

1

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

Please, don't try anything that you're about to see us do at home. Ever!

2

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

Really go boom!

3

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

Come on, little buddy, don't burn out! Go, go, go, go!

4

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

And Carrie Grant and Tori dip into two more defibrillator mitts.

5

00:00:40,000 --> 00:00:43,000

Will a jump start for your heart burn your bra?

6

00:00:43,000 --> 00:00:44,000

Claire!

7

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

Or even cause your piercing to spark?

8

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

Ow!

9

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

Who are the mythbusters?

10

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

I'm so pumped!

11

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

Adam Savage

12

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

Time for science!

13

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

And Jamie Hoderman

14

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

Is that beautiful or what?

15

00:01:03,000 --> 00:01:06,000

Between them more than 30 years of special effects experience.

16

00:01:06,000 --> 00:01:08,000

It bleeds!

17

00:01:08,000 --> 00:01:09,000

Let's go!

18

00:01:09,000 --> 00:01:11,000

Joining them, Grant Imahara

19

00:01:11,000 --> 00:01:13,000

Don't give up on me now!

20

00:01:13,000 --> 00:01:14,000

Tori Bellegi

21

00:01:14,000 --> 00:01:16,000

So I love my little friend.

22

00:01:16,000 --> 00:01:17,000

And Carrie Byron

23

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

High explosives and electricity!

24

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

Woo!

25

00:01:20,000 --> 00:01:24,000

They don't just tell the myth, they put them to the test.

26

00:01:28,000 --> 00:01:37,000

We've got another action hero, meth, huh?

27

00:01:37,000 --> 00:01:40,000

We do, and it's really only illustratable by telling a story.

28

00:01:40,000 --> 00:01:43,000

So, you are in a showdown with the bad guy in.

29

00:01:43,000 --> 00:01:45,000

You've got the beat on him, but just as you're about to shoot him,

30

00:01:45,000 --> 00:01:47,000

he jumps into his car and drives away, but...

31

00:01:47,000 --> 00:01:52,000

You're able to get off one shot into his gas tank, which starts leaking fuel.

32

00:01:52,000 --> 00:01:55,000

Oh, I love this one, cause I happen to have a lighter in my pocket.

33

00:01:55,000 --> 00:01:58,000

I light it, I drop it into the trail of fuel, and it races,

34

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

catches up with the car, car blows up, bad guy's dead, right?

35

00:02:01,000 --> 00:02:04,000

Exactly that, and we're going to do it.

36

00:02:04,000 --> 00:02:06,000

It's a cinematic cliché.

37

00:02:06,000 --> 00:02:09,000

Our hero has to stop the escaping bad guy.

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00:02:09,000 --> 00:02:13,000

Okay, so action heroes don't usually come with a beret and mustache.

39

00:02:13,000 --> 00:02:18,000

There's the single shot into the gas tank, the leaking trail of gasoline,

40

00:02:18,000 --> 00:02:21,000

the nonchalant flick of a light,

41

00:02:21,000 --> 00:02:27,000

and finally, the fleeing fugitive feels the full force of Hollywood-style justice.

42

00:02:27,000 --> 00:02:34,000

But is this another example of the language of film rewriting the laws of physics?

43

00:02:34,000 --> 00:02:36,000

So how are we going to do this one?

44

00:02:36,000 --> 00:02:38,000

Are you going to shoot my car while I drive away at high speeds?

45

00:02:38,000 --> 00:02:40,000

We'll save that for the finale.

46

00:02:40,000 --> 00:02:42,000

I think we need to start small and simple.

47

00:02:42,000 --> 00:02:46,000

Just test what the different fuel types do, you know, how quickly they burn.

48

00:02:46,000 --> 00:02:47,000

Break it down.

49

00:02:47,000 --> 00:02:49,000

That sounds great.

50

00:02:49,000 --> 00:02:53,000

As always, Jamie wants to take the pragmatic approach.

51

00:02:53,000 --> 00:02:57,000

But this look into the future confirms that the small and simple plan

52

00:02:57,000 --> 00:02:59,000

will quite literally go up in flames.

53

00:02:59,000 --> 00:03:01,000

Faster, faster, faster. Everybody out.

54

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

And when the story ends with full-scale mayhem,

55

00:03:05,000 --> 00:03:08,000

inevitably it began with bench tests in the bunker.

56

00:03:08,000 --> 00:03:13,000

The basic metric for all of this is figuring out how fast fuel burns from A to B.

57

00:03:13,000 --> 00:03:16,000

So we're basically under slightly safer conditions.

58

00:03:16,000 --> 00:03:18,000

We're going to spray some fuel on the ground, light it,

59

00:03:18,000 --> 00:03:21,000

time how fast it takes to get from A to B.

60

00:03:21,000 --> 00:03:24,000

Three fuels will make up the samples for this first test.

61

00:03:24,000 --> 00:03:28,000

And gasoline, diesel and jet fuel are the most likely culprits

62

00:03:28,000 --> 00:03:32,000

to be found causing a conflagration in an action movie.

63

00:03:32,000 --> 00:03:34,000

Gasoline is first up.

64

00:03:34,000 --> 00:03:38,000

At Adams Square, it's a seven-foot trail onto a smooth metal plate.

65

00:03:38,000 --> 00:03:39,000

Here we go.

66

00:03:42,000 --> 00:03:44,000

1.7 seconds to go seven feet.

67

00:03:44,000 --> 00:03:45,000

That's fast.

68

00:03:45,000 --> 00:03:49,000

And despite several tests adding more and more gasoline,

69

00:03:49,000 --> 00:03:53,000

that time of one and a half seconds seems to be constant.

70

00:03:53,000 --> 00:03:54,000

1.5 seconds.

71

00:03:56,000 --> 00:03:58,000

Yeah, one and a half seconds.

72

00:03:59,000 --> 00:04:02,000

It's the same whether we use a tiny amount of fuel or a whole lot.

73

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

Well, this seems to be a constant in the timing of gasoline.

74

00:04:05,000 --> 00:04:08,000

1.6 seconds. It's really, really steady.

75

00:04:08,000 --> 00:04:11,000

1.5, 1.6. We're within a tenth of a second.

76

00:04:11,000 --> 00:04:13,000

But we're getting a very constant speed

77

00:04:13,000 --> 00:04:17,000

and it doesn't seem to be related to the amount of gasoline we're putting down.

78

00:04:17,000 --> 00:04:20,000

So I think we can extrapolate this out to miles per hour

79

00:04:20,000 --> 00:04:22,000

and start working with it as a bonafide figure.

80

00:04:22,000 --> 00:04:25,000

All right, so we went seven feet and six.

81

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

That's 4.6 feet per second.

82

00:04:27,000 --> 00:04:31,000

And we'll go three point three point one seven miles per hour.

83

00:04:31,000 --> 00:04:34,000

That's actually like a reasonable walk speed.

84

00:04:34,000 --> 00:04:36,000

But what about the other fuels?

85

00:04:36,000 --> 00:04:38,000

Diesel's next.

86

00:04:38,000 --> 00:04:40,000

It's not lighting.

87

00:04:40,000 --> 00:04:45,000

But despite liberally applying the blowtorch, it doesn't want to go up in flames.

88

00:04:45,000 --> 00:04:47,000

That's hard stuff to light.

89

00:04:49,000 --> 00:04:51,000

It only lights when it gets mystified.

90

00:04:51,000 --> 00:04:53,000

Next up is jet fuel.

91

00:04:54,000 --> 00:04:56,000

Jet fuel in three, two, one.

92

00:04:56,000 --> 00:05:01,000

And just like the diesel, jet fuel does anything but rock it along the track.

93

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

Diesel burn. Diesel burn.

94

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

Very similar to diesel fuel.

95

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

But the police are coming, so let's wrap up and get out of here.

96

00:05:07,000 --> 00:05:12,000

Okay. The reason that diesel fuel and jet fuel don't burn on the ground is that they're not aerosolized.

97

00:05:12,000 --> 00:05:17,000

They need to be mixed in with the air in a vapor or a mist for them to burn effectively.

98

00:05:17,000 --> 00:05:20,000

Which leaves just one conclusion.

99

00:05:20,000 --> 00:05:24,000

I think it's pretty obvious that of all the things we tested, gasoline is by far the most volatile.

100

00:05:24,000 --> 00:05:28,000

If you're a bad guy, you want to light someone's gas tank on fire and blow up their car,

101

00:05:28,000 --> 00:05:32,000

you better hope they're driving a gasoline powered vehicle, not diesel or jet fuel.

102

00:05:32,000 --> 00:05:38,000

So gasoline's perfect trailblazing properties means it's the fuel of choice going forward.

103

00:05:38,000 --> 00:05:40,000

But where to next?

104

00:05:40,000 --> 00:05:46,000

Well, the mythical action scene in question involves a leaking gas tank as a result of a gunshot.

105

00:05:46,000 --> 00:05:54,000

So to find out how fast fuel falls from a bullet hole, Frank Tabor has answered the call with a veritable ballistic buffet.

106

00:05:54,000 --> 00:05:58,000

Can I fire this one? Can I? Can I? Can I? Do you mind? Do you mind? Is it alright?

107

00:05:58,000 --> 00:05:59,000

Sure, go ahead.

108

00:05:59,000 --> 00:06:00,000

Awesome!

109

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

With the gas tank in position at the end of their makeshift gun range, Adam and Jamie are aiming to find out

110

00:06:07,000 --> 00:06:11,000

the size of a .22 caliber bullet hole.

111

00:06:14,000 --> 00:06:16,000

As well as a .44.

112

00:06:16,000 --> 00:06:21,000

I'd round these off, say the .22's like a quarter inch and this is like a .58's.

113

00:06:21,000 --> 00:06:25,000

Absolutely. So shooting the hole was only the first part of this test.

114

00:06:25,000 --> 00:06:29,000

Now I want to know how fast fuel will leak out of the hole that Jamie shot.

115

00:06:29,000 --> 00:06:36,000

So I've got a one liter bottle here, I'm going to let the fuel fall into here, count how many seconds it takes to get to exactly one liter.

116

00:06:36,000 --> 00:06:39,000

Then I'll know how many liters per minute this hole will leak.

117

00:06:39,000 --> 00:06:42,000

So that's just over three liters a minute.

118

00:06:42,000 --> 00:06:50,000

So Adam and Jamie know exactly how quickly fuel flows from a gunshot gas tank and the speed at which a trail of gas burns.

119

00:06:50,000 --> 00:06:54,000

And with that information, it's full scale ahead.

120

00:06:54,000 --> 00:06:58,000

But shooting the gas tank of a car isn't exactly a safe option.

121

00:06:58,000 --> 00:07:01,000

So Adam builds a rig for the back of an old pickup.

122

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

I'm going to hang this gas tank off the back of this pickup truck with a steel shield between it and the pickup truck

123

00:07:06,000 --> 00:07:12,000

so that I can experiment with amounts of leaking fuel coming out of this, igniting them and potentially blowing up this gas tank

124

00:07:12,000 --> 00:07:15,000

without hurting the driver of this truck while driving.

125

00:07:15,000 --> 00:07:18,000

Adam and Jamie are all set.

126

00:07:18,000 --> 00:07:22,000

So it's off to the Alameda Naval Base to heat things up.

127

00:07:23,000 --> 00:07:25,000

Next on MythBusters.

128

00:07:25,000 --> 00:07:27,000

This is the badly one.

129

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

Woo!

130

00:07:28,000 --> 00:07:33,000

Carrie Grant and Tori find out if a shock from a defibrillator will burn your bra.

131

00:07:33,000 --> 00:07:34,000

Clear.

132

00:07:44,000 --> 00:07:45,000

Ready.

133

00:07:45,000 --> 00:07:46,000

Clear.

134

00:07:46,000 --> 00:07:48,000

Is that your defibrillator?

135

00:07:48,000 --> 00:07:49,000

Yeah.

136

00:07:49,000 --> 00:07:50,000

Hey, we've been here before.

137

00:07:50,000 --> 00:07:54,000

Yes, but the fans have a couple more shocking myths that they want cleared up.

138

00:07:54,000 --> 00:07:57,000

Get it shocking cleared?

139

00:07:57,000 --> 00:08:00,000

No, we got it. I'm pretty sure we got it.

140

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

Last time the team said...

141

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

Everyone clear?

142

00:08:03,000 --> 00:08:12,000

Grant builds his very own defibrillator and then busted the myth that medical nitroglycerin patches

can give you a severe case of blown up.

143

00:08:13,000 --> 00:08:15,000

Okay, what do we got this time?

144

00:08:15,000 --> 00:08:17,000

Bra's and nipple rings.

145

00:08:17,000 --> 00:08:19,000

You're a freak.

146

00:08:19,000 --> 00:08:21,000

You might have to explain this one.

147

00:08:21,000 --> 00:08:29,000

Our unfortunate patient in need of a jump start is either wearing a metal underwire bra or has nipple piercings.

148

00:08:29,000 --> 00:08:33,000

Oh, and the defibrillator arcs to the metal and they get burnt.

149

00:08:33,000 --> 00:08:34,000

Ouch.

150

00:08:34,000 --> 00:08:37,000

It was bad enough they're having a heart attack. Now they're going to get burnt too.

151

00:08:37,000 --> 00:08:39,000

Well, we're going to find out.

152

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

So the fans want to get a pair of parables off their chests.

153

00:08:45,000 --> 00:08:52,000

And the first tail the team is tackling is, will an emergency medical procedure cause a bra burn?

154

00:08:52,000 --> 00:08:55,000

Or is the Browsier a benign bystander?

155

00:08:57,000 --> 00:09:05,000

Using the same ballistic gel torso and homemade defibrillator as last time, our intrepid trio intend to find out.

156

00:09:05,000 --> 00:09:08,000

So they have the equipment and patient.

157

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

Now, all they need is a 40 double A bra.

158

00:09:11,000 --> 00:09:14,000

Now, who'd wear a bra that size?

159

00:09:14,000 --> 00:09:17,000

Apparently, I am close to the size of the ballistics dummy.

160

00:09:17,000 --> 00:09:21,000

Therefore, I have to go and shop for a bra.

161

00:09:21,000 --> 00:09:24,000

Once again, making my family proud.

162

00:09:26,000 --> 00:09:28,000

A girl's got to do what a girl's got to do.

163

00:09:28,000 --> 00:09:31,000

Grant, however, is there for fun.

164

00:09:31,000 --> 00:09:32,000

I can't look.

165

00:09:32,000 --> 00:09:35,000

I just don't know if these express me.

166

00:09:35,000 --> 00:09:38,000

I think I might want another color.

167

00:09:38,000 --> 00:09:40,000

Calla is not really the issue here, my friend.

168

00:09:40,000 --> 00:09:41,000

It's size.

169

00:09:41,000 --> 00:09:44,000

We don't want it to cut into the ballistics gel.

170

00:09:44,000 --> 00:09:50,000

So maybe we'll get a little bit larger and go from there.

171

00:09:50,000 --> 00:09:52,000

Is this as disturbing as I think it is?

172

00:09:52,000 --> 00:09:55,000

It's even more disturbing than you think it is.

173

00:09:55,000 --> 00:09:57,000

There's no doubt it's disturbing.

174

00:09:57,000 --> 00:10:00,000

There's also no doubt we're going to show you more.

175

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

I can't get the same room.

176

00:10:04,000 --> 00:10:08,000

After half an hour of not so wonder bras.

177

00:10:08,000 --> 00:10:09,000

Need some help, big guy?

178

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

No. Got it.

179

00:10:11,000 --> 00:10:13,000

I'm coming to prove.

180

00:10:13,000 --> 00:10:15,000

Our odd couple finally make a decision.

181

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

This is the fancy one.

182

00:10:17,000 --> 00:10:19,000

I think that's our winner, actually.

183

00:10:19,000 --> 00:10:21,000

Oh, fancy.

184

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

I think we got a winner.

185

00:10:27,000 --> 00:10:30,000

Next, Carrie fits our patient with the undergarment.

186

00:10:30,000 --> 00:10:33,000

But despite her best attempt to banish the thought,

187

00:10:33,000 --> 00:10:36,000

she can't help wondering what happened at the bra store.

188

00:10:36,000 --> 00:10:39,000

You didn't take off your shirt, did you?

189

00:10:39,000 --> 00:10:42,000

No way, nuts.

190

00:10:44,000 --> 00:10:45,000

All right.

191

00:10:45,000 --> 00:10:46,000

Do underwire bras conducts.

192

00:10:46,000 --> 00:10:48,000

You got the defibrillator?

193

00:10:48,000 --> 00:10:49,000

Yeah, we got it.

194

00:10:49,000 --> 00:10:50,000

We're in charge.

195

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

Okay. This is the scene.

196

00:10:51,000 --> 00:10:53,000

Your heart has stopped.

197

00:10:53,000 --> 00:10:55,000

We're going to do maximum 360 joules.

198

00:10:55,000 --> 00:10:56,000

Let's do it.

199

00:10:56,000 --> 00:10:58,000

The medics in a hurry place their home-made

200

00:10:58,000 --> 00:11:02,000

barbecue tongue defibrillator in the recommended position

201

00:11:02,000 --> 00:11:05,000

and prepare to deliver a life-saving shot.

202

00:11:05,000 --> 00:11:08,000

In three, two, one.

203

00:11:08,000 --> 00:11:10,000

Clear.

204

00:11:12,000 --> 00:11:13,000

Nothing.

205

00:11:13,000 --> 00:11:15,000

We may have saved her life, but we didn't burn her bra.

206

00:11:15,000 --> 00:11:18,000

Clearly, no underwear went up in flames.

207

00:11:18,000 --> 00:11:21,000

So is the burning bra myth busted?

208

00:11:21,000 --> 00:11:23,000

To give it the best chance possible,

209

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

do you want to maybe open up the bra a little bit

210

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

so that the wire's exposed and you can see what's happening?

211

00:11:27,000 --> 00:11:29,000

Sure. Maybe it was a slightly older bra

212

00:11:29,000 --> 00:11:32,000

and the wire was sticking out.

213

00:11:32,000 --> 00:11:33,000

Yeah.

214

00:11:33,000 --> 00:11:35,000

So it's take two with an unlikely

215

00:11:35,000 --> 00:11:38,000

but conceivable set of circumstances.

216

00:11:38,000 --> 00:11:41,000

In three, two, one.

217

00:11:41,000 --> 00:11:42,000

Clear.

218

00:11:43,000 --> 00:11:45,000

Ooh, a spark flew.

219

00:11:45,000 --> 00:11:46,000

Whoa.

220

00:11:46,000 --> 00:11:48,000

We got a burn.

221

00:11:48,000 --> 00:11:53,000

Yep, the sparks fly and our unlucky patient takes a hot hit.

222

00:11:53,000 --> 00:11:56,000

So what this means for the myth is

223

00:11:56,000 --> 00:11:59,000

if they have the paddles in the wrong position

224

00:11:59,000 --> 00:12:02,000

and you've got a slightly older bra

225

00:12:02,000 --> 00:12:04,000

with some of the metal exposed,

226

00:12:04,000 --> 00:12:09,000

you could be in for a few burns in your tender regions.

227

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

The bra didn't burst into flames as some of the stories I'd heard,

228

00:12:13,000 --> 00:12:16,000

but there's an obvious burn on the skin,

229

00:12:16,000 --> 00:12:21,000

so I'd say this one is pretty plausible.

230

00:12:32,000 --> 00:12:37,000

But next, Adam and Jamie's Blazing Trail investigation is smoking.

231

00:12:37,000 --> 00:12:40,000

See you at Stigson here.

232

00:12:45,000 --> 00:12:48,000

Since around the time Jamie started going to the movies

233

00:12:48,000 --> 00:12:50,000

in the early 1900s,

234

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

a blazing trail of flammable fuel has been a Hollywood staple.

235

00:12:55,000 --> 00:12:59,000

No action hero's CV would be complete

236

00:12:59,000 --> 00:13:03,000

without a lit fuse of gasoline blowing up the bad guys.

237

00:13:11,000 --> 00:13:14,000

On the trail of this flammable fable,

238

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

Jamie and his partner in flame, Adam,

239

00:13:17,000 --> 00:13:20,000

have found that gasoline burns in a contiguous line.

240

00:13:20,000 --> 00:13:25,000

And they know how much and how quickly fuel leaks from a bullet hole.

241

00:13:25,000 --> 00:13:28,000

That's just over three liters a minute.

242

00:13:28,000 --> 00:13:31,000

So on location at the Alameda Naval Base,

243

00:13:31,000 --> 00:13:33,000

it's time to take things up a notch.

244

00:13:33,000 --> 00:13:35,000

It's kind of dark in here.

245

00:13:35,000 --> 00:13:37,000

Maybe we need to light a fire.

246

00:13:37,000 --> 00:13:38,000

Well, you like it?

247

00:13:38,000 --> 00:13:40,000

We got a sealed floor, total control, no wind.

248

00:13:40,000 --> 00:13:42,000

It's perfect experimental space,

249

00:13:42,000 --> 00:13:44,000

and the fire department says,

250

00:13:44,000 --> 00:13:46,000

provisionally, we can light a fire.

251

00:13:46,000 --> 00:13:47,000

I love it.

252

00:13:47,000 --> 00:13:50,000

Yep, the sealed floor and contained environment

253

00:13:50,000 --> 00:13:53,000

is perfect for this myth.

254

00:13:53,000 --> 00:13:54,000

Oh, no!

255

00:13:58,000 --> 00:14:00,000

Okay, let's get started with work.

256

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

At this point, we've learned what gasoline does

257

00:14:02,000 --> 00:14:04,000

when you lay it out in a stream and light it.

258

00:14:04,000 --> 00:14:06,000

But we have yet to see what happens

259

00:14:06,000 --> 00:14:10,000

when it's coming out of something that's moving, like a vehicle.

260

00:14:10,000 --> 00:14:12,000

So we're going to go ahead and light it up.

261

00:14:12,000 --> 00:14:15,000

And we're going to see what happens when it's coming out

262

00:14:15,000 --> 00:14:17,000

of something that's moving, like a vehicle.

263

00:14:17,000 --> 00:14:20,000

So I figure, like we normally do,

264

00:14:20,000 --> 00:14:23,000

we like to start out small to see what we're dealing with.

265

00:14:23,000 --> 00:14:25,000

And therefore, I've invented this thing,

266

00:14:25,000 --> 00:14:27,000

which I call the fire bug.

267

00:14:27,000 --> 00:14:29,000

Which, let's face it,

268

00:14:29,000 --> 00:14:32,000

is a remote-controlled fire hazard on wheels.

269

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

That's absolutely perfect.

270

00:14:33,000 --> 00:14:36,000

Well, you want to just start running around

271

00:14:36,000 --> 00:14:39,000

and I'll light the back end as it goes?

272

00:14:39,000 --> 00:14:40,000

Yeah.

273

00:14:40,000 --> 00:14:42,000

With a full, squeezezy bottle of gas on board,

274

00:14:42,000 --> 00:14:44,000

the fire bug is ready.

275

00:14:44,000 --> 00:14:47,000

Fire extinguisher. I'm totally ready.

276

00:14:47,000 --> 00:14:49,000

And by turning the nozzle down

277

00:14:49,000 --> 00:14:51,000

to simulate a leaking gas tank,

278

00:14:51,000 --> 00:14:53,000

Jamie is all set.

279

00:14:53,000 --> 00:14:54,000

Okay, ready?

280

00:14:54,000 --> 00:14:55,000

Yeah.

281

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

The fire bug takes off,

282

00:14:58,000 --> 00:15:01,000

leaving a perfect trail of gasoline in its wake,

283

00:15:01,000 --> 00:15:03,000

which Adam happily sets a blaze.

284

00:15:03,000 --> 00:15:04,000

There we go.

285

00:15:04,000 --> 00:15:09,000

This little thing is about the coolest RC toy

286

00:15:09,000 --> 00:15:11,000

that I've ever seen,

287

00:15:11,000 --> 00:15:13,000

but it's extremely dangerous.

288

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

You can't do this at home.

289

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

You may have an RC car,

290

00:15:16,000 --> 00:15:17,000

you may have some gasoline,

291

00:15:17,000 --> 00:15:18,000

but you could die,

292

00:15:18,000 --> 00:15:19,000

you could burn your house down.

293

00:15:19,000 --> 00:15:22,000

This is the coolest remote-controlled car I've ever seen.

294

00:15:22,000 --> 00:15:24,000

We've got fire extinguishers and EMTs

295

00:15:24,000 --> 00:15:25,000

and everything.

296

00:15:25,000 --> 00:15:26,000

We're prepared.

297

00:15:26,000 --> 00:15:28,000

You're not done.

298

00:15:28,000 --> 00:15:29,000

You're not done.

299

00:15:29,000 --> 00:15:30,000

You're not done.

300

00:15:30,000 --> 00:15:31,000

You're not done.

301

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

You're not done.

302

00:15:32,000 --> 00:15:33,000

You're prepared.

303

00:15:33,000 --> 00:15:34,000

You're not.

304

00:15:34,000 --> 00:15:35,000

Don't try it at home.

305

00:15:35,000 --> 00:15:37,000

That was actually a pretty good test.

306

00:15:37,000 --> 00:15:40,000

It told us a lot of what we needed to know.

307

00:15:40,000 --> 00:15:43,000

We wanted to know if you could lay down a line of fuel

308

00:15:43,000 --> 00:15:44,000

out of a moving vehicle,

309

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

and it would remain continuous.

310

00:15:46,000 --> 00:15:47,000

The answer is yes.

311

00:15:47,000 --> 00:15:50,000

And it doesn't seem like we need that much fuel.

312

00:15:50,000 --> 00:15:52,000

So I think we're ready to go full-scale.

313

00:15:52,000 --> 00:15:54,000

I think we've learned what we wanted to know,

314

00:15:54,000 --> 00:15:56,000

although Jamie still seems to be enjoying setting stuff on.

315

00:15:56,000 --> 00:16:01,000

Full-scale it is.

316

00:16:01,000 --> 00:16:05,000

And for that, they need Firebug's big brother.

317

00:16:05,000 --> 00:16:08,000

Say hello to the Firebeast.

318

00:16:08,000 --> 00:16:10,000

The Firebeast.

319

00:16:10,000 --> 00:16:13,000

A truck with a leaking gas tank attachment.

320

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

Don't expect to see one of these in a showroom near you.

321

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

This is the patented Mythbusters 10-minute solution

322

00:16:18,000 --> 00:16:21,000

for controlling the fuel from the driver's seat.

323

00:16:21,000 --> 00:16:23,000

Rather than a complex solenoid-driven valve

324

00:16:23,000 --> 00:16:25,000

or something like that, it's a rope.

325

00:16:25,000 --> 00:16:27,000

It's got a little hole on the rope,

326

00:16:27,000 --> 00:16:29,000

nozzles and lifts above the level of the fuel.

327

00:16:29,000 --> 00:16:31,000

Let it go, and it starts to run out.

328

00:16:31,000 --> 00:16:33,000

It's just that simple.

329

00:16:33,000 --> 00:16:34,000

Mythbuster Ingenuity.

330

00:16:34,000 --> 00:16:37,000

Also useful for time-saving home inventions.

331

00:16:37,000 --> 00:16:39,000

I use one of those when I go to the bathroom.

332

00:16:39,000 --> 00:16:41,000

I'm done.

333

00:16:41,000 --> 00:16:44,000

So on this test, Adam and Jamie will get a good feel

334

00:16:44,000 --> 00:16:45,000

for this movie myth.

335

00:16:45,000 --> 00:16:48,000

They already know a gas trail burns like it does in the movies.

336

00:16:48,000 --> 00:16:52,000

They've got 44 and 22-caliber-sized bullet holes

337

00:16:52,000 --> 00:16:53,000

in their gas tank.

338

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

And they've seen, in small scale,

339

00:16:56,000 --> 00:16:59,000

a continuous gas trail laid by a moving vehicle.

340

00:16:59,000 --> 00:17:02,000

I am the fire ninja, Tom.

341

00:17:02,000 --> 00:17:04,000

And you could say Adam is excited.

342

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

And sore.

343

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

So, I mean, our goal here is just to find out

344

00:17:10,000 --> 00:17:13,000

if the 22-caliber-sized hole or the 44-caliber hole

345

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

leaves enough fuel behind the truck for the fire to follow, right?

346

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

And at what speed it'll sort of keep up with it.

347

00:17:20,000 --> 00:17:23,000

So, I'm just going to listen for your cues on the radio.

348

00:17:23,000 --> 00:17:25,000

And you tell me to speed up or slow down.

349

00:17:25,000 --> 00:17:26,000

That's what I'll do.

350

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

Okay, start with a baseline of like five miles an hour.

351

00:17:29,000 --> 00:17:30,000

A good brisk run.

352

00:17:30,000 --> 00:17:32,000

In this action movie scenario,

353

00:17:32,000 --> 00:17:35,000

Jamie's playing the part of the escaping bad guy

354

00:17:35,000 --> 00:17:38,000

with a 22-caliber bullet hole in his gas tank.

355

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

It's time to burn for science.

356

00:17:42,000 --> 00:17:43,000

Let's go.

357

00:17:43,000 --> 00:17:45,000

And Adam is standing in for the hero

358

00:17:45,000 --> 00:17:49,000

who's going to light up the gas trail Jamie's leaving behind.

359

00:17:49,000 --> 00:17:53,000

Jamie, whenever you're ready, lower down the fuel and start driving.

360

00:17:55,000 --> 00:17:57,000

Jamie the villain makes a run for it.

361

00:17:57,000 --> 00:17:59,000

I'm lighting the fuel now.

362

00:18:02,000 --> 00:18:05,000

You can slow down Jamie, it's moving quite slowly.

363

00:18:05,000 --> 00:18:07,000

But there's no need to hurry.

364

00:18:08,000 --> 00:18:10,000

That's moving really slowly.

365

00:18:10,000 --> 00:18:13,000

Not exactly the high-speed blazing trail of fire

366

00:18:13,000 --> 00:18:15,000

we're used to seeing on the silver screen.

367

00:18:15,000 --> 00:18:17,000

Okay, yeah, you can stop it.

368

00:18:17,000 --> 00:18:22,000

I had to put my brakes on, I wasn't giving it any fuel to get it to go that slow.

369

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

I was just idling with my brakes half on to do that.

370

00:18:25,000 --> 00:18:28,000

You can pretty much push a car faster than gasoline burns.

371

00:18:28,000 --> 00:18:29,000

Kind of sorta.

372

00:18:29,000 --> 00:18:31,000

So does that put the brakes on this myth

373

00:18:31,000 --> 00:18:34,000

or will the 44-caliber sized hole make a difference?

374

00:18:35,000 --> 00:18:38,000

My prediction is from what I saw in the bunker test,

375

00:18:38,000 --> 00:18:40,000

volume didn't affect speed that much.

376

00:18:40,000 --> 00:18:44,000

Now, this is a much bigger test than we were able to do in the bunker

377

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

so this will be pretty definitive

378

00:18:46,000 --> 00:18:49,000

but I don't think it's going to prove anything different than we've already seen.

379

00:18:52,000 --> 00:18:56,000

Jamie moves off, gently idling along at less than five miles an hour,

380

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

easily staying ahead of the lit trail.

381

00:19:00,000 --> 00:19:04,000

It's looking good Jamie, it's keeping in case with you about ten feet back.

382

00:19:04,000 --> 00:19:08,000

Until Adam has a lapse in concentration on radio duties

383

00:19:08,000 --> 00:19:11,000

and fails to warn Jamie the flames are gaining on him.

384

00:19:11,000 --> 00:19:13,000

Faster, faster, faster!

385

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

Lift it up!

386

00:19:17,000 --> 00:19:25,000

It was going along fine until it started to catch up a little bit

387

00:19:25,000 --> 00:19:27,000

and all of a sudden Adam's saying gun it

388

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

and I took off but it was too late.

389

00:19:29,000 --> 00:19:32,000

It actually stayed with me and it caught up with the tank

390

00:19:32,000 --> 00:19:34,000

and I could have set it off.

391

00:19:34,000 --> 00:19:37,000

Traveling at the lower limit of the speedometer,

392

00:19:37,000 --> 00:19:39,000

Jamie is unsure of his speed

393

00:19:39,000 --> 00:19:43,000

but it seems as though the fresher the trail, the faster it burns.

394

00:19:44,000 --> 00:19:47,000

However, another run to test that hypothesis

395

00:19:47,000 --> 00:19:50,000

is brought to an abrupt end when Jamie gets hemmed in.

396

00:19:50,000 --> 00:19:54,000

Guys I'm going to stop, we're going to start to have crossover.

397

00:19:55,000 --> 00:19:58,000

As another band of busters once said,

398

00:19:58,000 --> 00:20:01,000

it's a bad idea to cross the streets.

399

00:20:06,000 --> 00:20:08,000

Hey you it stinks in here!

400

00:20:09,000 --> 00:20:11,000

We're waiting for the smoke to clear in there

401

00:20:11,000 --> 00:20:15,000

but provisionally I'll say the 44 caliber hole test was really educational.

402

00:20:15,000 --> 00:20:21,000

Specifically noticing that the closer the line of gas got to the source,

403

00:20:21,000 --> 00:20:25,000

i.e. the gas tank, the faster the flame traveled.

404

00:20:25,000 --> 00:20:27,000

Remember it's not the liquid gas that's burning,

405

00:20:27,000 --> 00:20:30,000

it's the vapor gas above the liquid.

406

00:20:30,000 --> 00:20:33,000

So if it's had a long time to settle that vapor spreads out

407

00:20:33,000 --> 00:20:36,000

and it's got a lot of wind resistance like a weather front

408

00:20:36,000 --> 00:20:38,000

but the closer it gets the faster it travels.

409

00:20:38,000 --> 00:20:40,000

There may actually be something to this.

410

00:20:42,000 --> 00:20:44,000

Three, two...

411

00:20:44,000 --> 00:20:47,000

Carrie Grant and Tori have burnt their bra

412

00:20:47,000 --> 00:20:50,000

and proved it's plausible that underwired underwear

413

00:20:50,000 --> 00:20:52,000

can be too hot to handle.

414

00:20:52,000 --> 00:20:56,000

But the team have their eye on another defibrillator myth.

415

00:20:56,000 --> 00:21:01,000

So this myth is about defibrillating somebody who has nipple piercings.

416

00:21:01,000 --> 00:21:05,000

Now they're metal and there's a possibility that when the paddles go to the skin

417

00:21:05,000 --> 00:21:10,000

and they discharge that it could actually arc to the metal in the piercing.

418

00:21:10,000 --> 00:21:13,000

Our ballistics media torso is going through a rebellious phase

419

00:21:13,000 --> 00:21:16,000

and wants to upset his mom.

420

00:21:16,000 --> 00:21:19,000

I'm pretty sure this isn't how they do it.

421

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

A barbell in each nipple should do it.

422

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

This looks really weird.

423

00:21:22,000 --> 00:21:24,000

You think?

424

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

Let's just, yeah, let's just do this one.

425

00:21:26,000 --> 00:21:30,000

They're using 40 times the voltage of a household socket

426

00:21:30,000 --> 00:21:34,000

real close to a conductive metal object in the left nipple of the patient.

427

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

As ElectricSix once said,

428

00:21:36,000 --> 00:21:39,000

danger, danger, high voltage.

429

00:21:39,000 --> 00:21:42,000

Nipple piercing defibrillation test with the paddles

430

00:21:42,000 --> 00:21:45,000

ridiculously close together touching the piercing.

431

00:21:45,000 --> 00:21:49,000

Three, two, one, clear!

432

00:21:49,000 --> 00:21:50,000

Whoa!

433

00:21:50,000 --> 00:21:51,000

Ow!

434

00:21:51,000 --> 00:21:52,000

That was a good one.

435

00:21:52,000 --> 00:21:53,000

That was good.

436

00:21:53,000 --> 00:21:59,000

The end of the piercing is black surrounded by like an indentation

437

00:21:59,000 --> 00:22:01,000

that took the coating off of the piercing.

438

00:22:01,000 --> 00:22:02,000

Whoa.

439

00:22:02,000 --> 00:22:04,000

That seems like it'd be enough to burn you.

440

00:22:04,000 --> 00:22:07,000

Yeah, I think the kind of heat that would melt the coating.

441

00:22:07,000 --> 00:22:08,000

Definitely!

442

00:22:08,000 --> 00:22:10,000

Burn your skin.

443

00:22:10,000 --> 00:22:12,000

So are the fans right?

444

00:22:12,000 --> 00:22:15,000

Is this another plausible result?

445

00:22:15,000 --> 00:22:17,000

Okay guys, what do we call on this one?

446

00:22:17,000 --> 00:22:18,000

That's a good question.

447

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

Well, we did get some scorching from arcing between the defibrillator paddles.

448

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

Yeah, but that's when the paddles were practically touching each other.

449

00:22:25,000 --> 00:22:28,000

You know, during defibrillation, there's no way they would be that close.

450

00:22:28,000 --> 00:22:31,000

And the metal of the underwire bra would have to be exposed.

451

00:22:31,000 --> 00:22:36,000

And medics are trained to remove anything that's going to impede that procedure anyway.

452

00:22:36,000 --> 00:22:39,000

So we're calling this one plausible?

453

00:22:39,000 --> 00:22:41,000

Yeah, but totally unlikely.

454

00:22:41,000 --> 00:22:42,000

Almost impossible.

455

00:22:42,000 --> 00:22:43,000

Alright.

456

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

Alright, that's enough.

457

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

Okay.

458

00:23:10,000 --> 00:23:11,000

Woo!

459

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

I'm rolling it into gasoline.

460

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

Nothing's happened.

461

00:23:41,000 --> 00:23:45,000

But this time they're testing whether the trail, lit by GI Jamie,

462

00:23:45,000 --> 00:23:48,000

will blow up an escaping car's gas tank.

463

00:23:49,000 --> 00:23:53,000

And for a definitive answer, they've returned to the runway at Alameda.

464

00:23:53,000 --> 00:23:55,000

This is perfect!

465

00:23:55,000 --> 00:24:00,000

The sun is setting, the wind's dying, we've got like ideal real-world conditions here.

466

00:24:00,000 --> 00:24:03,000

And just as importantly, it'll be dark soon,

467

00:24:03,000 --> 00:24:06,000

meaning they'll be able to clearly see the flame.

468

00:24:06,000 --> 00:24:08,000

The first thing we're going to do is sort of a control.

469

00:24:08,000 --> 00:24:11,000

We're going to put a 44-caliber sized hole in the tank.

470

00:24:11,000 --> 00:24:15,000

Gasoline's going to come running out of the tank as the truck is moving.

471

00:24:15,000 --> 00:24:20,000

Remember, the previous tests took place on a sealed floor out of the elements.

472

00:24:20,000 --> 00:24:25,000

So this first test is a control to see if the lit trail burns continuously,

473

00:24:25,000 --> 00:24:27,000

just like it did indoors.

474

00:24:28,000 --> 00:24:33,000

Jamie at the start position lowers the hose, letting the fuel spill out.

475

00:24:33,000 --> 00:24:34,000

And go!

476

00:24:34,000 --> 00:24:39,000

And Adam once again fanning the flames of his pyromania lights her up.

477

00:24:39,000 --> 00:24:40,000

More, more, more.

478

00:24:40,000 --> 00:24:41,000

More, more.

479

00:24:41,000 --> 00:24:43,000

Good, good speed, good speed.

480

00:24:48,000 --> 00:24:51,000

And that's pretty much all she wrote.

481

00:24:51,000 --> 00:24:56,000

A good control, but really it's a case of so far so slow.

482

00:24:56,000 --> 00:25:02,000

In the testing so far, I've been driving so slowly that it's not even registering on the speedometer.

483

00:25:02,000 --> 00:25:07,000

This next test I'm going to get up to 20 miles an hour before I hit the starting line.

484

00:25:07,000 --> 00:25:12,000

Right at the starting line, I'll be dropping the hose, starting to like fuel out.

485

00:25:12,000 --> 00:25:18,000

And my guess is that it's going to be such a thin stream that actually contacts the pavement

486

00:25:18,000 --> 00:25:21,000

that it's not going to light more than a few inches.

487

00:25:21,000 --> 00:25:23,000

It's still moving towards him.

488

00:25:24,000 --> 00:25:26,000

Oh, but it's petering out.

489

00:25:27,000 --> 00:25:30,000

Which means the fleeing fugitive is free and clear.

490

00:25:31,000 --> 00:25:33,000

And 20 miles an hour isn't it fast?

491

00:25:33,000 --> 00:25:39,000

No, not like an action movie car chase would be a lot faster, so it would only get worse for this myth at any speed above 20.

492

00:25:41,000 --> 00:25:42,000

Not looking too good.

493

00:25:42,000 --> 00:25:43,000

No, it's not.

494

00:25:43,000 --> 00:25:49,000

Yep, if our villain takes off at any kind of reasonable speed, the trail simply burns out.

495

00:25:50,000 --> 00:25:55,000

And although the fat lady is preparing her tonsils, Adam and Jamie aren't ready to call it.

496

00:25:55,000 --> 00:25:58,000

After all, there's two parts to this myth.

497

00:25:58,000 --> 00:26:05,000

Even though we've proved that it is extremely unlikely, under most circumstances, for the line of burning gasoline to get to the tank,

498

00:26:05,000 --> 00:26:08,000

now it's time to find out what happens if it actually does.

499

00:26:08,000 --> 00:26:15,000

Adam in full safety gear lights up the pool of fuel, and Jamie crawls forward, letting the flame catch up.

500

00:26:16,000 --> 00:26:18,000

Okay, it's reached the tank.

501

00:26:20,000 --> 00:26:24,000

It's reached the tank. It's burning up this line, but it's not exploding yet.

502

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

Don't let your guard down yet.

503

00:26:27,000 --> 00:26:28,000

Don't worry.

504

00:26:28,000 --> 00:26:30,000

That was not what I expected out of that test.

505

00:26:30,000 --> 00:26:37,000

You know, in every movie, every bullet or cigarette equals an exploding gas tank. They seem to be on air triggers.

506

00:26:37,000 --> 00:26:46,000

And in this case, we had gas pouring out of a tank on fire for about a good six or seven minutes.

507

00:26:46,000 --> 00:26:51,000

The wind started to whip up the gasoline and the flames.

508

00:26:51,000 --> 00:26:54,000

The flames got under the tank, which heated it up.

509

00:26:54,000 --> 00:27:01,000

And once they heated it up, the air inside started expanding, and I started watching the gas spewing out of the hole.

510

00:27:01,000 --> 00:27:08,000

At that point, the flames got so vigorous, they engulfed one of our cameras, and I decided to pull the plug and extinguish everything.

511

00:27:08,000 --> 00:27:09,000

Who?

512

00:27:09,000 --> 00:27:11,000

Camera, let's put it out.

513

00:27:13,000 --> 00:27:14,000

So what do we do now?

514

00:27:14,000 --> 00:27:21,000

Well, I think we're back to our old friend and nemesis, air-fuel mixture.

515

00:27:21,000 --> 00:27:28,000

In an attempt to get that Hollywood-style big boom, Adam and Jamie opened up several ports on the tank.

516

00:27:28,000 --> 00:27:30,000

But why are they even necessary?

517

00:27:30,000 --> 00:27:37,000

Gasoline or gasoline vapor by itself is not exploding. It needs a source of ignition, and it needs air.

518

00:27:37,000 --> 00:27:42,000

In fact, it needs a very specific amount of air for it to blow up.

519

00:27:42,000 --> 00:27:50,000

That range is above 1.4% vapor to air or below 7.6% vapor to air.

520

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

If it's outside that range, it's not exploding.

521

00:27:53,000 --> 00:27:58,000

If it's within that range and it has a source of ignition, it can blow up.

522

00:27:58,000 --> 00:28:05,000

Now, we're going to use this meter here to determine what we've got in the tank and whether we can get it to the butter zone or not.

523

00:28:05,000 --> 00:28:10,000

So the mix of air and fuel vapor in the gas tank has to be just right.

524

00:28:10,000 --> 00:28:17,000

In a vapor-rich environment, there has to be the right amount of air to be in what's known as the flammability band.

525

00:28:17,000 --> 00:28:25,000

And in a contained environment with an ignition source here in prime territory for an explosion.

526

00:28:25,000 --> 00:28:32,000

And to detect that crucial air-to-fuel ratio, the guys are using a portable gas monitor.

527

00:28:32,000 --> 00:28:35,000

It's going back and forth between 4 and 4.5.

528

00:28:35,000 --> 00:28:37,000

That's fantastic.

529

00:28:37,000 --> 00:28:40,000

And so we're right in the butter zone.

530

00:28:40,000 --> 00:28:43,000

Awesome, let's go. Let's do it.

531

00:28:43,000 --> 00:28:47,000

With the added through flow, the air-fuel mixture is perfect.

532

00:28:47,000 --> 00:28:50,000

And we're about to find out...

533

00:28:50,000 --> 00:28:52,000

Go ahead!

534

00:28:52,000 --> 00:28:57,000

...if those spectacular cinematic explosions are based on real-world physics...

535

00:28:57,000 --> 00:29:00,000

Careful, you guys. Not too close.

536

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

...or simply movie magic.

537

00:29:02,000 --> 00:29:04,000

Good, stop!

538

00:29:05,000 --> 00:29:11,000

It's burning in the tank, but it's stubbornly refusing to detonate.

539

00:29:11,000 --> 00:29:14,000

The facts here are pretty simple.

540

00:29:14,000 --> 00:29:17,000

We were at 5%. That is exactly the butter zone we were looking for.

541

00:29:17,000 --> 00:29:24,000

We got perfect ignition. The test went really well and we did not get an explosion.

542

00:29:24,000 --> 00:29:30,000

This is actually really frustrating to look at because if the tank is enclosed,

543

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

it very quickly goes above the explosive limit.

544

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

If it's open like we had it, then it's just burning.

545

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

It's just flame. It's not explosion.

546

00:29:40,000 --> 00:29:44,000

No explosion! That's a result.

547

00:29:46,000 --> 00:29:48,000

How do you want to wrap up a vapor trail?

548

00:29:48,000 --> 00:29:52,000

Well, the flame did follow right along that trail of gasoline as it was laid down.

549

00:29:52,000 --> 00:29:54,000

In fact, it went all the way up to the tank.

550

00:29:54,000 --> 00:29:58,000

Yeah, but it went so slowly, man. It would never catch up to any car.

551

00:29:58,000 --> 00:30:01,000

You could push a car faster than that gasoline trail burn.

552

00:30:01,000 --> 00:30:04,000

And once it got to the tank, it no blow up.

553

00:30:04,000 --> 00:30:06,000

I guess we got to call it busted then.

554

00:30:06,000 --> 00:30:07,000

Busted, it is.

555

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

Jamie and Adam have busted the movie myth that a blazing trail of gasoline

556

00:30:33,000 --> 00:30:37,000

will catch a car and explode the gas tank.

557

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

But this fiery fable is still alive.

558

00:30:40,000 --> 00:30:45,000

I know it's been a segue, but I don't feel like we're all the way done with Hollywood pyrotechnics just yet.

559

00:30:45,000 --> 00:30:46,000

Why is that?

560

00:30:46,000 --> 00:30:51,000

Because I've got another one I want to try and it is an old cowboy myth that involves gunpowder.

561

00:30:51,000 --> 00:30:57,000

Oh, you mean where the bad guy lays down the trail of gunpowder, it goes to the keg, he lights it.

562

00:30:57,000 --> 00:31:01,000

But the good guy rushes in and puts out the flame right before it reaches the keg.

563

00:31:01,000 --> 00:31:04,000

It's like you're a mind reader or something. That's exactly it.

564

00:31:06,000 --> 00:31:09,000

So it's Trail Blazers Part 2.

565

00:31:10,000 --> 00:31:13,000

But this movie myth comes from way back yonder,

566

00:31:13,000 --> 00:31:19,000

when your average action scene involved cowboys and gunpowder, not cars and gasoline.

567

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

A lit trail of gunpowder is heading for a powder keg, and if it can't be stopped, disaster.

568

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

But our hero saves the day by leaping ahead of the sparking fuse and kicking out the trail.

569

00:31:39,000 --> 00:31:44,000

Back in the bunker, the team begin testing to find out what would happen in real life.

570

00:31:44,000 --> 00:31:47,000

I don't think this is going to work. The whole premise we're testing.

571

00:31:47,000 --> 00:31:56,000

Just kind of cowboy, lay out a line of black powder, and if I saw it and tried to kick out that powder before it got to something that was going to blow up, would I have enough time?

572

00:31:56,000 --> 00:31:59,000

I don't think I would. I think the black powder is going to burn too fast.

573

00:31:59,000 --> 00:32:05,000

Every time we've ever noodled with it on the show, it's defining characteristic is that it's super fast.

574

00:32:05,000 --> 00:32:10,000

So like the vapor trail, Adam thinks this movie myth is just another special effect.

575

00:32:10,000 --> 00:32:16,000

My guess is it's going to be less a shh than a shaboom kind of moment.

576

00:32:16,000 --> 00:32:21,000

Well, without the boom, we're not adding in any boom just yet. It's all about the shh.

577

00:32:21,000 --> 00:32:29,000

On site supervising, it's pyrotechnician Rob Clott, and he's got the shaboom making material.

578

00:32:29,000 --> 00:32:37,000

This is black powder. You can buy this in most gun shops, and it's actually the closest thing we have to what would be period correct for like a cowboy movie.

579

00:32:38,000 --> 00:32:42,000

First up, they're starting small, a trail just a few feet long.

580

00:32:42,000 --> 00:32:45,000

I think that's great. What do you think? I mean, this is just to see how, what it does.

581

00:32:45,000 --> 00:32:47,000

Just see how it feels.

582

00:32:47,000 --> 00:32:52,000

To light it safely, Adam has pulled out all the stops to impress Rob.

583

00:32:52,000 --> 00:33:06,000

This is a standard industry remote lighter. This is your butane torch on the end of a couple of tie straps on some structural aluminum, providing some distance between me and a flame so I can light while I'm safely away from the explosion.

584

00:33:06,000 --> 00:33:11,000

Alright. Everybody ready? There we go.

585

00:33:18,000 --> 00:33:20,000

That's a little too fast.

586

00:33:20,000 --> 00:33:26,000

Yep, and the myth that you could run ahead of the burning fuse looks like it's gone up in smoke already.

587

00:33:26,000 --> 00:33:35,000

Gun powder by design burns very quickly. When you have it inside a gun, it burns explosively quickly. When we lay it out in a line, it just kind of burns fast.

588

00:33:35,000 --> 00:33:46,000

Well, it behaved exactly the way I thought it would behave. In fact, you'll see that the rating for this is, which is pretty much the sound it made when we lit it. And that's what it's based on.

589

00:33:46,000 --> 00:33:48,000

What do you think we do now?

590

00:33:48,000 --> 00:33:55,000

Well, I think we need to come up with a more controlled way of laying down the powder. Something's very consistent and maybe a little less of it.

591

00:33:56,000 --> 00:34:06,000

Jamie, basing his design on an old-fashioned powder horn, soon has a solution. And they're ready to see how quickly a three-foot line of powder burns.

592

00:34:08,000 --> 00:34:09,000

Oh, look at that.

593

00:34:09,000 --> 00:34:21,000

That was really nice. That was much slower. And it was like, pshhh. I thought that if we laid out a line here and it was fairly visible black powder, that it would go, pshhh, and just go really fast.

594

00:34:21,000 --> 00:34:29,000

But in fact, it seems to burn at a rate not unreasonably close to what I'm used to remembering in cowboy movies.

595

00:34:29,000 --> 00:34:45,000

I'm starting to think that if we laid out a line of powder like this, maybe 20 feet long, with a, you know, keg at the end that might blow up, and I had a few seconds to run over and kick this line so it would stop igniting, but I might actually be able to do that.

596

00:34:48,000 --> 00:34:50,000

I figure I could outrun that for you.

597

00:34:50,000 --> 00:34:53,000

Well, if you want to try it, say we get out to the bomb range and do it for real.

598

00:34:53,000 --> 00:34:55,000

Okay. Let's get out of here.

599

00:34:58,000 --> 00:35:02,000

Alameda County Bomb Disposal Range. Adam and Jamie's second home.

600

00:35:02,000 --> 00:35:04,000

Another day at the bomb range.

601

00:35:04,000 --> 00:35:05,000

That's right.

602

00:35:05,000 --> 00:35:11,000

And as usual, their hospitable host, keeping them out of hospital, is Sergeant JD Nelson.

603

00:35:11,000 --> 00:35:17,000

The bomb range is a perfect location for us because we can blow stuff up, but it's a little bit rocky.

604

00:35:17,000 --> 00:35:21,000

And it's dirt, so we want to be able to see the black powder.

605

00:35:21,000 --> 00:35:25,000

We're going to lay out basically a dance floor for dancing with the black powder.

606

00:35:25,000 --> 00:35:34,000

It's about 20 some odd sheets of plywood or chipboard that we're going to lay out in a line approximately 80 to 100 feet long.

607

00:35:34,000 --> 00:35:37,000

Should be plenty of a run for our black powder tests.

608

00:35:39,000 --> 00:35:40,000

Well, there you go.

609

00:35:40,000 --> 00:35:41,000

Dance floor.

610

00:35:41,000 --> 00:35:42,000

My dance card is empty.

611

00:35:42,000 --> 00:35:43,000

Let's go.

612

00:35:43,000 --> 00:35:47,000

Adam's job is to kick out the line of burning powder before it reaches this.

613

00:35:47,000 --> 00:35:51,000

Now, for safety reasons, we're not going to put any powder in this.

614

00:35:51,000 --> 00:35:55,000

We're not quite ready for Adam to blow up just yet.

615

00:35:55,000 --> 00:35:59,000

What Jamie means is for safety reasons, the keg will be empty.

616

00:35:59,000 --> 00:36:07,000

But at the end of an 80 foot trail of black powder, Adam can't resist adding a cup full of extra motivation.

617

00:36:07,000 --> 00:36:14,000

My motivation for this is really like, you know, humanity is going down the wrong path.

618

00:36:14,000 --> 00:36:16,000

That's the gunpowder line.

619

00:36:16,000 --> 00:36:24,000

And I'm the only one who can see that it's burning and I've got to kick it out before it explodes.

620

00:36:27,000 --> 00:36:29,000

Two, three, here we go.

621

00:36:31,000 --> 00:36:33,000

It's not that hard to outrun it.

622

00:36:34,000 --> 00:36:37,000

Here it comes.

623

00:36:41,000 --> 00:36:43,000

I stopped it.

624

00:36:43,000 --> 00:36:44,000

Look at that.

625

00:36:44,000 --> 00:36:46,000

Here, light this one.

626

00:36:49,000 --> 00:36:51,000

It's like a really brisk walk, really.

627

00:36:53,000 --> 00:36:55,000

Here comes the thing.

628

00:37:00,000 --> 00:37:02,000

This is a fun job.

629

00:37:03,000 --> 00:37:07,000

Well, I don't know about you, but it seems to me it doesn't move as fast as I thought it was going to move.

630

00:37:07,000 --> 00:37:11,000

I think it's pretty easy to run down a line of gunpowder and kick it out to stop it from blowing up.

631

00:37:11,000 --> 00:37:14,000

If you want to give it a shot, I think we've got this one in the back.

632

00:37:14,000 --> 00:37:16,000

I'll go to a shot.

633

00:37:17,000 --> 00:37:19,000

Ready, racing powder.

634

00:37:19,000 --> 00:37:21,000

Adam, would you mind laying the powder?

635

00:37:21,000 --> 00:37:24,000

I'm just going to sort of relax and you can light it.

636

00:37:24,000 --> 00:37:26,000

I got a good view.

637

00:37:26,000 --> 00:37:29,000

Jamie's idea of racing is pretty laid back.

638

00:37:29,000 --> 00:37:31,000

Powder kick test number two.

639

00:37:31,000 --> 00:37:33,000

Grandpa Heidemann presiding.

640

00:37:35,000 --> 00:37:39,000

Jamie, cool as a cucumber, gives the fuse a good head start.

641

00:37:39,000 --> 00:37:43,000

Of course, he's thinking his only obstacle will be covering the ground in time.

642

00:37:51,000 --> 00:37:53,000

I'm still going.

643

00:37:55,000 --> 00:37:57,000

He pushed me out of the way.

644

00:37:57,000 --> 00:37:59,000

What the hell was that?

645

00:37:59,000 --> 00:38:01,000

I was giving you more of a challenge.

646

00:38:04,000 --> 00:38:08,000

We wanted to find out whether it is possible to outrun a burning line of powder,

647

00:38:08,000 --> 00:38:13,000

break the line and stop it before it reaches the barrel and blows up the barrel.

648

00:38:13,000 --> 00:38:15,000

Turns out, it is.

649

00:38:15,000 --> 00:38:17,000

We did it. It's not that hard really.

650

00:38:18,000 --> 00:38:23,000

So the movie myth that you can outrun a lit trail of gunpowder is confirmed.

651

00:38:24,000 --> 00:38:26,000

But the fun doesn't end there.

652

00:38:26,000 --> 00:38:29,000

The fuse is still burning on this fable.

653

00:38:33,000 --> 00:38:34,000

Next.

654

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

Adam and Jamie get their satisfaction.

655

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

That was awesome. That was the best explosion we've ever done.

656

00:38:42,000 --> 00:38:49,000

Jamie, despite unforeseen obstacles, is confident that you can outrun and kick out a burning fuse of gunpowder.

657

00:38:49,000 --> 00:38:53,000

The next thing we need to know is what would happen if you were not successful.

658

00:38:53,000 --> 00:38:59,000

Maybe somebody got in your way or pushed you and, you know, before you were able to do your job,

659

00:38:59,000 --> 00:39:01,000

does the barrel blow up?

660

00:39:01,000 --> 00:39:03,000

Will it run up the stream of powder?

661

00:39:03,000 --> 00:39:05,000

Will it run up the stream of powder?

662

00:39:05,000 --> 00:39:07,000

Will it run up the stream of powder?

663

00:39:07,000 --> 00:39:09,000

Will it run up the stream of powder?

664

00:39:09,000 --> 00:39:13,000

Will it run up the stream of powder coming out of the barrel?

665

00:39:13,000 --> 00:39:15,000

Are we going to see a big explosion?

666

00:39:15,000 --> 00:39:18,000

It's a cartoon caper classic.

667

00:39:18,000 --> 00:39:22,000

The lit fuse of gunpowder leads right to the powder keg and...

668

00:39:22,000 --> 00:39:23,000

Kalooly.

669

00:39:23,000 --> 00:39:29,000

But would the barrel really blow or would the fuse just fizzle out when it reaches the end of the line?

670

00:39:29,000 --> 00:39:31,000

Go ahead and plug it in.

671

00:39:32,000 --> 00:39:38,000

And to find out, they'll need to light the powder remotely and our bright sparks have just the thing.

672

00:39:38,000 --> 00:39:41,000

See, it's a 20,000 volt young transformer.

673

00:39:41,000 --> 00:39:45,000

I know that the electrical resistance of air is roughly 10,000 volts per centimeter,

674

00:39:45,000 --> 00:39:51,000

which means I only need to get the two ends of this transformer within two centimeters of each other

675

00:39:51,000 --> 00:39:53,000

for that arc to travel across them.

676

00:39:53,000 --> 00:39:56,000

And it is the most ideal thing to light the gunpowder.

677

00:39:57,000 --> 00:39:59,000

Perfect.

678

00:39:59,000 --> 00:40:05,000

Next, with Adam and Jamie displaying all the characteristics of kids who know the ice cream man is coming...

679

00:40:05,000 --> 00:40:07,000

Yet another thing to not try at home.

680

00:40:07,000 --> 00:40:11,000

Fill the keg with powder and lay down the road to explode.

681

00:40:11,000 --> 00:40:14,000

So as soon as the line gets here, shi-boom!

682

00:40:14,000 --> 00:40:16,000

At least in theory.

683

00:40:16,000 --> 00:40:19,000

It's a theory they can't wait to put into practice.

684

00:40:19,000 --> 00:40:24,000

Plus, there's a breeze and a danger the black powder will soon be blowing in the wind.

685

00:40:24,000 --> 00:40:26,000

Alright, let's do this thing.

686

00:40:26,000 --> 00:40:28,000

So it's double time down to the bunker.

687

00:40:28,000 --> 00:40:31,000

So I'm going to count it down and tell me when you're set.

688

00:40:32,000 --> 00:40:34,000

I am totally set now.

689

00:40:34,000 --> 00:40:38,000

Okay, going in three, two, one.

690

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

There it goes.

691

00:40:41,000 --> 00:40:43,000

Look at it go.

692

00:40:43,000 --> 00:40:48,000

The trail is ablaze and just like in the movies, it races towards its destination.

693

00:40:48,000 --> 00:40:52,000

Come on little buddy, don't burn out! Go, go, go, go!

694

00:40:52,000 --> 00:40:54,000

A barrel full of big boom.

695

00:40:54,000 --> 00:40:56,000

Go, go, go.

696

00:40:56,000 --> 00:40:58,000

And...

697

00:40:59,000 --> 00:41:01,000

Yeah!

698

00:41:02,000 --> 00:41:07,000

That was awesome! That was the best explosion we've ever done!

699

00:41:09,000 --> 00:41:10,000

I swear!

700

00:41:10,000 --> 00:41:12,000

That was a serious bang.

701

00:41:12,000 --> 00:41:17,000

This is one cinematic and cartoon cliché that does exactly what it says on the label.

702

00:41:19,000 --> 00:41:24,000

What happens when a burning line of gun powder reaches a keg full of gun powder?

703

00:41:24,000 --> 00:41:26,000

Exactly what you think.

704

00:41:26,000 --> 00:41:28,000

It's going to blow up and that's what it did.

705

00:41:29,000 --> 00:41:32,000

Each one of these expands a little bit.

706

00:41:32,000 --> 00:41:35,000

And look at all the burn strikes on the inside.

707

00:41:35,000 --> 00:41:39,000

Yeah, exactly. It's quite clear what it did, but it blew out both heads.

708

00:41:39,000 --> 00:41:40,000

It blew out the weakest part.

709

00:41:40,000 --> 00:41:43,000

If you watch the show at all, you know that I like to live my life.

710

00:41:43,000 --> 00:41:46,000

Halfway like an action movie hero and halfway like a cartoon character.

711

00:41:46,000 --> 00:41:51,000

And this explosion satisfied both of those halves of my personality.

712

00:41:51,000 --> 00:41:55,000

I proclaim it my favorite ever Mythbusters explosion.

713

00:41:59,000 --> 00:42:01,000

How are we going to call this one?

714

00:42:01,000 --> 00:42:03,000

Alright, let's go down the list one by one.

715

00:42:03,000 --> 00:42:09,000

The myth that you can light a line of black powder and yet still someone can outrun that line as it's on fire

716

00:42:09,000 --> 00:42:13,000

and kick it and break it's stream before it gets to an explosive thing.

717

00:42:13,000 --> 00:42:14,000

Perfectly plausible.

718

00:42:14,000 --> 00:42:20,000

And the myth that that line of black powder if it got all the way to a powder keg full of powder would it explode that keg?

719

00:42:20,000 --> 00:42:23,000

Absolutely...plausible.

720

00:42:23,000 --> 00:42:25,000

I totally agree. I think it's plausible.

721

00:42:25,000 --> 00:42:27,000

I think we've done some very good work here today.

722

00:42:27,000 --> 00:42:28,000

Let's get out of here.