

1

00:00:00,000 --> 00:00:04,000

Please don't try anything you're about to see at home.

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00:00:04,000 --> 00:00:06,000

Where would you call experts?

3

00:00:09,000 --> 00:00:12,000

On this episode of Myth Busters, 2, 1, go!

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00:00:15,000 --> 00:00:19,000

Awesome! Adam, Jamie getting down and dirty.

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00:00:19,000 --> 00:00:21,000

I've never seen anything like that.

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00:00:21,000 --> 00:00:24,000

Testing that an explosion inside a sewer...

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00:00:26,000 --> 00:00:28,000

That sewer is getting pretty full of methane.

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00:00:28,000 --> 00:00:31,000

Turns manhole covers into missiles.

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00:00:31,000 --> 00:00:33,000

This is killing me!

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00:00:34,000 --> 00:00:38,000

Then, Carrie Turing and Grant take on the fan fable...

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00:00:38,000 --> 00:00:39,000

Love when I get struck.

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00:00:39,000 --> 00:00:42,000

That truck bedliner is indestructible.

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00:00:43,000 --> 00:00:45,000

With car crashes.

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00:00:45,000 --> 00:00:46,000

I'm okay!

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00:00:47,000 --> 00:00:48,000

Angry attack dogs.

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00:00:50,000 --> 00:00:52,000

And an end with a bang finale...

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00:00:53,000 --> 00:00:56,000

Can bedliner really save your life?

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00:00:56,000 --> 00:00:59,000

A lot of people ask me, do you ever get tired of blowing stuff up?

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00:00:59,000 --> 00:01:00,000

I tell them no.

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00:01:03,000 --> 00:01:05,000

Who are the Myth Busters?

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00:01:06,000 --> 00:01:07,000

Adam Savage.

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00:01:07,000 --> 00:01:09,000

Am I missing an eyebrow?

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00:01:09,000 --> 00:01:10,000

And Jamie Heineman.

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00:01:10,000 --> 00:01:13,000

Things are going to start to get a little crazy in here.

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00:01:13,000 --> 00:01:17,000

Between them more than 30 years of special effects experience...

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00:01:17,000 --> 00:01:19,000

Together with Carrie Byron.

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00:01:19,000 --> 00:01:20,000

I'm to wreck this car.

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00:01:20,000 --> 00:01:21,000

Tori Belachie.

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00:01:21,000 --> 00:01:23,000

Oh, he survived!

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00:01:23,000 --> 00:01:24,000

And Grant Himahala.

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00:01:24,000 --> 00:01:25,000

Save yourselves!

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00:01:26,000 --> 00:01:28,000

They don't just tell the Myths...

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00:01:29,000 --> 00:01:31,000

They put them to the test.

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00:01:44,000 --> 00:01:47,000

So is every story we do an excuse for you to wear a funny hat?

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00:01:47,000 --> 00:01:49,000

You should know the answer to that by now.

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00:01:49,000 --> 00:01:53,000

Although specifically in this story it's quite apt because we're doing a myth about sewers.

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00:01:53,000 --> 00:01:54,000

Sewers.

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00:01:54,000 --> 00:01:56,000

Well specifically explosions within sewers.

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00:01:56,000 --> 00:01:58,000

You mean like from a methane build up?

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00:01:58,000 --> 00:02:00,000

Yes, but it's not just about methane explosions.

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00:02:00,000 --> 00:02:05,000

It's about during a methane explosion do the manhole covers in the street above the sewer,

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00:02:05,000 --> 00:02:07,000

get blown high into the air.

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00:02:07,000 --> 00:02:08,000

Well that sounds like classic.

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00:02:08,000 --> 00:02:09,000

It's perfect for us.

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00:02:09,000 --> 00:02:10,000

I totally agree.

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00:02:11,000 --> 00:02:18,000

It's no myth that the decay of waste inside sewers makes them the perfect breeding ground for combustion.

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00:02:18,000 --> 00:02:25,000

However, could a stray spark trigger an epic explosion and send manhole covers skyrocketing?

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00:02:25,000 --> 00:02:28,000

Could a manhole ever turn missile?

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00:02:28,000 --> 00:02:29,000

What's the plan?

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00:02:29,000 --> 00:02:33,000

Well it seems clear to me that this myth has to end with us testing it full scale.

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00:02:33,000 --> 00:02:36,000

We need full size manhole covers over a real sewer.

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00:02:36,000 --> 00:02:44,000

I agree, but you know what, before we lock in on a full size plan, let's do a small scale one first and see if we can learn anything.

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00:02:44,000 --> 00:02:45,000

Sounds like a good idea.

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00:02:45,000 --> 00:02:46,000

This ought to do it.

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00:02:46,000 --> 00:02:53,000

So to find out if a methane kaboom can make manholes fly, the mythbusters get their minds into the sewer.

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00:02:53,000 --> 00:03:01,000

This is a Schedule 80 steel pipe and I'm about to make it into a miniature sewer with a viewing port all along one side,

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00:03:01,000 --> 00:03:05,000

which is hopefully going to be explosion proof.

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00:03:05,000 --> 00:03:09,000

This cumbersome pipe should perfectly replicate a sewer in miniature,

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00:03:09,000 --> 00:03:16,000

but with great weight comes great responsibility.

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00:03:16,000 --> 00:03:19,000

You see us build a lot of stuff on this show and a lot of times it's kind of like jazz.

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00:03:19,000 --> 00:03:22,000

We are really just figuring it out as we go along.

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00:03:22,000 --> 00:03:23,000

Oh, it's beautiful.

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00:03:23,000 --> 00:03:29,000

But when you're building something this heavy and substantial, you can't quite do it that way.

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00:03:29,000 --> 00:03:31,000

You actually have to plan two or three steps ahead.

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00:03:31,000 --> 00:03:33,000

Let's weld this puppy down.

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00:03:33,000 --> 00:03:40,000

Because everything you're doing and everything you're going to do is going to require moving hundreds of pounds of steel around.

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00:03:40,000 --> 00:03:41,000

Oh, this is heavy.

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00:03:41,000 --> 00:03:46,000

Not only can it make it logistically difficult, but fingers can be lost, eyes can be poked out.

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00:03:46,000 --> 00:03:47,000

It's dangerous.

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00:03:47,000 --> 00:03:48,000

Watch your fingers.

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00:03:48,000 --> 00:03:49,000

It's lovely.

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00:03:49,000 --> 00:03:50,000

Yeah, it is.

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00:03:50,000 --> 00:03:53,000

I can't believe this is a small scale.

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00:03:53,000 --> 00:03:58,000

It may be big, but to withstand a methane explosion, it has to be.

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00:03:58,000 --> 00:04:03,000

And to complete its authentic aesthetic, Jamie needs to make these.

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00:04:03,000 --> 00:04:06,000

That's a manhole cover.

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00:04:06,000 --> 00:04:15,000

So clearly in a sewer, there's all sorts of waste, human waste, household waste, and those wastes produce the dangerous gases that can lead to an explosion.

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00:04:15,000 --> 00:04:17,000

That's not how we're creating our gases.

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00:04:17,000 --> 00:04:21,000

Now we're just calling up the welding store and bringing in some methane and pumping it in.

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00:04:21,000 --> 00:04:23,000

But remember, methane is a little tricky.

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00:04:23,000 --> 00:04:25,000

It requires a lot of oxygen.

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00:04:25,000 --> 00:04:27,000

But remember, methane is a little tricky.

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00:04:27,000 --> 00:04:32,000

It requires a precise ratio of air to gas in order to explode.

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00:04:32,000 --> 00:04:34,000

9% in three.

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00:04:34,000 --> 00:04:37,000

And that's exactly the ratio that we'll be using today.

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00:04:37,000 --> 00:04:40,000

Why?

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00:04:40,000 --> 00:04:44,000

Because this myth isn't really about the circumstances that lead to an explosion.

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00:04:44,000 --> 00:04:46,000

It's about what happens afterwards.

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00:04:46,000 --> 00:04:50,000

The question we're answering is, will those manhole covers fly sky high?

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00:04:50,000 --> 00:04:57,000

To find that out, Adam and Jamie are going to test a series of potentially explosive sewer scenarios.

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00:04:57,000 --> 00:05:02,000

The first test is the most standard sewer setup, an open-ended system.

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00:05:02,000 --> 00:05:04,000

Here's how this procedure is going to go down.

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00:05:04,000 --> 00:05:06,000

First, we fill our chamber with this.

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00:05:06,000 --> 00:05:13,000

Methane, exactly 0.12 cubic feet, or a stoichiometry of 9.5% gas to air by volume.

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00:05:13,000 --> 00:05:14,000

Alright, you ready? I'm going to turn on the gas.

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00:05:14,000 --> 00:05:15,000

I'm ready.

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00:05:15,000 --> 00:05:17,000

Okay.

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00:05:17,000 --> 00:05:21,000

That gas will flow into the chamber until it's the correct amount, then we shut off all the valves.

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00:05:21,000 --> 00:05:23,000

Then we mix the air and the gas.

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00:05:23,000 --> 00:05:27,000

With this, this little whisper fan, we turn on this fan for exactly two minutes.

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00:05:27,000 --> 00:05:29,000

Let the air and the gas get together.

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00:05:29,000 --> 00:05:31,000

It's a nice-looking rig.

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00:05:31,000 --> 00:05:35,000

That might be in the running for the heaviest small-scale thing we've ever built.

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00:05:35,000 --> 00:05:40,000

At that point, we will plug in this neon transformer setting this mark, and hopefully,

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00:05:40,000 --> 00:05:44,000

whoops, whoops, whoops.

106

00:05:44,000 --> 00:05:47,000

Getting the manhole cover launches of our dreams.

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00:05:47,000 --> 00:05:52,000

But will the free flow of air and gas in the open-ended sewer mean the manholes fly?

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00:05:52,000 --> 00:06:00,000

This is drain disaster, open system, and three, two, one, go.

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00:06:00,000 --> 00:06:03,000

That was totally boring.

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00:06:03,000 --> 00:06:06,000

I was like, huh.

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00:06:06,000 --> 00:06:08,000

Wait a minute, let me do that again. Hold on.

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00:06:08,000 --> 00:06:11,000

Ha!

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00:06:11,000 --> 00:06:18,000

Despite igniting the methane at its explosive ratio, the manhole covers didn't get air.

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00:06:18,000 --> 00:06:21,000

Manhole cover check one, two, three, all still on.

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00:06:21,000 --> 00:06:23,000

I don't think an open system is that energetic.

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00:06:23,000 --> 00:06:24,000

No.

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00:06:24,000 --> 00:06:27,000

That will reason for that lethargic blast.

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00:06:27,000 --> 00:06:29,000

Well, for that, it's over to the Heinemann.

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00:06:29,000 --> 00:06:31,000

Think of this like a gun.

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00:06:31,000 --> 00:06:35,000

If the back of the barrel of the gun is closed, then the exploding gunpowder goes this way

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00:06:35,000 --> 00:06:38,000

and pushes the bullet out the end of the barrel.

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00:06:38,000 --> 00:06:43,000

However, if that breech is open, the gas is going to follow the path of least resistance

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00:06:43,000 --> 00:06:47,000

and escape here, and it's not going to do anything to the bullet.

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00:06:47,000 --> 00:06:52,000

It's not looking good for the open system, but this myth doesn't rest there.

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00:06:52,000 --> 00:06:54,000

I'm making a mess.

126

00:06:54,000 --> 00:06:55,000

For science.

127

00:06:55,000 --> 00:06:59,000

There's a whole lot more manhole mayhem to come.

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00:06:59,000 --> 00:07:01,000

Ha!

129

00:07:04,000 --> 00:07:09,000

Next up is a fan favorite with three times the carnage.

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00:07:09,000 --> 00:07:11,000

All right, so you guys are familiar with bed liners, right?

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00:07:11,000 --> 00:07:12,000

Yeah.

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00:07:12,000 --> 00:07:14,000

It's the stuff you spray in your pickup truck bed to protect it.

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00:07:14,000 --> 00:07:15,000

Right.

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00:07:15,000 --> 00:07:19,000

Now, officially, it's known to stop scratches, dents, and rust.

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00:07:19,000 --> 00:07:23,000

But unofficially, people are claiming that it is practically indestructible.

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00:07:23,000 --> 00:07:26,000

You have all sorts of crazy stuff on the fan site that you can make a suit dog proof.

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00:07:26,000 --> 00:07:27,000

You can make car crash proof.

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00:07:27,000 --> 00:07:28,000

You can make a house blast proof.

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00:07:28,000 --> 00:07:31,000

I assume we're taking most outlandish and testing, right?

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00:07:31,000 --> 00:07:32,000

Exactly.

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00:07:32,000 --> 00:07:38,000

Bed liners use to line the beds of trucks and protect against dings and scratches.

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00:07:38,000 --> 00:07:41,000

But according to the fans, that's not all.

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00:07:41,000 --> 00:07:47,000

Supposedly, it can defend against damage in a host of unconventional conditions.

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00:07:47,000 --> 00:07:51,000

So we're going to be working with the tack dogs, crashing cars, and exploding houses.

145

00:07:51,000 --> 00:07:53,000

I think I love this myth already.

146

00:07:53,000 --> 00:07:56,000

Okay, well, before we get too far, let's find out what the bed liner is made of

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00:07:56,000 --> 00:07:58,000

and how it performs under normal conditions.

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00:07:58,000 --> 00:07:59,000

Buzz kill.

149

00:07:59,000 --> 00:08:00,000

Science.

150

00:08:00,000 --> 00:08:02,000

Ready to find out about bed liner?

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00:08:02,000 --> 00:08:03,000

I got a few questions.

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00:08:03,000 --> 00:08:08,000

So first, it's time to bed down and find out just how this stuff works.

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00:08:08,000 --> 00:08:09,000

All right, Mark.

154

00:08:09,000 --> 00:08:11,000

So what exactly is bed liner?

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00:08:11,000 --> 00:08:16,000

The bed liner material is a two component polyurethane, polyurethane, elastomeric coating.

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00:08:16,000 --> 00:08:18,000

What is it normally used for?

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00:08:18,000 --> 00:08:25,000

You'll find these coatings do very well where there's a high abrasion, where typical paints will not hold up.

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00:08:25,000 --> 00:08:27,000

So the applications are endless.

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00:08:27,000 --> 00:08:30,000

Yeah, but if you turn it through any explosions, they're been attacked by dogs.

160

00:08:30,000 --> 00:08:32,000

Not today, no.

161

00:08:32,000 --> 00:08:37,000

Right, so bed liner is really only designed to guard against dings and scratches.

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00:08:37,000 --> 00:08:41,000

So now to get started on what the fans claim it can do.

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00:08:41,000 --> 00:08:45,000

Number one, can bed liner make your car crash proof?

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00:08:45,000 --> 00:08:47,000

To find out, they've got a car.

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00:08:47,000 --> 00:08:50,000

So now to give it a very special paint job.

166

00:08:50,000 --> 00:08:54,000

We're going to spray half of this car with bed liner and leave the other half completely clean.

167

00:08:54,000 --> 00:08:58,000

This car is not been in any accidents and there's not a dent on it, so we're starting to scratch.

168

00:08:58,000 --> 00:09:07,000

With the aid of the bed liner ninjas and the time lapse camera in no time at all.

169

00:09:07,000 --> 00:09:09,000

This is totally carried. That's amazing.

170

00:09:09,000 --> 00:09:11,000

All right, well you get on the unsafe side.

171

00:09:11,000 --> 00:09:12,000

I'm driving.

172

00:09:12,000 --> 00:09:13,000

All right.

173

00:09:15,000 --> 00:09:17,000

See, abrasion resistant.

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00:09:17,000 --> 00:09:19,000

Abrasion resistant, maybe.

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00:09:19,000 --> 00:09:25,000

But to find out if it's crash proof, it's time to crash it.

176

00:09:25,000 --> 00:09:30,000

I don't like carpooling. Could we not carpool anymore?

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00:09:32,000 --> 00:09:34,000

Love when I get to drive.

178

00:09:36,000 --> 00:09:38,000

We're going to simulate a minor fender bender.

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00:09:38,000 --> 00:09:45,000

To do that, we're going to back our car in the treated and untreated side into this barrier at six miles an hour.

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00:09:46,000 --> 00:09:49,000

We want to get minor damage and compare the differences.

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00:09:49,000 --> 00:09:55,000

Yep, and six miles per hour still equates to a 5,000 joule impact.

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00:09:55,000 --> 00:09:59,000

Okay, this is six miles per hour rear bumper test. Here we go.

183

00:09:59,000 --> 00:10:01,000

First on the untreated side.

184

00:10:06,000 --> 00:10:08,000

Wow, you got all of that one.

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00:10:08,000 --> 00:10:10,000

A little more violent than I expected.

186

00:10:15,000 --> 00:10:17,000

And then the bed liners start.

187

00:10:21,000 --> 00:10:24,000

Nice job, man. I don't think I'll ever get used to that.

188

00:10:27,000 --> 00:10:33,000

Grants no fan of rear enders, but it does seem like the bed liner can take the strain.

189

00:10:33,000 --> 00:10:38,000

You know what? I'm going to have to say that was a win for the bed liner.

190

00:10:38,000 --> 00:10:40,000

Look at this. It's still intact.

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00:10:40,000 --> 00:10:41,000

Dude, that's crazy.

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00:10:41,000 --> 00:10:46,000

The untreated bumper is shattered while the bed liner is practically untouched.

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00:10:46,000 --> 00:10:50,000

But can it survive a six mile per hour assault from the front?

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00:10:50,000 --> 00:10:51,000

This is going to be funny.

195

00:10:59,000 --> 00:11:01,000

Oh my God, what are you, blind? Just kidding.

196

00:11:01,000 --> 00:11:03,000

All right, that was a good hit.

197

00:11:03,000 --> 00:11:12,000

I'm okay. Human crash just dummy.

198

00:11:14,000 --> 00:11:18,000

Well, that was a solid hit and it looks like the bed liner wins again.

199

00:11:18,000 --> 00:11:23,000

Dude, look, we have cracking here and here, but none on the bed liner side.

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00:11:23,000 --> 00:11:25,000

That is totally amazing.

201

00:11:25,000 --> 00:11:27,000

And that's some serious damage right there.

202

00:11:27,000 --> 00:11:34,000

Serious damage, but a collision of six miles per hour is relatively tame compared to what's coming up next.

203

00:11:35,000 --> 00:11:39,000

On the other side of the break, Tori puts an ultimatum.

204

00:11:39,000 --> 00:11:41,000

Oh my God, that was so fun.

205

00:11:41,000 --> 00:11:45,000

Later, it's Adam and Jamie and the great drain disaster.

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00:11:45,000 --> 00:11:47,000

That sewer is getting pretty full of methane.

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00:11:48,000 --> 00:12:00,000

In this drain disaster, supposedly a sewer explosion sends manhole covers sky high.

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00:12:00,000 --> 00:12:08,000

However, with their open ended system, that wasn't the case as the explosion took the path of least resistance.

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00:12:08,000 --> 00:12:15,000

So for the next test, the mythbusters are closing the sewer and that's not as crazy as it sounds.

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00:12:15,000 --> 00:12:18,000

There are many places in which a sewer can become a closed system.

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00:12:18,000 --> 00:12:22,000

You can have a large pipe that immediately makes a right angle turn into a small pipe.

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00:12:22,000 --> 00:12:25,000

Gases have a hard time going around corners like that when they're under pressure.

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00:12:25,000 --> 00:12:29,000

You can have a part of the sewer above water with a bunch of the sewer underwater.

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00:12:29,000 --> 00:12:32,000

All of a sudden that becomes a closed system.

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00:12:32,000 --> 00:12:39,000

But will a methane explosion in a closed sewer make the difference and send the manhole covers sky high?

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00:12:39,000 --> 00:12:42,000

3, 2, 1, go.

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00:12:45,000 --> 00:12:47,000

Awesome.

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00:12:47,000 --> 00:12:50,000

Apparently, yes.

219

00:12:50,000 --> 00:12:54,000

All of that hole covers went and it sounded cool too.

220

00:12:57,000 --> 00:13:03,000

The high speed referee proves that not only did the lids flip, but they got significant air.

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00:13:03,000 --> 00:13:07,000

Well that worked pretty much exactly as we hoped it would.

222

00:13:07,000 --> 00:13:09,000

And here's what's going on there.

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00:13:09,000 --> 00:13:14,000

The reason those manhole covers start to fly before the fire even gets to them is that the fire is an expanding gas.

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00:13:14,000 --> 00:13:17,000

And it is pushing air ahead of it, kind of like a piston.

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00:13:17,000 --> 00:13:24,000

That piston is causing an increase in pressure which is released by the manhole cover flying.

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00:13:24,000 --> 00:13:26,000

That's what we wanted to see.

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00:13:26,000 --> 00:13:27,000

Go.

228

00:13:27,000 --> 00:13:35,000

The closed sewer scenario may have achieved manhole flight, but there's one more parameter for the guys to test inside their small scale drain.

229

00:13:35,000 --> 00:13:39,000

I'm making a mess for science.

230

00:13:39,000 --> 00:13:41,000

Mom, this is the way it's supposed to look.

231

00:13:42,000 --> 00:13:49,000

That's right, they're adding to breathe because more junk might lead to a bigger kerfunk.

232

00:13:49,000 --> 00:13:57,000

Now you might be looking at this and thinking, how is your chamber full of springs and coiled wire anything remotely approaching a real world scenario?

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00:13:57,000 --> 00:14:00,000

How does that kind of blockage occur in a real sewer?

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00:14:00,000 --> 00:14:02,000

Well, actually it does.

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00:14:02,000 --> 00:14:09,000

Real sewers have all sorts of things like remnants of workmen working on them, schools of wire, ladders, equipment, things that washed into the sewer,

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00:14:09,000 --> 00:14:14,000

different sizes of pipes in the sewer that actually change and constrict the air flow.

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00:14:14,000 --> 00:14:17,000

This kind of thing can absolutely happen inside a sewer.

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00:14:17,000 --> 00:14:24,000

And with the springs providing 20% blockage, will they put a spring in the step of the manholes?

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00:14:24,000 --> 00:14:25,000

All right, here we go.

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00:14:25,000 --> 00:14:31,000

Drain disaster, small scale, 20% obstruction, single ignition source, and three, two, one, go.

241

00:14:32,000 --> 00:14:33,000

Oh!

242

00:14:36,000 --> 00:14:42,000

The scattering of springs accelerated the burn for the most dramatic drain explosion so far.

243

00:14:42,000 --> 00:14:46,000

Wow, look at that, how fast it moves!

244

00:14:48,000 --> 00:14:50,000

I've never seen anything like that.

245

00:14:50,000 --> 00:14:52,000

That is like a fireworks show.

246

00:14:52,000 --> 00:14:54,000

That was amazing.

247

00:14:56,000 --> 00:14:58,000

So what's happening here?

248

00:14:58,000 --> 00:15:05,000

Well, if you look at the unblocked burn, you'll see that the flame front is taking up maybe in this case about a quarter of a square foot.

249

00:15:05,000 --> 00:15:08,000

It's moving out spherically from the ignition source.

250

00:15:08,000 --> 00:15:16,000

But looking at the blocked burn, you'll see that the flame starts to wrinkle the minute it meets these obstructions that we put in the chamber.

251

00:15:16,000 --> 00:15:20,000

That wrinkling creates a much larger surface area.

252

00:15:20,000 --> 00:15:22,000

It may be several square feet for all we know.

253

00:15:22,000 --> 00:15:31,000

But the end result is that the flame front is able to accelerate much muck more quickly throughout the burn and it leaves the other one behind in the same time.

254

00:15:31,000 --> 00:15:32,000

Go!

255

00:15:32,000 --> 00:15:38,000

And that speedy flame front creates the pressure that propels the manhole cover sky high.

256

00:15:38,000 --> 00:15:42,000

Up over 36 inches, number three, number two, and number one.

257

00:15:42,000 --> 00:15:44,000

And they're off the scale.

258

00:15:44,000 --> 00:15:46,000

Freaking awesome.

259

00:15:46,000 --> 00:15:49,000

Well, that's what we need to do in the full size.

260

00:15:49,000 --> 00:15:51,000

I think we have our testing parameters.

261

00:15:53,000 --> 00:16:02,000

Carri, Tori, and Grant are on a collision course, finding out if truck bedliner can make your car crash-proof.

262

00:16:02,000 --> 00:16:05,000

And so far, it's looking good.

263

00:16:05,000 --> 00:16:11,000

Look, we have cracking here and here, but none on the bedliner side.

264

00:16:11,000 --> 00:16:13,000

That is totally amazing.

265

00:16:13,000 --> 00:16:18,000

All right, we've already established that bedliner works pretty well for low-speed crashes.

266

00:16:18,000 --> 00:16:22,000

Now it's time to put it through the ultimate test, a high-speed crash.

267

00:16:22,000 --> 00:16:24,000

And for that, Tori's going to ramp.

268

00:16:24,000 --> 00:16:26,000

All right, Tori, whenever you're ready!

269

00:16:26,000 --> 00:16:35,000

Tori's going to ramp both sides of the car at 25 miles per hour, or with an impact force of 50,000 joules.

270

00:16:39,000 --> 00:16:40,000

Nice!

271

00:16:41,000 --> 00:16:46,000

Remember, this is for science, and Tori is not enjoying himself at all.

272

00:16:49,000 --> 00:16:53,000

Oh my God, that was so much fun!

273

00:16:53,000 --> 00:16:56,000

What's red and white and dent it all over?

274

00:16:56,000 --> 00:16:57,000

Nice!

275

00:16:58,000 --> 00:17:04,000

After both impacts, the difference between the control and coated side is negligible.

276

00:17:04,000 --> 00:17:06,000

Check it out.

277

00:17:06,000 --> 00:17:08,000

That's some pretty good damage there.

278

00:17:08,000 --> 00:17:10,000

Hey, it's a little better on this side.

279

00:17:10,000 --> 00:17:12,000

Yeah, but I mean, barely.

280

00:17:12,000 --> 00:17:16,000

You know what? This is still busted because it's definitely not crash-proof.

281

00:17:16,000 --> 00:17:19,000

All right, yeah, it helped a little bit, but didn't do it.

282

00:17:19,000 --> 00:17:20,000

Good work, man.

283

00:17:21,000 --> 00:17:26,000

Now, the fansite claims that bedliner is indestructible. You coat your car in it.

284

00:17:26,000 --> 00:17:29,000

It's not only dent-resistant, but it's crash-proof.

285

00:17:29,000 --> 00:17:32,000

I think we proved them wrong on that.

286

00:17:32,000 --> 00:17:36,000

Anything small, abrasions, little tiny dings, definitely helped.

287

00:17:36,000 --> 00:17:39,000

But you get anything more severe, it's busted.

288

00:17:39,000 --> 00:17:41,000

Crash-proof is busted.

289

00:17:41,000 --> 00:17:47,000

But how about claim number two? Can you make a DIY dog-proof suit with bedliner?

290

00:17:47,000 --> 00:17:55,000

So to see if bedliner can actually make a fabric bite-proof, we're going to build a dog-biting robot.

291

00:17:55,000 --> 00:18:00,000

We'll find out what fabric works the best, and once we've figured all that out, then we'll bring in the real dog.

292

00:18:01,000 --> 00:18:04,000

Ultimately, Tori will face the jaws of fate.

293

00:18:04,000 --> 00:18:14,000

But to make sure they're not barking up the wrong tree, first, RoboChop will test if there's any truth to the bedliner being dog-tooth-proof.

294

00:18:16,000 --> 00:18:18,000

Now, this is an actual German Shepherd skull.

295

00:18:18,000 --> 00:18:23,000

We've done a little bit of research, found out that the German Shepherd bites down about 400 pounds of force.

296

00:18:23,000 --> 00:18:28,000

So we're going to take a pneumatic cylinder, put it right in this bit here,

297

00:18:28,000 --> 00:18:35,000

and that way we can precisely control the speed and the bite force until it exactly matches a real dog.

298

00:18:36,000 --> 00:18:39,000

Here we go. In three, two, one.

299

00:18:44,000 --> 00:18:46,000

I call that successful.

300

00:18:47,000 --> 00:18:50,000

And for its next meal, Carrie has found these.

301

00:18:50,000 --> 00:18:56,000

We're going to spray bedliner on each one of these different fabrics and see which one's going to be the best for a dog-proof suit.

302

00:18:56,000 --> 00:18:59,000

We have leather, denim, canvas, and a quilted jacket.

303

00:18:59,000 --> 00:19:06,000

Those are the contenders, and the winner will be coated in bedliner and hopefully make an attack dog pause.

304

00:19:07,000 --> 00:19:12,000

Now I'm going to apply a 1-8 inch layer of bedliner, exactly what you have in a truck.

305

00:19:14,000 --> 00:19:15,000

It's like a carnival game!

306

00:19:16,000 --> 00:19:26,000

With one arm sprayed and set, and RoboChomp calibrated to a tech scan rating of 400 pounds, which fabric can strong arm its bite?

307

00:19:26,000 --> 00:19:27,000

Alright, sick of boy.

308

00:19:27,000 --> 00:19:29,000

Okay, control test dog bite, denim.

309

00:19:29,000 --> 00:19:31,000

Here we go. Three, two, one.

310

00:19:33,000 --> 00:19:35,000

Alright, you got a nice bite.

311

00:19:35,000 --> 00:19:36,000

That's a bleeder.

312

00:19:37,000 --> 00:19:38,000

What?

313

00:19:39,000 --> 00:19:47,000

Unsurprisingly, 400 pounds of bite force is more than a match for the leather, denim, canvas, and quilted jacket.

314

00:19:47,000 --> 00:19:48,000

That.

315

00:19:48,000 --> 00:19:51,000

But how will the bedliner fashion compare?

316

00:19:51,000 --> 00:19:53,000

Okay, first up, denim.

317

00:19:53,000 --> 00:19:55,000

Three, two, one.

318

00:19:56,000 --> 00:19:58,000

Wow, that is strong.

319

00:19:58,000 --> 00:19:59,000

Release.

320

00:20:00,000 --> 00:20:01,000

Wow, kind of treed.

321

00:20:01,000 --> 00:20:03,000

I don't think it can get penetrated.

322

00:20:03,000 --> 00:20:05,000

Well, it starts out strong.

323

00:20:05,000 --> 00:20:08,000

Well, it doesn't look like there is any penetration.

324

00:20:08,000 --> 00:20:09,000

Cool. This stuff's tough.

325

00:20:09,000 --> 00:20:10,000

Leather jacket.

326

00:20:11,000 --> 00:20:13,000

And continues to hold out.

327

00:20:13,000 --> 00:20:14,000

It's not punching through?

328

00:20:14,000 --> 00:20:15,000

No, not at all.

329

00:20:15,000 --> 00:20:18,000

Okay, this is canvas arm with bedliner.

330

00:20:19,000 --> 00:20:21,000

Oh my god, this is ridiculous.

331

00:20:21,000 --> 00:20:22,000

It looks like it's working.

332

00:20:22,000 --> 00:20:23,000

Bedliner quilted jacket.

333

00:20:23,000 --> 00:20:29,000

In fact, on every jacket, the bedliner protects against 400 pounds of RoboChomp.

334

00:20:29,000 --> 00:20:31,000

Look at that, it protected the arm as well.

335

00:20:31,000 --> 00:20:32,000

Not a scratch.

336

00:20:32,000 --> 00:20:34,000

Wow, that's amazing.

337

00:20:34,000 --> 00:20:40,000

It looks like the fans could be right about bedliner being a cheaper alternative to a dog-proof suit.

338

00:20:40,000 --> 00:20:42,000

This coat is a little bit more padded.

339

00:20:42,000 --> 00:20:46,000

I feel a lot safer wearing this if I'm going to let the dog attack me.

340

00:20:46,000 --> 00:20:50,000

So what I'm going to do now is let them coat the rest of the coat, and then we're going to let the dog out.

341

00:20:59,000 --> 00:21:03,000

These high-speed shots are some of the most beautiful things we've ever gotten in small scale.

342

00:21:03,000 --> 00:21:05,000

Where do we stand in going full-scale?

343

00:21:05,000 --> 00:21:08,000

Well, the best-case scenario is a closed system with lots of blockages.

344

00:21:08,000 --> 00:21:14,000

Also, surprisingly, it turns out that nobody, but nobody, wants to let us use a real sewer to blow up.

345

00:21:14,000 --> 00:21:15,000

Shocking.

346

00:21:15,000 --> 00:21:17,000

Yeah, I think we're going to have to make our own.

347

00:21:17,000 --> 00:21:22,000

I'm thinking dig a nice big trench, put down some real sewer parts with real manhole covers, and have a go at it.

348

00:21:22,000 --> 00:21:23,000

Works for me.

349

00:21:24,000 --> 00:21:26,000

Three, two, one, go.

350

00:21:27,000 --> 00:21:34,000

So to upscale their best-case scenario sewer, the guys will need to get down and dirty in ION and build their own.

351

00:21:34,000 --> 00:21:36,000

Nice wide-open space.

352

00:21:36,000 --> 00:21:38,000

Perfect to blow up a sewer in.

353

00:21:39,000 --> 00:21:43,000

Now, of course, the first prerequisite of building your own sewer is a hole.

354

00:21:43,000 --> 00:21:46,000

In order to get started, we're going to need to find a hole.

355

00:21:46,000 --> 00:21:47,000

Here's one.

356

00:21:47,000 --> 00:21:48,000

Perfect.

357

00:21:49,000 --> 00:21:55,000

It's a conveniently large hole for some inconveniently large construction.

358

00:21:55,000 --> 00:22:01,000

Our sewer is going to be 40 feet long, and it's going to be made of sections of something known as box culverts.

359

00:22:01,000 --> 00:22:07,000

They're precast concrete pieces that will be four feet high and six feet wide.

360

00:22:07,000 --> 00:22:11,000

The first thing we have to do is put those in here and join them together.

361

00:22:11,000 --> 00:22:15,000

Yep, and if you thought the small-scale rig was heavy-duty,

362

00:22:15,000 --> 00:22:20,000

that piece of culvert behind me weighs 32,000 pounds, 16 tons.

363

00:22:20,000 --> 00:22:25,000

Altogether, this is the largest construction project we've ever undertaken for an experiment.

364

00:22:26,000 --> 00:22:32,000

It is, and luckily the team of heavy lifters are on hand to choreograph the culverts into place.

365

00:22:33,000 --> 00:22:36,000

I want to send it to music. You guys are like ballet.

366

00:22:37,000 --> 00:22:39,000

These things aren't just decorations.

367

00:22:39,000 --> 00:22:46,000

We saw in our small-scale experiment that obstructions like this dramatically speed up the burn.

368

00:22:46,000 --> 00:22:51,000

And so these may make the difference between man-hold covers that jump up a little bit or a lot.

369

00:22:51,000 --> 00:22:57,000

They're standing in for real-life blockages like sewer servicing equipment and garbage,

370

00:22:57,000 --> 00:23:02,000

and based on the small-scale, they should accelerate the speed of the burn.

371

00:23:02,000 --> 00:23:07,000

You may be wondering why we're going whole hog on this thing, rather than working incrementally up to it.

372

00:23:07,000 --> 00:23:09,000

Why start with the best-case scenario?

373

00:23:09,000 --> 00:23:10,000

Well, for two reasons.

374

00:23:10,000 --> 00:23:15,000

We are spending a tremendous amount of time and energy building a full-size, full-scale sewer,

375

00:23:15,000 --> 00:23:20,000

and we don't know that maybe a mid-scale explosion would render it useless for further tests.

376

00:23:20,000 --> 00:23:24,000

Given the number of unknowns, I think it's safe to say that we only have one shot at this.

377

00:23:24,000 --> 00:23:29,000

The other reason we're going full-scale is because when you scale things up from small-scale to large-scale,

378

00:23:29,000 --> 00:23:36,000

things get very, very complicated very quickly, and given all of that, we want to see what happens to these man-hold covers.

379

00:23:36,000 --> 00:23:38,000

That's why we're going with the best-case scenario.

380

00:23:39,000 --> 00:23:41,000

Ha ha ha ha! Looking more like a real sewer every minute.

381

00:23:42,000 --> 00:23:45,000

Have you guys cleaned up? It's a sewer down here.

382

00:23:45,000 --> 00:23:49,000

It's the best-case scenario, but it's not an unrealistic one.

383

00:23:49,000 --> 00:23:51,000

That looks pretty good.

384

00:23:51,000 --> 00:23:54,000

Sewers are naturally confined spaces.

385

00:23:54,000 --> 00:23:59,000

Add to that what we know about the instances of standing water or pipe configuration,

386

00:23:59,000 --> 00:24:05,000

and this closed system with blockages is the most likely scenario for a blast.

387

00:24:05,000 --> 00:24:07,000

With the sewer structure complete...

388

00:24:07,000 --> 00:24:12,000

Ha ha ha ha ha ha ha ha!

389

00:24:12,000 --> 00:24:14,000

It's almost done.

390

00:24:14,000 --> 00:24:16,000

It's time to make the earth move.

391

00:24:18,000 --> 00:24:24,000

We're gonna bury our sewer under three feet of dirt, because, well, the dirt is actually an important structural part of the sewer.

392

00:24:24,000 --> 00:24:29,000

A sewer that's buried underground will be a lot less likely to blow apart than one that's on the surface.

393

00:24:29,000 --> 00:24:33,000

Indeed, because the only things that are supposed to blow are these.

394

00:24:33,000 --> 00:24:36,000

And now, what this whole thing's all about...

395

00:24:36,000 --> 00:24:38,000

The manhole cover!

396

00:24:38,000 --> 00:24:42,000

This is your basic cast-iron manhole cover.

397

00:24:42,000 --> 00:24:46,000

24 inches in diameter, an inch-and-a-quarter thick, and 103 pounds.

398

00:24:46,000 --> 00:24:50,000

If this indeed is going to become our projectile, we want to make sure we see it,

399

00:24:50,000 --> 00:24:52,000

so we're going to make it a little more camera-friendly.

400

00:24:52,000 --> 00:24:56,000

The distinctive manhole covers are manhandled into place.

401

00:24:56,000 --> 00:24:59,000

You know why manhole covers are round, don't you?

402

00:24:59,000 --> 00:25:04,000

It's the only shape that won't fall through its own hole.

403

00:25:04,000 --> 00:25:09,000

And now, to prep the elements that will make their sewer explosive.

404

00:25:09,000 --> 00:25:15,000

Believe it or not, the methane in this tank is enough to create a blast equivalent to 120 pounds of high explosives.

405

00:25:15,000 --> 00:25:18,000

Now, we're not going to put all of this in our sewer.

406

00:25:18,000 --> 00:25:22,000

We're only going to put a third of it, or 100 cubic feet, in there.

407

00:25:22,000 --> 00:25:24,000

Bye!

408

00:25:25,000 --> 00:25:29,000

But just to be safe, we're going to bury this in a pit nearby,

409

00:25:29,000 --> 00:25:32,000

and we're going to operate it remotely with a solenoid.

410

00:25:32,000 --> 00:25:35,000

Okay, it's done. We're wired.

411

00:25:35,000 --> 00:25:42,000

100 cubic feet of methane will fill their sewer to the perfect stoichiometric ratio for a big boom.

412

00:25:42,000 --> 00:25:47,000

We've optimized the design of our full-scale experiment based on everything we learned in small scale.

413

00:25:47,000 --> 00:25:51,000

We are going for the fastest burn for deflagration possible.

414

00:25:51,000 --> 00:25:55,000

Now, there is a small chance that we could achieve a detonation.

415

00:25:55,000 --> 00:25:57,000

Let's lay some cable.

416

00:25:57,000 --> 00:26:00,000

That means in order to be safe, we have to remove all of our systems.

417

00:26:00,000 --> 00:26:05,000

The gas release, the gas monitoring, and the ignition almost a quarter of a mile away.

418

00:26:05,000 --> 00:26:13,000

With that, their spectacular sewer is ready for what could be the most explosive debut ever on Mythbusters.

419

00:26:13,000 --> 00:26:15,000

They look beautiful!

420

00:26:15,000 --> 00:26:19,000

This sewer is a replica of an actual real-world sewer.

421

00:26:19,000 --> 00:26:28,000

Except that we've optimized it to give it the best possible chance of actually detonating a gas instead of deflagrating it or burning it.

422

00:26:28,000 --> 00:26:33,000

Now, if it just burns, it'll be fairly impressive, and the manhole covers will probably go fairly high.

423

00:26:33,000 --> 00:26:38,000

But if it detonates, they're really going to go high, and here's the thing.

424

00:26:38,000 --> 00:26:45,000

If it detonates, this will be the first incident that has ever been recorded and documented of a gas detonation

425

00:26:45,000 --> 00:26:49,000

occurring from a natural source, like a flame or a spark.

426

00:26:49,000 --> 00:26:51,000

That'll be something.

427

00:26:51,000 --> 00:26:58,000

Coming up next on Mythbusters, can bedliner make a coat bite proof?

428

00:26:58,000 --> 00:27:01,000

Do not try what you're about to see at home.

429

00:27:01,000 --> 00:27:04,000

We're what you call experts.

430

00:27:05,000 --> 00:27:11,000

Dog's man's best friend, loyal, cute, and cuddly.

431

00:27:11,000 --> 00:27:14,000

Well, most of the time.

432

00:27:14,000 --> 00:27:16,000

Alright, sick of them, boy.

433

00:27:16,000 --> 00:27:23,000

Their bite may be worse than their bark, but can truck bedliner protect you from the jaws of an angry dog?

434

00:27:23,000 --> 00:27:26,000

Looks like it's working. Wow.

435

00:27:26,000 --> 00:27:33,000

We're testing bedliner myths, specifically that if you coat a jacket in bedliner, you can make it dog bite proof.

436

00:27:33,000 --> 00:27:38,000

Now, so far, we've created a dog bite rig that can bite down with 400 pounds of force.

437

00:27:38,000 --> 00:27:42,000

Next step is a real arm and a real dog.

438

00:27:42,000 --> 00:27:44,000

Dog's no problem.

439

00:27:44,000 --> 00:27:46,000

Tori's going to provide the arm.

440

00:27:46,000 --> 00:27:50,000

And German shepherd Cliff is going to provide the bite.

441

00:27:50,000 --> 00:27:53,000

But before Tori gets into his bedliner...

442

00:27:53,000 --> 00:27:55,000

Okay, Dan, what do you think is the best way to go about this?

443

00:27:55,000 --> 00:27:59,000

We'll start off with putting Tori in the full bite suit and letting Cliff bite Tori.

444

00:27:59,000 --> 00:28:01,000

Just so he can get the taste of Tori.

445

00:28:01,000 --> 00:28:03,000

And so Tori gets the feel of Cliff.

446

00:28:03,000 --> 00:28:05,000

Does Cliff like Italian?

447

00:28:05,000 --> 00:28:07,000

He's never had any.

448

00:28:07,000 --> 00:28:13,000

That's about to change because for a starter, Tori must own the familiar dog bite suit.

449

00:28:13,000 --> 00:28:16,000

Oh, gee!

450

00:28:16,000 --> 00:28:19,000

And despite the fact he's been here before...

451

00:28:19,000 --> 00:28:22,000

I'm not nervous. I'm scared.

452

00:28:22,000 --> 00:28:26,000

Nobody likes staring down a highly trained attack dog.

453

00:28:26,000 --> 00:28:28,000

Look, Tori, he's salivating.

454

00:28:28,000 --> 00:28:30,000

This isn't going to be good.

455

00:28:30,000 --> 00:28:32,000

Hey, you stop it, there's some dogs! Stop it, there's some dogs!

456

00:28:32,000 --> 00:28:34,000

Fuck!

457

00:28:34,000 --> 00:28:38,000

Good boy! Ah, good dog! Good boy!

458

00:28:38,000 --> 00:28:44,000

As expected, that heavy-duty nylon of the bite suit protects Tori from Cliff's bite.

459

00:28:44,000 --> 00:28:47,000

But Cliff doesn't seem to know that.

460

00:28:47,000 --> 00:28:49,000

Plots!

461

00:28:49,000 --> 00:28:52,000

House! Plots.

462

00:28:52,000 --> 00:28:55,000

You didn't let go that fast.

463

00:28:55,000 --> 00:28:57,000

Apparently he likes the Italian.

464

00:28:57,000 --> 00:28:59,000

Holy crap!

465

00:28:59,000 --> 00:29:01,000

I'm nervous.

466

00:29:01,000 --> 00:29:03,000

I think it's going to hurt.

467

00:29:03,000 --> 00:29:06,000

Do you see how long it took him to get it off me?

468

00:29:06,000 --> 00:29:08,000

Does anybody else feel bad about this?

469

00:29:08,000 --> 00:29:10,000

Or is it just me?

470

00:29:10,000 --> 00:29:14,000

Although the bench test may have proven the bed liner successful...

471

00:29:14,000 --> 00:29:16,000

Doesn't look like there was any penetration.

472

00:29:16,000 --> 00:29:20,000

RoboChomp is a far cry from an angry attack dog.

473

00:29:20,000 --> 00:29:22,000

Good dog! Good boy!

474

00:29:22,000 --> 00:29:24,000

Look at him, he's like a piss.

475

00:29:24,000 --> 00:29:26,000

He's like, you want to go again?

476

00:29:26,000 --> 00:29:28,000

Not really. I don't.

477

00:29:28,000 --> 00:29:30,000

I'm not going to lie.

478

00:29:30,000 --> 00:29:33,000

All right, it's the moment of truth.

479

00:29:33,000 --> 00:29:38,000

With the control complete, it's time for Tori to make his bed liner debut.

480

00:29:38,000 --> 00:29:40,000

Wow, that is the height of fashion, my man.

481

00:29:40,000 --> 00:29:42,000

Well, thank you, friend.

482

00:29:42,000 --> 00:29:44,000

Um, does it close up?

483

00:29:44,000 --> 00:29:47,000

Um, well, the problem is...

484

00:29:47,000 --> 00:29:49,000

Ha ha ha!

485

00:29:49,000 --> 00:29:52,000

I think I put on a little weight with these pants.

486

00:29:52,000 --> 00:29:55,000

Bring out the dog. Let's get this over with.

487

00:29:55,000 --> 00:29:56,000

Grab me on.

488

00:29:56,000 --> 00:30:00,000

With Tori squeezed into the jacket, it's the moment of truth.

489

00:30:00,000 --> 00:30:03,000

This seems like the opposite of a good idea.

490

00:30:03,000 --> 00:30:05,000

And I hope this suit works.

491

00:30:05,000 --> 00:30:08,000

Get that bed liner. Get the bed liner.

492

00:30:08,000 --> 00:30:11,000

Okay, this is bed liner jacket.

493

00:30:11,000 --> 00:30:14,000

Is it dog bite proof or not?

494

00:30:14,000 --> 00:30:16,000

Boss!

495

00:30:16,000 --> 00:30:19,000

The boy, boss! Yeah, boss, boss, boss, boss!

496

00:30:19,000 --> 00:30:21,000

Oh, boy!

497

00:30:21,000 --> 00:30:23,000

It stopped it. That was incredible.

498

00:30:23,000 --> 00:30:26,000

Else, lads!

499

00:30:26,000 --> 00:30:32,000

Amazingly, it's just seconds before Cliff realizes that he won't get his man.

500

00:30:32,000 --> 00:30:35,000

The bed liner is too tough.

501

00:30:35,000 --> 00:30:37,000

That was incredible.

502

00:30:37,000 --> 00:30:40,000

It stopped the dog from biting through the jacket.

503

00:30:40,000 --> 00:30:44,000

Oh, my God, I never want to get bit by one of those for real.

504

00:30:44,000 --> 00:30:46,000

Boss!

505

00:30:46,000 --> 00:30:48,000

We've had dogs attack us wearing these suits,

506

00:30:48,000 --> 00:30:50,000

but these are rated for dog attacks.

507

00:30:50,000 --> 00:30:53,000

They're designed so that you don't get hurt.

508

00:30:53,000 --> 00:30:55,000

However, this has never been rated.

509

00:30:55,000 --> 00:31:00,000

So I had no idea whether or not the dog's teeth were going to tear through this or not.

510

00:31:00,000 --> 00:31:05,000

It worked! It stopped the dog attack.

511

00:31:05,000 --> 00:31:07,000

We have a dog bite proof.

512

00:31:07,000 --> 00:31:09,000

I call this one confirmed.

513

00:31:09,000 --> 00:31:11,000

What's worse, bark of the bite.

514

00:31:11,000 --> 00:31:13,000

The bite.

515

00:31:37,000 --> 00:31:43,000

I'm going to be using this experiment from a thousand feet away in the safety of this steel bunker behind bullet resistant glass.

516

00:31:43,000 --> 00:31:50,000

When I click this switch, it'll open this valve and allow the methane to flow into our homemade sewer buried underground.

517

00:31:50,000 --> 00:31:57,000

When the stoichiometry or the mixture between gas and air has reached the ideal relationship for an explosion,

518

00:31:57,000 --> 00:32:01,000

I'll hit this switch creating a spark which will ignite the gas.

519

00:32:01,000 --> 00:32:05,000

Hopefully sending these three manhole covers flying sky high.

520

00:32:05,000 --> 00:32:07,000

That's the theory.

521

00:32:07,000 --> 00:32:13,000

Because if the 103 pound manholes don't fly sky high, the myth is busted.

522

00:32:13,000 --> 00:32:16,000

What we need to see for this myth to be true is pretty straightforward.

523

00:32:16,000 --> 00:32:23,000

We need to see some type of shock wave or explosion that does not destroy the sewer and yet launches the manhole covers.

524

00:32:23,000 --> 00:32:25,000

And I'm not talking like a boonk boonk.

525

00:32:25,000 --> 00:32:27,000

I'm not even talking like a boonk boonk.

526

00:32:27,000 --> 00:32:30,000

I'm talking launches them.

527

00:32:30,000 --> 00:32:37,000

Well with the fire department on standby, there's only one way to find out if those manholes will fly.

528

00:32:37,000 --> 00:32:39,000

You ready? I'm going to start the flow of gas.

529

00:32:39,000 --> 00:32:41,000

Let her rip.

530

00:32:41,000 --> 00:32:47,000

It will take a hundred cubic feet of methane to get their sewer to the optimum explosive ratio.

531

00:32:47,000 --> 00:32:49,000

Twenty one cubic feet.

532

00:32:49,000 --> 00:32:51,000

About two percent.

533

00:32:51,000 --> 00:32:53,000

One fifth of the way there.

534

00:32:53,000 --> 00:32:56,000

It's that familiar myth busters waiting game.

535

00:32:56,000 --> 00:32:59,000

That sewer is getting pretty full of methane.

536

00:32:59,000 --> 00:33:05,000

Small scale proved that the perfect stoichiometric ratio sent manholes flying.

537

00:33:05,000 --> 00:33:11,000

However, will the full scale equivalent, 100 cubic feet of methane, prove just as effective?

538

00:33:11,000 --> 00:33:12,000

Shall we do it?

539

00:33:12,000 --> 00:33:13,000

I think it's time.

540

00:33:13,000 --> 00:33:15,000

Alright, call it.

541

00:33:15,000 --> 00:33:25,000

Alright, real world sewer explosion, best case scenario, sparking in three, two, one.

542

00:33:29,000 --> 00:33:34,000

Wow, look at that.

543

00:33:34,000 --> 00:33:36,000

That had to be a hundred feet.

544

00:33:36,000 --> 00:33:40,000

That was insane.

545

00:33:40,000 --> 00:33:44,000

That exceeded my wildest expectations.

546

00:33:44,000 --> 00:33:47,000

That was, that was significant.

547

00:33:47,000 --> 00:33:49,000

Significant is right.

548

00:33:49,000 --> 00:33:58,000

The manholes turn missile, rocketing a hundred and fifty feet and only returning to earth after a hang time of six seconds.

549

00:33:58,000 --> 00:33:59,000

Take a look.

550

00:33:59,000 --> 00:34:00,000

Alright.

551

00:34:00,000 --> 00:34:05,000

And closer inspection of their sewer as the guys astonished at the force of the explosion.

552

00:34:05,000 --> 00:34:11,000

Well, there's two, there's three and number one seems to have traveled the farthest.

553

00:34:11,000 --> 00:34:14,000

That is one hell of a blast.

554

00:34:14,000 --> 00:34:18,000

I think the whole riff of the sewer came up.

555

00:34:18,000 --> 00:34:21,000

Well, as I'm walking on it, I can feel it feels soft.

556

00:34:21,000 --> 00:34:22,000

Do you feel that?

557

00:34:22,000 --> 00:34:23,000

That's what I'm saying.

558

00:34:23,000 --> 00:34:26,000

All this dirt kind of came up in the air or a foot or something.

559

00:34:26,000 --> 00:34:27,000

We should check our high speed.

560

00:34:27,000 --> 00:34:29,000

That was awesome.

561

00:34:29,000 --> 00:34:30,000

Yep.

562

00:34:30,000 --> 00:34:37,000

And from the safety of solid ground, the high speed shows that the deflagration of the sewer sent

earth and manholes flying.

563

00:34:37,000 --> 00:34:38,000

There they go.

564

00:34:38,000 --> 00:34:42,000

Wow, it's perfect.

565

00:34:42,000 --> 00:34:44,000

They look like flying saucers taken off.

566

00:34:44,000 --> 00:34:47,000

Look at number two showing it to the camera.

567

00:34:47,000 --> 00:34:51,000

That is insane.

568

00:34:51,000 --> 00:34:54,000

That might be one of my favorite high speed shots we've ever gotten.

569

00:34:54,000 --> 00:34:55,000

That's gorgeous.

570

00:34:55,000 --> 00:34:56,000

Gorgeous.

571

00:34:56,000 --> 00:34:59,000

And also very revealing.

572

00:34:59,000 --> 00:35:06,000

Now, seeing fire coming out of that manhole cover and not the others is telling us that this is not a detonation.

573

00:35:06,000 --> 00:35:09,000

If it was a detonation, it all would be simultaneous.

574

00:35:09,000 --> 00:35:12,000

We're not seeing that, so this is a burn.

575

00:35:12,000 --> 00:35:20,000

Yep, but a burn big and fast enough to bring the manhole mayhem to a close.

576

00:35:20,000 --> 00:35:23,000

Well, there's one thing everyone knows they can expect from a sewer explosion.

577

00:35:23,000 --> 00:35:26,000

It's that number two is going to fly into the air.

578

00:35:26,000 --> 00:35:27,000

And that's what happened.

579

00:35:27,000 --> 00:35:30,000

I'd say mission accomplished.

580

00:35:30,000 --> 00:35:32,000

You know what kind of makes you wonder?

581

00:35:32,000 --> 00:35:39,000

Could you get a jet of fire like that coming out of the toilet when you're sitting on it if

something like that happened?

582

00:35:39,000 --> 00:35:41,000

Man, that was awesome.

583

00:35:41,000 --> 00:35:43,000

We got a super fast burn.

584

00:35:43,000 --> 00:35:50,000

We got internal pressures in the sewer of over 100 pounds per square inch, and our manhole covers flew 150 feet in the air.

585

00:35:50,000 --> 00:35:52,000

Yeah, and that wasn't even a detonation.

586

00:35:52,000 --> 00:35:55,000

Imagine what would happen if the flame front and the shock wave got all lined up.

587

00:35:55,000 --> 00:35:58,000

Everything happens at once, and who knows how high they'd go.

588

00:35:58,000 --> 00:36:02,000

Still, we have plenty of information to fully call this myth.

589

00:36:02,000 --> 00:36:04,000

Yep, it's confirmed.

590

00:36:04,000 --> 00:36:05,000

Totally confirmed.

591

00:36:05,000 --> 00:36:09,000

Sometimes the truth is far more spectacular than fiction.

592

00:36:13,000 --> 00:36:16,000

Next, Carri-Torre and Grant have a blast.

593

00:36:16,000 --> 00:36:19,000

I like our C4 modeling.

594

00:36:19,000 --> 00:36:22,000

But can bedliner save Buster?

595

00:36:28,000 --> 00:36:31,000

Final experiment for bedliner bedlam.

596

00:36:31,000 --> 00:36:33,000

The bomb.

597

00:36:33,000 --> 00:36:36,000

If you coat your house in bedliner, you can make it blastproof.

598

00:36:36,000 --> 00:36:37,000

Alright, here's what I'm thinking.

599

00:36:37,000 --> 00:36:38,000

Four walls total.

600

00:36:38,000 --> 00:36:43,000

Two Cinder Block walls, one coated one not, and two standard wood frame walls, one coated one not.

601

00:36:43,000 --> 00:36:45,000

Then we detonate an explosive, see how the myth stands.

602

00:36:45,000 --> 00:36:48,000

Alright, and then we'll see how strong this stuff really is.

603

00:36:49,000 --> 00:36:53,000

And quick as a flash, they've knocked up those four walls for a test.

604

00:36:53,000 --> 00:36:57,000

So we have two sets of walls, wood ones and Cinder Block ones.

605

00:36:57,000 --> 00:37:02,000

And we're going to see how well the bedliner does against an explosion.

606

00:37:02,000 --> 00:37:05,000

A lot of people ask me, do you ever get tired of blowing stuff up?

607

00:37:05,000 --> 00:37:07,000

I tell them no, I don't.

608

00:37:07,000 --> 00:37:10,000

It'll be a blast times four.

609

00:37:10,000 --> 00:37:13,000

But that's not good news for Buster.

610

00:37:13,000 --> 00:37:16,000

So we've placed Buster right in the middle of our wood frame house.

611

00:37:16,000 --> 00:37:18,000

He's got no instrumentation inside of him.

612

00:37:18,000 --> 00:37:19,000

This is just a visual test.

613

00:37:19,000 --> 00:37:22,000

We want to see if the walls fall in on him.

614

00:37:22,000 --> 00:37:26,000

Now on this side of the wall, I'm setting up the blast.

615

00:37:26,000 --> 00:37:29,000

C4 is exactly five feet away from the center of the wall.

616

00:37:29,000 --> 00:37:35,000

When this thing explodes, it's going to be putting out a blast load of 95 PSI.

617

00:37:35,000 --> 00:37:38,000

Let's see how the wood wall handles it.

618

00:37:38,000 --> 00:37:40,000

Okay, this is control test for bedliner.

619

00:37:40,000 --> 00:37:41,000

Here we go.

620

00:37:41,000 --> 00:37:44,000

Three, two, one.

621

00:37:48,000 --> 00:37:51,000

Oh, hold on that wall.

622

00:37:51,000 --> 00:37:54,000

Oh yeah, like I can see Buster.

623

00:37:54,000 --> 00:37:59,000

He's all black and Cajun Buster.

624

00:37:59,000 --> 00:38:06,000

Unsurprisingly, the code-compliant wooden wall between Buster and the C4 failed.

625

00:38:06,000 --> 00:38:08,000

Looks like we just put a new door in.

626

00:38:08,000 --> 00:38:10,000

I like our C4 modeling.

627

00:38:10,000 --> 00:38:14,000

Now if this bedliner has any hope of working at all,

628

00:38:14,000 --> 00:38:20,000

what it's got to do is contain most, if not all of us, and keep it from hitting Buster.

629

00:38:20,000 --> 00:38:21,000

My prediction?

630

00:38:21,000 --> 00:38:22,000

I don't think so.

631

00:38:22,000 --> 00:38:25,000

Well, to find out its relocation relocation.

632

00:38:25,000 --> 00:38:29,000

As Buster is moved to an identical wooden home.

633

00:38:29,000 --> 00:38:30,000

Good luck Buster.

634

00:38:30,000 --> 00:38:31,000

You're going to need it.

635

00:38:31,000 --> 00:38:34,000

All except the coating of bedliner.

636

00:38:34,000 --> 00:38:36,000

Now for the bedliner house.

637

00:38:36,000 --> 00:38:41,000

Same amount of C4, same distance.

638

00:38:41,000 --> 00:38:44,000

All right, this is Woodwall with bedliner versus C4.

639

00:38:44,000 --> 00:38:45,000

Do it.

640

00:38:45,000 --> 00:38:48,000

In three, two, one.

641

00:38:50,000 --> 00:38:53,000

And smoke clears and still standing.

642

00:38:53,000 --> 00:38:56,000

Wow, the wall is still together.

643

00:38:56,000 --> 00:38:58,000

All right, but we got to check the inside.

644

00:38:58,000 --> 00:38:59,000

Let's go look, let's go look.

645

00:38:59,000 --> 00:39:01,000

It worked baby.

646

00:39:05,000 --> 00:39:08,000

It stopped the shockwave from breaking through the wall.

647

00:39:08,000 --> 00:39:09,000

That's incredible.

648

00:39:09,000 --> 00:39:11,000

This is in remarkably good shape.

649

00:39:11,000 --> 00:39:13,000

All right, well it's blastproof from the outside.

650

00:39:13,000 --> 00:39:14,000

Let's check the inside.

651

00:39:20,000 --> 00:39:23,000

I would have to say this is totally blastproof.

652

00:39:24,000 --> 00:39:28,000

Amazingly the coated wooden walls are indeed bombproof.

653

00:39:28,000 --> 00:39:33,000

But can bedliner hold the C4 wolf away for the cinder blocks?

654

00:39:33,000 --> 00:39:35,000

Now we are moving on to the cinder block wall,

655

00:39:35,000 --> 00:39:37,000

but we are going to double the amount of C4.

656

00:39:37,000 --> 00:39:40,000

The reason is because the amount that we use on the woodwalls

657

00:39:40,000 --> 00:39:43,000

would not do any damage to the cinder block wall.

658

00:39:43,000 --> 00:39:47,000

All in all, it's just another brick in the wall.

659

00:39:47,000 --> 00:39:51,000

And in doing so, we are also increasing the amount of blast load

660

00:39:51,000 --> 00:39:54,000

from 95 PSI to 1400 PSI.

661

00:39:54,000 --> 00:39:57,000

We're going to set off C4 in front of both walls

662

00:39:57,000 --> 00:39:59,000

and see what happens.

663

00:39:59,000 --> 00:40:02,000

So first to find out what double the C4 does

664

00:40:02,000 --> 00:40:04,000

to their cinder block control.

665

00:40:04,000 --> 00:40:07,000

In three, two, one.

666

00:40:12,000 --> 00:40:13,000

Yeah!

667

00:40:13,000 --> 00:40:14,000

I see a hole.

668

00:40:20,000 --> 00:40:23,000

Wow, it blew the whole back out.

669

00:40:25,000 --> 00:40:27,000

It bowed just like the woodwall,

670

00:40:27,000 --> 00:40:29,000

but it pushed all the bricks out of the mortar.

671

00:40:29,000 --> 00:40:33,000

And I would have to say Buster probably didn't survive this blast.

672

00:40:33,000 --> 00:40:36,000

All right, well, let's see what the bedliner does.

673

00:40:36,000 --> 00:40:38,000

Okay, that was pretty impressive.

674

00:40:38,000 --> 00:40:44,000

For the ultimate test of bedliner, Buster has his back to the reinforced wall.

675

00:40:44,000 --> 00:40:48,000

But will it be enough to protect him from a C4 blast?

676

00:40:48,000 --> 00:40:51,000

This is bedliner on a cinder block wall.

677

00:40:51,000 --> 00:40:54,000

In three, two, one.

678

00:40:58,000 --> 00:41:00,000

I see smoke rising and...

679

00:41:00,000 --> 00:41:03,000

...it left a big black mark, but I don't think it did any damage to it.

680

00:41:03,000 --> 00:41:05,000

I don't see a hole.

681

00:41:06,000 --> 00:41:09,000

From the front, it's looking good for blast-proof bedliner.

682

00:41:09,000 --> 00:41:11,000

Guys, it's looking really good from this side.

683

00:41:11,000 --> 00:41:14,000

Yeah, there's hardly any damage. It's just dirt.

684

00:41:14,000 --> 00:41:16,000

Well, let's look at the other side.

685

00:41:16,000 --> 00:41:17,000

What?!

686

00:41:19,000 --> 00:41:20,000

It worked!

687

00:41:20,000 --> 00:41:22,000

Buster survived!

688

00:41:31,000 --> 00:41:33,000

So, bedliner is blast-proof.

689

00:41:33,000 --> 00:41:36,000

Totally blast-proof. This one's confirmed.

690

00:41:37,000 --> 00:41:41,000

So, as it turns out, bedliner has amazing blast-proofing qualities.

691

00:41:41,000 --> 00:41:43,000

We sprayed it on our wood wall here.

692

00:41:43,000 --> 00:41:45,000

It kept the wall together.

693

00:41:45,000 --> 00:41:47,000

It kept it from showering Buster with debris.

694

00:41:48,000 --> 00:41:52,000

Now, here with our cinder block wall, it totally devastated the back of the wall.

695

00:41:52,000 --> 00:41:55,000

Crumbled everything. Debris everywhere.

696

00:41:55,000 --> 00:41:59,000

And here on our treated cinder block wall, not a scratch on it.

697

00:42:00,000 --> 00:42:02,000

Bedliner as a blast-proofing agent?

698

00:42:02,000 --> 00:42:03,000

Confirmed.

699

00:42:03,000 --> 00:42:05,000

That's incredible, man!

700

00:42:05,000 --> 00:42:07,000

Wow, we've got a new application for bedliner, huh?

701

00:42:07,000 --> 00:42:08,000

That's awesome stuff.

702

00:42:08,000 --> 00:42:10,000

What else could we do with it?

703

00:42:10,000 --> 00:42:12,000

I don't know. Let's see if we can make stuff bulletproof.

704

00:42:12,000 --> 00:42:14,000

What about shark proof?

705

00:42:14,000 --> 00:42:15,000

What about bear proof?

706

00:42:30,000 --> 00:42:32,000

Buster's Aftershow