Recall from my initial description of the Variocage: the controlled deformation of the crate during a collision is a design feature that operates on the same principle as "crumple zones" in automobiles. When the crate deforms, it absorbs some of the energy of the crash and extends the time over which the interaction takes place, further reducing the forces on the crate. Based upon the CPS description, the Variocage functioned exactly as expected.

For run #2, placing the Variocage behind the simulated seat resulted in nearly identical results, the only difference being just one strap failed. The crate maintained structural integrity, the dog was contained in the crate and the front door was easy to open.

Again, CPS does not state the exact model or size of the crate as tested (recall the Variocage is also adjustable within base sizing). This complicates my analysis. If the crate crumpled 10" on impact, is that a lot? A little? CPS gives no indication that the test dog was left in a compromised position, so I can only assume there was sufficient room after impact. For reference, MIM lists the length of their Variocage Original SL as 760-1030 mm (30" - 40.5"). So a 10" crush is between 25% and 33% of the crate length. Without doubt, owners **must** take this into account when sizing this crate to their pet and car.

Other crates

CPS also tested two plastic body crates. One, the Gunner G1, was only tested in the run #1 scenario. This provides limited information as the crate remained anchored. Though the door remained intact and opened easily, that outcome is based largely on the crate's connection to the test sled. Looking at the results of the other crates, I still have concerns about the front door on the Gunner.

The other plastic crate, the Roto Mold "Ruff Tough Kennel" displayed mixed results. In both runs, the structural integrity of the crate was maintained. What is very troubling about the Roto Mold crate is that the door failed in both runs, dramatically so in the second when it completely detached from the crate, allowing the test dog to fly out. Even in the first run, the door partially shattered and, though contained, the test dog was at risk from sharp protruding edges. Based on the CPS images as well as my own web search, it appears that this door is plastic, a really poor design choice.

The Gunner uses a door that is made of metal parts and the connection points with the plastic body are fully recessed, unlike the Roto Mold. My strong opinion is that the Gunner crate cannot be fully evaluated until the door is subjected to realistic crash forces. I would like to see, at a minimum, this crate placed behind the seatback and tested without the benefit of tie downs.

Revisiting my short list, the Good Ideas Kennebec crate has a similar, if not stronger, body as the Roto Mold. Structurally, at least in a front crash, I expect it will perform well. The marketing materials indicate it has a "secure, hi-tension spring door" that by visual inspection is a metal grill with four recessed connection points. Though I do not worry that this door will shatter like the plastic Roto Mold, I have concerns the connection points may not be sufficiently recessed, nor the gauge of the wire sufficiently large, to withstand a crash impact. Like the Gunner, I can't feel totally comfortable without a test demonstrating the door acts appropriately during and after a crash.

CPS also tested a traditional wire framed crate. It was completely mangled as was expected.

What happened to …?

In the introductory sections of the test report, CPS repeatedly states their concerns about crates hitting, and possibly penetrating, car seatbacks. Yet, in none of the individual test results is any mention made of the type and severity of damage to the seatback. Further, if the risk of impact with the seatback is to the passenger on the other side, it would be appropriate to position a human test dummy with standard monitors to assess any potential injuries.

Conclusions

Highly Recommended

MIM Variocage

The only crate that I can recommend unconditionally to my friends is the MIM Variocage. There is no doubt in my mind that it is the safest crate for both the dog inside as well as the other passengers in the car. While the testing commissioned by MIM was thorough and included rear crash and drop tests, it was really the flawed CPS testing that made me most confident about the Variocage. Even in those tests, it did everything it was expected to do flawlessly. I really feel CPS has done a significant disservice to pet owners by not recommending the Variocage.

As is often the case, the best performing may come with the highest price tag and there is no exception for the MIM Variocage. It is the most expensive crate I considered and, to the best of my knowledge, also the most expensive in the marketplace. But unlike other expensive crates, the Variocage delivers with certainty.

If there is a downside to the Variocage, it is the same as exists with a modern car. Crumple zones collapse in a significant crash, resulting in significant repair bills. In the case of the Variocage, that almost certainly means replacement with a new crate. I urged my friends to check with their insurance carrier if they purchase a Variocage to be certain the damaged crate would be covered under their policy.

In A Pinch

Good Ideas Kennebec

If I were pressed to recommend a less costly alternative, I might give a very conditional nod to the Good Ideas Kennebec. My prime worry is the ability of the crate door to stay closed in a significant collision and still be functional afterward. Unfortunately, only crash testing can remove that qualification.

Further, until hard plastic style crates are subjected to rear end testing, be very cautious not to place this crate behind an occupied seat to avoid any chance it becomes a battering ram in a rear collision. Though the Gunner crate tested by CPS is similar, it is much more costly, was not tested in a rear-end collision and has the same question marks about its door.

Ultimately, it is up to the pet parents to decide if the cost savings and usage constraints are worth the potential trade offs in safety to both the pet and human occupants.

Additional Padding

Much of the analysis of crates done here, by CPS and other testing companies has focused solely on the crate - whether or not it survives and any collateral damage it may cause to human occupants. The addition of foam or similar padding to the rear panel of a crate should reduce the force felt by the pet on impact by extending the time over which the collision takes place. This may or may not amount to a significant improvement but it is one worth further examination.

Earlier I mentioned that ProLine sells a "Crash Bag" for about $90. It is a very high price for a foam pad inside a good liner. So while I was not impressed by their crate, I do see merit to their Crash Bag. If testing confirms the benefits, I would like to see other crate manufacturers offer something similar for their products, though hopefully at a better price. Optional of course, as clearly it provides a tempting target for a distracted pup!

A Short Note on CPS

My comments to this point about CPS have been negative and based upon my review of their 2015 crate study as it applied to two of the crates in my own short list. Some of the flaws in the CPS study have already been pointed out and many reflect a general lack of transparency. With no backup and details, the CPS crate test might receive a failing grade were it a college lab assignment. The onus is on CPS, as a new player in crash testing, to provide sufficient authoritative detail to promote confidence in their procedures and methods. This is all the more important since CPS is pushing the crash testing of products that have had limited, if any, public testing prior to their efforts.

At the least, references must be available to backup critical issues with the testing methodology. As an example, where are the testing results to indicate the CPS simulated seatback does behave like a typical auto seatback? Another is that when published standards are the basis for a test, deviation from that standard must be noted.

I also think CPS needs to take a step back and be sure to apply a common sense review of all current and future testing methodology. Sometimes it is easy to get so caught up in the small details that we can miss that the whole picture is off center. CPS also should be sure to present consistent recommendations throughout all their materials and boldly note when and where deviations are acceptable.

In fact, I think CPS has performed a *disservice* to pet owners with their 2015 crate test. They have disqualified one product and recommended another based upon a standard that, by their own admission, is flawed. Would the typical pet owner quickly reading the crate test report know that CPS implores pet owners not to rely upon anchoring systems for safe crate travel? Instead, the report makes clear pet owners should place great emphasis on a crate remaining attached to the test sled. CPS also deviated from the methodology they stated would be used (ECE R17) without making clear they were doing so.

I also believe CPS errs in issuing a recommendation of any kind without also having rear crash test performance data. Will CPS reverse their recommendation of the Gunner as "safe" if it fails subsequent rear testing? What of the pet owners who purchase based on that previous recommendation? CPS *must realize* that their statements are not perceived as just an opinion but are now viewed as *authoritative.*

Even so, I do applaud the effort that CPS is making to try to bring independent testing to the pet industry. For CPS to really make inroads, they must be extremely credible, to a flaw. Unlike Consumer Reports, who have a long testing track record and a large budget, CPS is new and run on good will and a shoe string. Hopefully these are just growing pains and CPS can gain additional funding and adjust their procedures to give pet owners confidence that manufacturers are really and truthfully being held accountable.

If CPS fails to make these types of adjustments, pet owners who rely on their recommendations could be led astray and influenced to purchase a product that may be less safe, perhaps even dangerous, for both their pet and themselves. That would be a tragedy for all involved and is one of the primary reasons I started ismypetsafe.com:

> Unfortunately, pets are not immune from an internet full of unsafe products, dubious claims and well intentioned but ill informed advice. Products and procedures are often panned by those who go on little more than gut feelings or a poor and incomplete understanding of the product/procedure, including the testing behind it. This can lead to a spiral of hearsay causing owners to reject otherwise safe products or procedures that are a good fit for their pet.

I do hope that CPS will take these criticisms into consideration.

ANNEX

ECE R-17

The following is a portion of the actual ECE-R17 document.

5.15. Special requirements regarding the protection of occupants from displaced luggage

5.15.1. Seat-backs

Seat-backs and/or head restraints located such that they constitute the forward boundary of the luggage compartment, all seats being in place and in the normal position of use as indicated by the manufacturer, shall have sufficient strength to protect the occupants from displaced luggage in a frontal impact. This requirement is deemed to be met if, during and after the test described in annex 9, the seat-backs remain in position and the locking mechanisms remain in place. However, the deformation of the seat-backs and their fastenings during the test is permitted, provided that the forward contour of the parts of the tested seat-back and/or head restraints, that are harder than 50 Shore A, does not move forward of a transverse vertical plane which passes through:

(a) a point of 150 mm forward of the R point of the seat in question, for the parts of the head restraint;

(b) a point of 100 mm forward of the R point of the seat in question, for parts of the seat-back;

excluding the rebound phases of the test blocks.

All measurements shall be taken in the longitudinal median plane of the corresponding seat or seating position for each seating position constituting the forward boundary of the luggage compartment.

During the test described in annex 9, the test blocks shall remain behind the seat-back(s) in question.

Annex-9

2. Test preparation

2.1. Test of seat-backs (see figure 1)

2.1.1. General requirements

2.1.1.1. At the option of the car manufacturer, parts whose hardness is lower than 50 Shore A can be removed from the tested seat and head restraint for the tests.

2.1.1.2. Two type 1 test blocks shall be placed on the floor of the luggage compartment. In order to determine the location of the test blocks in the longitudinal direction, they shall first be positioned such that their front side contacts that part of the vehicle which constitutes the forward boundary of the luggage compartment and that their lower side rests on the floor of the luggage compartment.

They shall then be moved backwards and parallel to the longitudinal median plane of the vehicle until their geometrical center has traversed a horizontal distance of 200 mm. If the dimensions of the luggage compartment do not allow a distance of 200 mm and if the rear seats are horizontally adjustable, these seats shall be moved forward to the limit of the adjustment range intended for normal occupant use, or to the position resulting in a distance of 200 mm, whichever is less. In other cases, the test blocks shall be placed as far as possible behind the rear seats.

Some calculations

Kinetic energy of a dog in free flight

A 30kg dog has kinetic energy of 3,375 joules when traveling at 15 m/s (or roughly 65 lb going 33 MPH). Put another way, this is the same amount of energy imparted by 345 kg (760 lb) falling on your foot from a height of 1 m (3.3 feet).

Force in a crash

Force in crash: A combined 34 kg (75 lb) crate plus dog at 15 m/s (33.5 MPH) will result in a force of 7650 N (1720 lb), assuming the deceleration is over a distance of 0.5 m (about 20")