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CRASH PAD FAQ

Frequently Asked Questions - *with common sense answers*

What thickness should I use?

Use as much as you have room for. The more the better to absorb impact but don't compromise headroom.

What if I remove layers of 802SAM?

Reducing thickness reduces impact absorption time and distance. You will bottom out sooner.

However, if you do not have enough rollcage headroom and you can't lower your seat, you may have to remove layers to get to a recommended minimum headroom.

Something is better than nothing but more is better.

Life is always a compromise.

Can I bottom out in the seat, in a crash?

Yes you can. You can always exceed the capacity of any material with enough force. Tests indicate that the forces will be distributed, reduced and spread out over time making the bottoming less severe.

The thicker the better.

What if I don't have enough headroom?

Lower your seat. Remove spacers or lower the seat mounting bar or frame tabs.

Get a tall cage option when you get a new chassis.

Don't compromise minimum recommended headroom.

How much headroom do I need?

We can only tell you that there seems to be a consensus of opinion that 3" is needed between the top of the helmet and the top of the roll cage.

Obviously more is better. These things are always a balance of compromises.

Why is 2" standard if 3" is best ?

So, why is the standard product bottom pad only 2" thick?

Many drivers do not have the headroom for the 3" pad.

The 2" pad is what many have used and it is most economical for the buyer to not have to buy extra material that will not be used.

The 3" or 2" Crash Pad can be reduced in half inch increments down to 1" if needed, by removing 1/2" layers.

A 2" pad can be upgraded to 2 1/2" or 3" by simply inserting the 1" upgrade material into the standard product and adjusting the combination of layers.

Choose what fits you best but remember the thicker the Crash Pad, the more space and time to dissipate energy. Remember that the seated thickness is less.

Can I use foam or other materials?

802SAM performed best over other material tested.

Other materials may feel similar but may not react the same in high speed impact.

If it hasn't been tested properly you don't know if it will have the right properties.

Some materials go solid, some collapse and some rebound in high speed impact and can actually make an impact worse.

Can I use foam rubber instead of 802SAM?

NO - The spring type rebound of foam rubber will make the impact worse!

If foam rubber is dense enough, at full compression, foam rubber rebounds and drives your spine up into your downward moving head.

Upholstery type foam rubber for cushions has little or no high speed impact resistance in this application.

Should I leave other cushioning material in the seat bottom?

Other materials will take up space that could be used for layers of 802SAM.

Other materials will probably not be as effective in absorbing impact forces.

Why haven't the seat manufacturers addressed this problem.

They are concerned with making a strong seat that is non deformable and supports the driver's weight in a crash.

Many years ago, seats could bend and deform in a crash and there were no shoulder supports or headrests.

Drivers would impact parts of the car in the cockpit and get hurt.

The containment seat stopped that from happening by providing support for the driver and removing the space to thrash around in a crash.

The containment seat is one of the most important improvements to reduce driver injuries in a crash in recent years.

It's effectiveness has made it a standard component of most race cars today.

It has helped in every direction of applied force on the driver, except for down into the bottom of the seat.

The Crash Pad is an accessory designed to work with the containment seat to reduce the risk of spinal compression injury in a crash.

What is 802SAM?

802SAM shock absorbing material is a proprietary material made for 802 Solutions.

Why is 802SAM "The Right Stuff"?

Mainly because it tested best. The reasons it tested best are many.

It compresses with even resistance throughout the compression.

It supports static weight without collapse.

It has uniform compression characteristics in high speed compression.

It does not rebound but does return to original capability quickly.

It is simple and reasonably light weight for the application.

How was 802SAM tested?

Spinal forces were measured in an anatomical dummy, helmeted, 5 point belted to an aluminum seat and drop impacted at a vertical sled test facility.

Simple "drop a weight on the material" type tests and tests without typical preloading do

not correlate to the full scale dummy tests.

The tests measured spinal forces in the dummy, instead of the impact response of the material.

The tests showed what material was best to reduce the risk of spinal injury and that's what we are using.

Does the outer covering matter?

The Crash Pad uses a four way stretch material that works in conjunction with the 802SAM material in high speed impact.

802SAM can be used under existing upholstery. It must be covered so that it does not become saturated with dirt or water. Existing upholstery may be sufficient. There must be some venting so that air can escape during an impact.

I sink into the Crash Pad when I sit on it. Does it still work?

A certain amount of preloading occurs when you sit on the Crash Pad.

The preloading is necessary.

It equalizes your weight with an equal force from the 802SAM.

Typically the material will compress about 40% of its thickness when a 170 lb driver is seated and belted in.

How tight should my belts be?

Tighten your belts the same as you always have. The 802SAM will preload with your weight, belt tension and posture.

Measure your headroom with helmet on and belts tight. If you have room, add more layers of 802SAM.

If you have someone pull your belts super tight, you may want more layers of 802SAM to create more compressible space if there is excessive preload.

Would a contoured pad that matched my shape work better?

NO. It turns out from testing that the preload that occurs with a flat pad works better in high speed impact.

Contoured material actually performed much worse due to the places where it was thinner. Those protruding butt areas had the highest preload and raised the whole body to create a greater overall compression space.

How do I clean the Crash Pad?

The outer covering is very tough and smooth. It can be cleaned by wiping with a damp cloth.

Velcro loop on the back side can be washed or gently brushed.

802SAM is an open cell material that can absorb water like a sponge.

The dense cell structure can be cleaned like a sponge by washing and squeezing the water out. It should be used full dry.

How can I remove wrinkles when the pad is in place?

It's all in how you assemble it.

Seats have angles and curves. If you wrap the flaps while the face of the pad is on a curve or angle, it will tighten the covering so that it will be smooth when placed in a curved or angled seat bottom or back.

There are a couple of tricks.

1. Fold the pad (face down) over the edge of the workbench while wrapping the flaps to take out the slack on the front surface for an angled fit where needed.
2. Place the pad (face down) over a tire while wrapping the flaps to take out the slack on

the front surface for curved fit.

You can do the same with the lumbar or full back pieces.

Does The Crash Pad change my feel of the car?

No. We wondered about this but found that it actually connected our butt to the car better by conforming and filling the gaps. It eliminates seat bottom movement.

Can I use the bottom pad with out a back or lumbar?

Not Recommended. The lumbar is very important to the impact absorbing function for a couple of reasons.

1. The lumbar or back pad moves your tailbone a little further forward into the bottom pad material so it's not at the back edge.
2. The pelvis and lower back tend to rotate and roll back during impact and forces are absorbed in the lumbar or back pad.

Can I use 802SAM in other places?

Yes. We have stuffed a layer or two of 802SAM in the "rib cage wings" of our seats, under existing upholstery.

However, head/helmet impact is different because there is no preload and helmets contain a different kind of shock absorption material.

802SAM has not been tested in comparison to other established headrest materials for effectiveness in headrest and rollbar applications so we can not make any recommendation on it's use on headrest or rollbar locations.

Can I glue 802SAM in place?

We have used 3M 777 spray adhesive to bond 802SAM to other surfaces and materials.

You can glue layers together but it's not necessary. 802SAM has enough surface friction that layers stay in place and gluing is not usually necessary.

Can I use Raw 802SAM without covering?

Not Recommended. The material will tear if it doesn't have a covering.

If it gets ragged, it's performance will also deteriorate.

Uncovered 802SAM will get dirt and water in it and that will definitely degrade it's performance.

802SAM should always have a vented covering to protect from contamination.

Does material density matter?

Apparently not.

The material density (measured as weight in lbs per cubic foot of a material) is commonly used as a way to compare the energy absorbing properties of these type of materials.

However, a number of materials with identical density, from the same material family, can range from being very soft, to soft, to firm.

When tested, each of those materials had a different high speed impact response that ranged from worst to best. Other materials that had radically different densities had favorable responses but were ranked lower than the best.

We found that comparing materials by comparing the manufacturing specs does little to know how they will reduce the risk of spinal injury in a holistic and realistic model testing method.

Are there other ways that Spinal Injuries can happen in a crash?

1. You can also have spinal injury by being hit on top of the helmet during a crash, driving your head down onto your spine. It stands to reason that having compressible material and compression space at the bottom of the spine can be somewhat helpful in reducing the risk of spinal injury (untested). This crash scenario supports the reason for sufficient roll cage headroom.

2. Spinal injuries have also occurred in sprints, midgets, etc when the center section of the rear end or W-link or brake rotor have impacted the bottom or lower back of the seat in a crash. It stands to reason that having some compressible space between you and the impacting part can be very helpful in reducing the risk of spinal injury (untested). This crash scenario supports the reason for having protection bars, plates or cables between the seat and the rear end.

Can The Crash Pad be made cheaper?

We worked hard to trim costs and overhead and make this product affordable.

We did not compromise on materials and the right materials are expensive.

The 802SAM material is very expensive but it is the best for this application.

The outer covering is very tough and four way stretch and works better and lasts longer than other materials.

The Velcro materials and sewing threads are military grade and are the toughest and most durable we could find.

Everything is made in the USA.

If someone makes a cheaper pad, they will have to use something that does not perform as well.

How did you come up with this product?

We are life long sprint car racers and engineers. We saw friends and competitors get hurt and we wanted to reduce our own risk of spinal injury.

We did a lot of research to come up with this for ourselves and have used it for several years.

We decided it was now time to make something simple and affordable for others.