

Home

Forum

Media

Gallery

New Posts

HF Store



Odds & Ends

Calendar

Hammock Forum Quick Tips

Forum Actions ▾

Quick Links ▾

Advanced Search

[Home](#)
[Forum](#)
[Hammock Camping](#)
[Suspension Systems, Ridgelines, & Bug Nets](#)

Everything you always wanted to know about Amsteel but were afraid to ask



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Results 1 to 10 of 28

 Page 1 of 3
 [1](#)
[2](#)
[3](#)
[Last](#)

Thread: Everything you always wanted to know about Amsteel but were afraid to ask

Thread Tools ▾ Display ▾

02-10-2016, 16:36

#1

Gravity 

Senior Member



Join Date: Jan 2013

Location: US

Hammock: Trail Lair || Brazilian**Tarp:** CF w/ doors**Insulation:** UGQ**Suspension:** UCR

Posts: 621

Everything you always wanted to know about Amsteel but were afraid to ask

Is Amsteel the same thing than Amsteel Blue?

They are not the same thing, but are often confused. As an example, the average strength of 1/4" Amsteel is 7400 pounds, while Amsteel Blue is 8600 pounds. Samson's Amsteel is made from Dyneema SK60. Amsteel Blue is made from Dyneema SK75. What is being sold by cottage vendors today is usually Amsteel Blue, even if they don't always call it that.

Does Amsteel Blue have 8 strands or 12 strands?

It depends. The 7/64 commonly used for whoopie slings, has only eight strands, but diameters beyond that have twelve. The Samson documentation invariably lists Amsteel Blue as a (class 2) **12-strand** product, but that documentation often does not include the 7/64 size because it is too small for the marine and industrial use that Samson caters to.

Class I ropes are manufactured from polyolefin, nylon and or polyester fiber. Class II ropes (including Amsteel) are manufactured from high-modulus fiber, such as Dyneema.

What is high modulus?

Amsteel is defined by Samson as a "high-

Ex. 1033

Crüzer v. Tethrd

modulus polyethylene" rope. The high-modulus part means that Amsteel has "low elasticity elongation" or in other words, it doesn't stretch much. However, this also means that this type of rope doesn't like to be shock-loaded, so ease into the hammock! Safe working loads do not apply to shock loading.

What is the safe working load (SWL) of Amsteel 7/64?

Working load (WL) is the load that a rope is subjected to during normal use. WLs are based on a percentage of the breaking strength (aka tensile strength) of new and unused rope. They are calculated by dividing the rope's breaking strength (BS) by a safety factor (SF). The breaking strength of Amsteel Blue 7/64 is 1600 pounds. Samson' recommends that maximum workload should be 1/5th, or 20% of the quoted breaking strength (safety factor = 5), and recommends a higher safety factor for uses that involve "life or limb." The Cordage Institute's recommends safety factors of 5 to 12 for non-critical uses, and 15 for life lines.

Here is the weight that a typical 7/64 [Amsteel Blue](#) whoopie sling is rated to support, using the minimum safety factor recommended by Samson:

$$\text{SWL} = \text{BS} / \text{SF} = 1600 / 5 = \mathbf{320 \text{ lbs}}$$

Note: I had originally posted a calculation based on plain Amsteel, which gave rise to some of the responses below. Don't get confused.

What size bury for Amsteel 7/64?

Samson specifies that a fid is equal to the diameter of the rope x 21, and that an effective bury for Class 2 rope should be three and a half fids. The diameter of Amsteel 7/64 is 0.11 inches, so for this rope, one fid is equal to 2.31 inches. So the recommended bury would be about 8 inches.

$$\text{Bury} = \text{fid} \times 3.5 = 2.31 \times 3.5 = \mathbf{8.01 \text{ inches}}$$

Note that the length of the bury is dependent on the diameter of the rope. Counter-intuitively, the smaller the diameter of the rope, the shorter the bury needs to be. For example, a whoopie made with 1.75 mm Zing-it would only need five inches of bury (if following Samson specs), while one made with 1/8 inch Amsteel would need nine inches.

To stitch or not to stitch?

The eye of the whoopie sling is usually made with a locked Brummell, which does not require stitching. The eye made in a variation of the "utility constrictor rope" (UCR), does require lock

Ex. 1033

Crüzr v. Tethrd

stitches (I like UCRs better than whoopies).

Why use splicing instead of knots?

Knots degrade the strength of the rope up to fifty percent. A good splice should not reduce rope strength by more than ten percent.

Resources:

Samson Rope User Manual

http://www.samsonrope.com/Documents/...Manual_WEB.pdf

Amsteel Blue as Class 2 rope (see page 8)

<http://www.samsonropecatalogs.com/home/100239.pdf>

Samson Rope Splicing Tutorials

- Splicing Main Page (See Class II, 12-strand)

<http://www.samsonrope.com/Pages/SpliceInstructions.aspx>

- Eye Splice PDF

http://www.samsonrope.com/Documents/...Splice_WEB.pdf

- Eye Splice Video

<https://www.youtube.com/watch?v=EjR4...ature=youtu.be>

- Whoopie Sling PDF

http://www.samsonrope.com/Documents/...I-Blue_WEB.pdf

Other Splicing Tutorials

http://www.yalecordage.com/pdf/yale_backsplice.pdf

<http://www.machovec.com/rope/splicing/splicing.htm>

<https://www.youtube.com/watch?v=gRuiTrR4KQA>

<https://www.youtube.com/watch?v=KtJGTgpv4dc>

Utility Constrictor Rope (UCR) Tutorials

<https://www.hammockforums.net/forum/...ty+constrictor>

<https://www.youtube.com/watch?v=vbk0jiRcEf0>

<https://www.youtube.com/watch?v=Yw6P3pHt8KI> (5:26)

https://www.youtube.com/watch?v=17_uXaEfZ9w

<https://www.youtube.com/watch?v=aBiGD--SOFg>

<https://www.youtube.com/watch?v=Ch-bqE7OQZw>

Terminology

<http://www.ropecord.com/new/terminology.php#D>

Last edited by Gravity; 02-12-2016 at 08:57.

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02-10-2016, 17:40

#2

silentorpheus 

 Donating Member



Join Date: Mar 2010

Location: Something Brunswick, NJ

Hammock: DH, WBBB, Dutch, DIY

Tarp: HG, WBSF, UGQ

Insulation: HG, LLG

Suspension: Whoopie Hooks

Posts: 2,586

Great summation of info.

Question - where are you pulling the 1200 breaking strength number for 7/64" Amsteel Blue from? Samson lists it as average breaking strength of 1600lbs, min breaking strength of 1400lbs. If you take the average of the two (1500), and use the safety factor of 5 as ascribed above, that would put the suggested weight rating at 300lbs (instead of 240).

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02-10-2016, 19:39

#3

Gravity 

Senior Member



Join Date: Jan 2013

Location: US

Hammock: Trail Lair || Brazilian

Tarp: CF w/ doors

Insulation: UGQ

Suspension: UCR

Posts: 621

 Originally Posted by **silentorpheus** 

*...where are you pulling the 1200 breaking strength number for 7/64" Amsteel **Blue** from?...*

My calculation was not based on Blue, but on the original Amsteel. I am making the assumption (and you know how wrong that can go) that unless a vendor specifies that he is selling Blue, he is not. Therefore the breaking strength is going to be less than 1600. How much less? Information on the SK60-based Amsteel is hard to find, specially on the smaller-diameter rope, and unfortunately, I can't find the source for my 1200 number. But I made a rough estimate by comparing how much less breaking strength there is between regular Amsteel and Blue in the larger diameter rope, based on the breaking strength table here:

http://www.balancecommunity.com/wp/s...AY2013_WEB.pdf

- In the 1/4" size, regular Am is 7400 while Blue is 8600 - a 86% difference, yielding 1376 breaking strength for regular Amsteel.
- In the 5/16 size, 10500/13700, 77%, 1232.

Ex. 1033
Crüzr v. Tethrd

- In the 3/8 size, 15500/19600, 79%, 1264.
- In the 7/16 size, 18000/23900, 75%, 1200

The average breaking strength of regular Amsteel from this small sample was 1268 pounds. The question here would be: Is what is being sold in the market place today regular Amsteel or Amsteel Blue? If it is Blue, your calculation is correct, the safe working load would be around 300 pounds. It would be great to have the answer to this question, and I would be more than happy to change my calculation accordingly.

Edit: Added the calculation for Amsteel Blue in OP.

Edit 2: BS specs also found here:
<http://www.samsonropecatalogs.com/home/100239.pdf>

*Edit 3: The original post was modified to use Amsteel Blue, after it became clear that Blue is what is being most commonly sold by the cottage vendors. **So this post (#3) is largely irrelevant now** - don't read it. 😊*

Last edited by Gravity; 02-12-2016 at 08:59.

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02-10-2016, 21:43

#4

silentorpheus 

Donating Member



Join Date: Mar 2010

Location: Something Brunswick, NJ

Hammock: DH, WBBB, Dutch, DIY

Tarp: HG, WBSF, UGQ

Insulation: HG, LLG

Suspension: Whoopie Hooks

Posts: 2,586

 Originally Posted by **Gravity** 

My calculation is not based on Blue, but on the original Amsteel. I am making the assumption (and you know how wrong that can go) that unless a vendor specifies that he is selling Blue, he is not.

That makes sense now. I read the preamble where you called attention to the difference between Amsteel and Amsteel Blue, and then continued reading with the bias that you were doing so to then discuss Blue, when you were rather discussing regular.

Carry on. 😊

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02-10-2016, 22:03

#5

Ex. 1033

Crüzr v. Tethrd

silentorpheus ◉

Donating Member



Join Date: Mar 2010

Location: Something Brunswick, NJ

Hammock: DH, WBBB, Dutch, DIY

Tarp: HG, WBSF, UGQ

Insulation: HG, LLG

Suspension: Whoopie Hooks

Posts: 2,586

Follow up thought/question:

I see no evidence, that I can find, that Samson makes or ever made regular Amsteel (product code 870) in any diameter smaller than 1/4". If there is no record that they made smaller diameters except in the Amsteel Blue line (product code 872), one could safely assume (most likely) that a vendor offering 7/64" or 1/8" 'Amsteel' would be Amsteel Blue, no? It wouldn't be until you hit 1/4" diameter that you'd have to start investigating more thoroughly ...

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02-10-2016, 22:24

#6

Mtn hanger ◉

Senior Member



Join Date: Sep 2015

Location: Sparta, NC

Hammock: Dutchware halfwit

Tarp: WB superfly

Insulation: HG Phoenix, Burrow

Suspension: DIY whoopie sling

Posts: 221

That's very informative thanks for sharing this.

Reply With Quote

02-10-2016, 22:28

#7

SilvrSurfr ◉

Donating Member



Join Date: Jul 2011

Location: Jersey Shore, NJ

I don't think I've ever bought anything but Amsteel Blue - makes me wonder how helpful this info on regular Amsteel is. I know a few people that use Amsteel Blue 1/8", but never met anybody using Amsteel 1/4 inch.

Ex. 1033
Crüzr v. Tethrd

Hammock: Dutch PolyD

Tarp: HG Winter Palace

Insulation: HG 0, 20, 40

Suspension: Dutch Whoopie Hook

Posts: 14,724

Images: 3

Last edited by SilvrSurfr; 02-10-2016 at 22:33.

"A foolish consistency is the hobgoblin of little minds."
Ralph Waldo Emerson

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02-11-2016, 00:14

#8

Gravity 

Senior Member



Join Date: Jan 2013

Location: US

Hammock: Trail Lair || Brazilian

Tarp: CF w/ doors

Insulation: UGQ

Suspension: UCR

Posts: 621

 Originally Posted by **silentorpheus** 

I see no evidence... that Samson makes or ever made regular Amsteel (product code 870) in any diameter smaller than 1/4". If there is no record that they made smaller diameters except in the Amsteel Blue line (product code 872), one could safely assume (most likely) that a vendor offering 7/64" or 1/8" 'Amsteel' would be Amsteel Blue, no? ...

You may very well be right. I would consider it definitely settled if at least one of the vendors who regularly sells Amsteel were to confirm your conclusion.

 Originally Posted by **Mtn hanger** 

That's very informative thanks for sharing this.

You're welcome! I did invest quite a bit of time putting it together, so it is nice to get a little appreciation. Thanks for that. There's a ton of good information, so I hope that the thread doesn't get stuck in the issue of regular Amsteel versus Amsteel Blue.

Last edited by Gravity; 02-11-2016 at 00:20.

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02-11-2016, 00:43

#9

Ex. 1033

Crüzr v. Tethrd

silentorpheus ◉

Donating Member



Join Date: Mar 2010

Location: Something Brunswick, NJ

Hammock: DH, WBBB, Dutch, DIY

Tarp: HG, WBSF, UGQ

Insulation: HG, LLG

Suspension: Whoopie Hooks

Posts: 2,586

Originally Posted by **Gravity** »

Thanks for that. There's a ton of good information, so I hope that the thread doesn't get stuck in the issue of regular Amsteel versus Amsteel Blue.

Agreed. Thanks for pulling all of this together into one post - and please don't think my questioning is aimed at detracting. Your post actually just made me stop and think about whether or not I could accurately say I ordered one or the other, etc. 🙌😄🙌

Reply With Quote

02-11-2016, 08:06

#10

TominMN ◉

Senior Member

Join Date: Jun 2015

Location: MN

Posts: 2,619

As long as we're talking Samson cordage made from Dyneema, what does that say about Lash It and Zing It? SK60 or SK75?

And then there is Samson AS-78 made from SK78 fibers. Also available in 7/64 and 1/8. Looks just like AmSteel Blue!

I believe the term for what Dyneema and Spectra fibers are made from is UHMW (ultra-high-molecular-weight) polyethylene. Other forms of the material include artificial ice!

Don't know if Spectra fibers have ratings different than Dyneema. Pretty sure New England uses the Spectra fibers in their products, e.g. Dynaglide.

I only mention this because Samson products aren't the only ones hangers are using...

Last edited by TominMN; 02-11-2016 at 08:20.

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Page 1 of 3 1 2 3 Last »

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Ex. 1033

Crüzer v. Tethrd

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