Transcript: A Better Way to Waterproof Fabric

Video ID: HedRbIsM75M

Extraction Date: 2025-04-02 06:46:29

**[00:00:00]** two years ago we made what I claimed

**[00:00:02]** were the best waterproof tarps from

**[00:00:04]** recycled bed sheets and silicone

**[00:00:06]** dissolved in a solvent in this video

**[00:00:09]** we'll see how those tarps have survived

**[00:00:11]** the last 2 years being exposed to the

**[00:00:13]** elements we'll see how an ordinary

**[00:00:15]** plastic tarp compared over that same

**[00:00:17]** amount of time and we'll learn a brand

**[00:00:19]** new fabric waterproofing method that

**[00:00:21]** works just as well is less expensive and

**[00:00:24]** uses non-toxic ingredients I used that

**[00:00:27]** method on this very jacket

**[00:00:30]** my shoe isn't waterproof a lot of water

**[00:00:33]** just got in

**[00:00:35]** there hi I'm Ben thank you for being

**[00:00:37]** with me let's get

**[00:00:47]** started well here is the bed sheet tarp

**[00:00:50]** that we made in my earlier video this is

**[00:00:52]** an ordinary poly blend bed sheet coated

**[00:00:55]** in silicone and it has lived on this

**[00:00:57]** wood pile for the past 2 years apart

**[00:00:59]** from a few stains it is still in pretty

**[00:01:02]** good shape there's a few holes where I

**[00:01:04]** have tossed logs on top very roughly but

**[00:01:07]** otherwise let's see if it still sheds

**[00:01:19]** water except for the water that just got

**[00:01:21]** in my shoe again that worked

**[00:01:23]** [Laughter]

**[00:01:28]** perfectly one of the key benefits of

**[00:01:31]** using a fabric tarp as compared to a

**[00:01:33]** plastic one is increased flexibility

**[00:01:37]** take a look at this this tarp is not

**[00:01:39]** much older than the one we just looked

**[00:01:40]** at and it is in tatters and that is

**[00:01:43]** because these tarps are made out of an

**[00:01:45]** array a grid of plastic ribbons which

**[00:01:48]** Bend IN very particular ways along those

**[00:01:51]** grid lines as they're being beaten by

**[00:01:53]** the wind and so once you get a weak

**[00:01:55]** point in one of these tarps it'll keep

**[00:01:56]** flexing in that same spot over and over

**[00:01:58]** again until you end up with these

**[00:02:00]** straight tears this is completely

**[00:02:03]** useless now if we want a tarp that can

**[00:02:05]** actually survive constant continuous use

**[00:02:08]** in the elements we need to go with

**[00:02:10]** fabric the loads of the wind will be

**[00:02:11]** distributed much more evenly throughout

**[00:02:14]** all the fibers and you don't end up with

**[00:02:16]** these tatters and tears

**[00:02:31]** well if my previous version of this

**[00:02:33]** project worked so well and the tarps

**[00:02:35]** have stood the test of time as we've

**[00:02:37]** seen what are we doing back here in the

**[00:02:39]** workshop trying to make waterproof

**[00:02:41]** fabric well it comes down to this stuff

**[00:02:44]** the solvent that I used to dissolve the

**[00:02:46]** silicone in my previous video this is

**[00:02:49]** Napa it's basically a petroleum

**[00:02:52]** distillate similar to gasoline and it's

**[00:02:54]** being banned in many places because like

**[00:02:57]** gasoline it's similarly carcinogen IC

**[00:03:00]** now that's not really a problem at a gas

**[00:03:02]** pump where you're only exposed to a

**[00:03:04]** little bit of it but apparently they

**[00:03:06]** don't want us messing with this stuff

**[00:03:07]** anymore in the workshop where you might

**[00:03:09]** receive a much higher dose at a time now

**[00:03:12]** in my earlier process I think that we

**[00:03:13]** did handle this solvent fairly safely by

**[00:03:16]** containing the fumes in a plastic bag

**[00:03:18]** however it would be obviously better if

**[00:03:20]** we used a process to make our waterproof

**[00:03:23]** tarps that was completely non-toxic and

**[00:03:25]** didn't use any solvent at all and so I

**[00:03:28]** thought we would go back to a much more

**[00:03:30]** ancient technique in this video that is

**[00:03:33]** coating Fabric in wax now this is a

**[00:03:36]** process that is hundreds of years old it

**[00:03:39]** used to be done with beeswax and now we

**[00:03:41]** have much cheaper paraffin wax that can

**[00:03:43]** also be used and there's many recipes

**[00:03:46]** online and in old books to do

**[00:03:50]** this wax treatment options for Fabrics

**[00:03:53]** span the gamut in terms of complexity

**[00:03:56]** it's a technique that goes back hundreds

**[00:03:57]** of years and so there's bound to be well

**[00:04:00]** at least a recipe for every year that

**[00:04:02]** this technique has existed and so we

**[00:04:04]** have recipes that call for things like

**[00:04:06]** pinear iron oxide boiled linseed oil all

**[00:04:09]** kinds of stuff that is either needlessly

**[00:04:11]** expensive or just

**[00:04:13]** unnecessary other recipes call for just

**[00:04:16]** straight wax either beeswax or paraffin

**[00:04:20]** however that undercuts our purpose to a

**[00:04:22]** certain extent because as we saw in the

**[00:04:25]** intro to this video flexibility is a key

**[00:04:28]** feature of a fabric tar

**[00:04:30]** well let me show you a piece of fabric

**[00:04:32]** that has been treated with 100%

**[00:04:38]** paraffin how flexible does that look to

**[00:04:42]** you it's actually not as bad as it looks

**[00:04:45]** this piece of fabric which has been

**[00:04:47]** treated with a 100% paraffin wax coating

**[00:04:51]** well it actually has some interesting

**[00:04:53]** properties people actually use this

**[00:04:55]** stuff as kind of a more organic version

**[00:04:57]** of Saran Wrap you can ball it up or put

**[00:05:00]** it over a container of food and it will

**[00:05:01]** maintain its shape the problem is when

**[00:05:05]** we unfold this we see some serious

**[00:05:08]** issues about using this as a tarp we see

**[00:05:11]** these white lines where the fabric has

**[00:05:13]** been folded and on the microscopic level

**[00:05:16]** these white stripes are actually the wax

**[00:05:19]** powdering turning into a powder in a

**[00:05:21]** state where it can just fall right off

**[00:05:23]** the fibers now this would maintain its

**[00:05:25]** water resistance for a while but being

**[00:05:28]** beaten over and over by the wind this

**[00:05:30]** wax is just going to fall off it also

**[00:05:32]** has the same problem as we saw in the

**[00:05:34]** plastic tarp where wherever these white

**[00:05:36]** lines are that is now a seam that is

**[00:05:38]** more flexible than the surrounding

**[00:05:40]** Fabric and so it will repeatedly Bend in

**[00:05:43]** the same places until we end up with a

**[00:05:46]** weak spot that is more likely to tear

**[00:05:49]** the ideal wax waterproofing method would

**[00:05:51]** not leave any of these white marks along

**[00:05:53]** the areas where the fabric has been

**[00:05:55]** previously bent and if you take a look

**[00:05:57]** at this jacket which has been treated

**[00:05:59]** with with my new waterproofing method we

**[00:06:01]** don't see any of this damage this is in

**[00:06:04]** perfect condition even along the most

**[00:06:06]** bent

**[00:06:08]** areas this is my secret weapon for the

**[00:06:10]** perfect wax coating mineral oil this has

**[00:06:14]** the excellent property when mixed with

**[00:06:16]** molten paraffin wax of causing it to

**[00:06:19]** become softer more flexible so that when

**[00:06:22]** we coat fabric the flexibility of the

**[00:06:25]** wax matches the flexibility of the

**[00:06:27]** fabric itself and you don't get that

**[00:06:29]** crumbl effect along the fold lines we

**[00:06:32]** can add increasing amounts of oil to

**[00:06:34]** increase the flexibility of our wax and

**[00:06:36]** so I did a bunch of different tests at

**[00:06:38]** the lowest quantity of oil we get fabric

**[00:06:41]** that is a little bit softer than the

**[00:06:43]** original 100% wax coating this is one

**[00:06:46]** cup of oil for every 2 lbs of wax and

**[00:06:49]** this is a pretty good sample we still

**[00:06:51]** get some white marks along the fold

**[00:06:53]** lines but unlike the original 100% wax

**[00:06:56]** coating a little bit of pressure on this

**[00:06:58]** Fabric and those white marks go away

**[00:07:01]** this already has obtained some

**[00:07:03]** self-healing properties giving it a huge

**[00:07:05]** advantage over 100% wax on the other end

**[00:07:09]** of the spectrum we have this sample

**[00:07:11]** using four cups of oil for every 2 lbs

**[00:07:14]** of wax that's a whole liter of oil per

**[00:07:16]** kilogram this has great flexibility it's

**[00:07:19]** as flexible as the original fabric

**[00:07:21]** without being treated however this

**[00:07:24]** leaves an oil slick on my fingers adding

**[00:07:26]** more oil lowers the melting point of the

**[00:07:28]** wax and this melts right around my body

**[00:07:30]** temperature so if we used this mixture

**[00:07:33]** to coat something like a jacket I would

**[00:07:35]** end up very oily stepping out of it this

**[00:07:38]** could be appropriate in a very cold

**[00:07:40]** weather environment because wax gets

**[00:07:42]** stiffer in colder weather this being

**[00:07:44]** very soft at room temperature and body

**[00:07:46]** temperature would retain its flexibility

**[00:07:49]** even in the coldest of environments so

**[00:07:51]** there is still a use for this type of

**[00:07:53]** wax coating however the best coating I

**[00:07:56]** found for everyday use uses this recipe

**[00:08:00]** 2 cups of oil for every 2 lb of wax

**[00:08:03]** that's 500 ml per kogam this has some

**[00:08:06]** excellent properties it's a little bit

**[00:08:09]** stiffer than the ordinary fabric but we

**[00:08:11]** don't get any white marks along fold

**[00:08:13]** lines and it also doesn't leave any oil

**[00:08:15]** slick on my hands this is the perfect

**[00:08:18]** coating for clothing and normal weather

**[00:08:22]** tarps this is excellent and conveniently

**[00:08:25]** it uses exactly 1 16 o bottle of mineral

**[00:08:29]** oil

**[00:08:30]** per two boxes of wax no measuring needed

**[00:08:33]** at least if you're in the

**[00:08:35]** US my sponsor for this video is delete

**[00:08:39]** me I want you to take a look at this

**[00:08:41]** list these are just some of the data

**[00:08:44]** Brokers that sced the internet compiling

**[00:08:47]** public and government records of my

**[00:08:49]** personal information like my phone

**[00:08:51]** number address email and who I'm related

**[00:08:54]** to and packaged it into a product that

**[00:08:56]** they could sell to anyone willing to pay

**[00:08:58]** for these personal detail details most

**[00:09:00]** often the buyers for this kind of data

**[00:09:02]** are advertisers like telemarketers and

**[00:09:05]** scammers fishing attempts are a lot more

**[00:09:07]** effective when the scammer knows your

**[00:09:09]** history and the data Brokers on this

**[00:09:11]** list who are selling my information

**[00:09:13]** almost certainly are doing the same to

**[00:09:15]** you this is why delete me exists you

**[00:09:18]** could Google yourself try to find each

**[00:09:20]** of these sites and manually fill out

**[00:09:22]** their required forms to submit takedown

**[00:09:24]** requests for the removal of your data

**[00:09:27]** but this is a big list with more brok

**[00:09:29]** appearing all the time delete me

**[00:09:32]** regularly scans the internet for your

**[00:09:33]** data and submits takedown requests for

**[00:09:35]** you whenever your information appears

**[00:09:38]** this list is just what they submitted

**[00:09:40]** takedowns for on my behalf in the first

**[00:09:42]** few weeks that I used them if you'd like

**[00:09:44]** to make it a lot harder on telemarketers

**[00:09:46]** scammers and identity thieves to get

**[00:09:48]** your information and that of those you

**[00:09:50]** care about check out delete me you can

**[00:09:52]** get a 20% discount on a US consumer plan

**[00:09:55]** by using my link join delet me.com

**[00:09:57]** Nighthawk and using the code Nighthawk

**[00:10:00]** on

**[00:10:01]** checkout the first step of this

**[00:10:03]** waterproofing process is to prepare the

**[00:10:06]** wax mixture and this is really

**[00:10:08]** straightforward you just melt the oil

**[00:10:10]** and wax together and this is best done

**[00:10:12]** in something like a double boiler so I

**[00:10:14]** have here an electric hot plate and then

**[00:10:17]** in this lower dish I have water to even

**[00:10:20]** out the heat on this second container

**[00:10:22]** this little pot here which is where

**[00:10:24]** we'll melt our wax this double boiler

**[00:10:27]** setup prevents the wax from overheating

**[00:10:29]** Ing and smoking or causing a fire as

**[00:10:31]** long as there's water in this pan this

**[00:10:33]** will never exceed the boiling point of

**[00:10:36]** water so there we go 2 lb of wax to 2

**[00:10:40]** cups of mineral oil 500 mL of oil per

**[00:10:45]** kilogram of wax and that will make the

**[00:10:48]** perfect waterproofing

**[00:10:52]** mixture all right let's give this a stir

**[00:10:55]** make sure the oil is mixed in and this

**[00:10:59]** will take quite a long time to cool and

**[00:11:04]** resolidify well I've let this wax set up

**[00:11:07]** now it will take about 2 to 3 hours for

**[00:11:10]** the wax to solidify at room temperature

**[00:11:13]** molten wax can hold on to a lot of heat

**[00:11:15]** and that heat is released again when it

**[00:11:18]** turns back into a solid it could

**[00:11:20]** actually be useful for a lot of other

**[00:11:21]** purposes like holding on to latent heat

**[00:11:23]** overnight to keep a building warm that

**[00:11:26]** could be an interesting experiment for

**[00:11:27]** the future so now we're left with just a

**[00:11:30]** solid chunk of wax in the bottom of this

**[00:11:32]** container and to get this out I'm going

**[00:11:34]** to first try to just tap this upside

**[00:11:36]** down on the table here hopefully it'll

**[00:11:38]** just slip right out if not an easy trick

**[00:11:40]** is throw the whole thing into a freezer

**[00:11:42]** for 5 or 10 minutes that'll cause the

**[00:11:44]** steel to shrink which will break its

**[00:11:46]** connection with the wax at the same time

**[00:11:48]** the wax will harden from the cold so

**[00:11:49]** it's less sticky and that will usually

**[00:11:52]** cause it to pop

**[00:11:53]** out and here it is a block of the

**[00:11:56]** perfect wax for fabric waterproofing so

**[00:11:59]** I have another piece here that I have

**[00:12:01]** prepared earlier and cutting this stuff

**[00:12:03]** is really easy let me show you I'll

**[00:12:05]** start with this piece so I have a metal

**[00:12:08]** ruler you can use anything hard in metal

**[00:12:10]** including a knife but you don't need

**[00:12:12]** anything sharp to do this because this

**[00:12:14]** wax is very soft just take something

**[00:12:16]** like a ruler and press it down through

**[00:12:18]** the

**[00:12:19]** wax just like that you can cut it just

**[00:12:22]** like a bar of soap and that's all there

**[00:12:24]** is to it to Preparing the actual wax

**[00:12:27]** mixture now the form fact after you want

**[00:12:29]** this stuff in depends on how you're

**[00:12:31]** going to use it first I'll show you how

**[00:12:33]** to make a waterproof tarp using this wax

**[00:12:36]** and then we'll move on to something more

**[00:12:38]** advanced like this jacket to start with

**[00:12:41]** for a tarp what you'll need is a cheap

**[00:12:43]** iron this I've had for years I'm sure I

**[00:12:47]** didn't spend more than $20 on it you

**[00:12:49]** don't want to use your favorite iron on

**[00:12:51]** this if you have a favorite iron I guess

**[00:12:53]** that's probably a thing people have uh

**[00:12:55]** you want something that you're willing

**[00:12:57]** to get a lot of wax on I wouldn't use

**[00:13:00]** this anymore to iron regular clothes the

**[00:13:03]** first consideration before beginning

**[00:13:05]** this process is protecting your work

**[00:13:07]** surface this is a wooden tabletop which

**[00:13:09]** would absorb a lot of wax if we allowed

**[00:13:12]** it to so instead I've protected it with

**[00:13:14]** a sheet of freezer paper you can buy

**[00:13:16]** this stuff at any grocery store it's

**[00:13:18]** kind of similar to wax paper but instead

**[00:13:20]** of wax it uses a thin layer of plastic

**[00:13:23]** on one side so it's a piece of paper

**[00:13:25]** that's completely impervious to both

**[00:13:27]** water and wax making it perfect for this

**[00:13:29]** process the first step here is to cut

**[00:13:32]** the wax into 1in cubes which the iron

**[00:13:34]** will easily be able to melt meanwhile we

**[00:13:37]** can also get this iron warming up at its

**[00:13:39]** lowest heat setting you might be able to

**[00:13:41]** creep the temperature up warmer as this

**[00:13:43]** project progresses and you get a better

**[00:13:45]** feel for how it's going but start at

**[00:13:47]** that lowest setting just to be safe and

**[00:13:49]** maybe you can increase the temperature

**[00:13:51]** from there this process consists of

**[00:13:54]** taking a few cubes of our wax at a time

**[00:13:57]** and melting them into the sheet with the

**[00:14:00]** iron the purpose of using an iron rather

**[00:14:03]** than pouring on the wax already molten

**[00:14:06]** is that the iron is a nice surface that

**[00:14:08]** can actually push the wax around it can

**[00:14:11]** force it into the fibers of the fabric

**[00:14:13]** so we treat multiple layers of this

**[00:14:15]** sheet at once and if we end up with

**[00:14:17]** excess wax in any area of this sheet

**[00:14:20]** we'll actually be able to use the iron

**[00:14:22]** to push that excess wax into other areas

**[00:14:25]** so we get a very even coating it's a

**[00:14:28]** really easy proc process this does

**[00:14:30]** require quite a lot of wax I'll end up

**[00:14:33]** using probably a little bit more than

**[00:14:35]** half a pound for this twins siiz sheet a

**[00:14:38]** queen will take about a pound and in

**[00:14:40]** order to make sure that this goes as

**[00:14:42]** smoothly as possible we also want to

**[00:14:44]** make sure that the sheet is well folded

**[00:14:46]** any place where there's a wrinkle or an

**[00:14:49]** extra layer of fabric is a place where

**[00:14:51]** the wax is going to have a harder time

**[00:14:53]** absorbing than the rest of the surface

**[00:14:55]** and so once we unfold it we'll see a

**[00:14:57]** bunch of spots that were never treated

**[00:14:59]** and we'll have to go back over those

**[00:15:00]** again individually the less of that you

**[00:15:03]** have to do the better so make sure the

**[00:15:05]** sheet is well

**[00:15:06]** folded now you can also see the reason

**[00:15:08]** for keeping this iron on a low setting

**[00:15:11]** in order to cause the wax to melt

**[00:15:13]** through all the layers of this sheet we

**[00:15:15]** need to keep the heat applied for a good

**[00:15:17]** amount of time if the iron were set too

**[00:15:19]** high we might cause the wax to smoke I

**[00:15:23]** know I'm not done yet but let's take a

**[00:15:25]** look at the other side I don't expect

**[00:15:28]** we'll have soaked through much no not

**[00:15:30]** hardly any so we're about halfway

**[00:15:32]** through with some of this Fabric and we

**[00:15:34]** need to work on this side applying quite

**[00:15:36]** a bit more wax working from this side

**[00:15:38]** down now and see if you can make the wax

**[00:15:40]** meet in the

**[00:15:41]** middle well with that little bit along

**[00:15:44]** the edge there finished I think that

**[00:15:45]** about covered all the dry spots that I

**[00:15:48]** can see from the outside on this sheet

**[00:15:52]** so now what I'm going to do is slowly

**[00:15:54]** work my iron across the entire surface

**[00:15:57]** of this sheet now that we have enough

**[00:15:59]** wax absorbed into the fabric I just want

**[00:16:01]** to make sure that it's spread evenly so

**[00:16:03]** little by little I'm going to work from

**[00:16:06]** my right to the left see how soft and

**[00:16:09]** flexible the fabric is over here that's

**[00:16:12]** because the wax is molten all the way

**[00:16:14]** through and I can be fairly confident at

**[00:16:16]** this point that we have penetrated the

**[00:16:19]** fabric fully with that wax now this

**[00:16:23]** should be a finished sheet let's take a

**[00:16:26]** look inside see if there's any dry spots

**[00:16:28]** left left

**[00:16:29]** over I think we have a perfect

**[00:16:33]** coating right where two folds met

**[00:16:36]** there's a little bit of a dry spot so

**[00:16:38]** what I'll do is I'll take a little piece

**[00:16:39]** of wax rub it on there and just hit it

**[00:16:42]** one more time with the

**[00:16:45]** iron and it's gone perfectly

**[00:16:52]** coated the sides of the tarp can stick

**[00:16:55]** to one another a little bit after that

**[00:16:56]** first ironing

**[00:17:00]** but there we have

**[00:17:04]** it how exactly am I supposed to

**[00:17:06]** demonstrate how waterproof this is when

**[00:17:08]** the water is

**[00:17:11]** solid notice how flexible this is even

**[00:17:14]** in subzero temperatures it's cold out

**[00:17:17]** here and

**[00:17:18]** this it's soft the wax did not harden up

**[00:17:22]** and it feels just like ordinary fabric

**[00:17:24]** maybe a little bit of a waxy texture but

**[00:17:27]** nothing comes off on your hands this is

**[00:17:29]** awesome this is the perfect wax

**[00:17:32]** waterproofing

**[00:17:35]** recipe look at how it beads up on

**[00:17:41]** [Laughter]

**[00:17:43]** there look at that look at those

**[00:17:46]** beads that's so cool by the way some of

**[00:17:50]** you may have noticed uh that there is

**[00:17:53]** that sort of white pattern on there that

**[00:17:55]** we said was a bad thing on the 100% wax

**[00:17:59]** coating this is not the same thing going

**[00:18:00]** on this is just a little bit of excess

**[00:18:02]** wax on the surface that wasn't quite

**[00:18:04]** smeared off with the pressure from the

**[00:18:08]** iron this excess wax actually brushes

**[00:18:11]** right off and once it's gone what's

**[00:18:13]** absorbed into the fibers is going to

**[00:18:15]** stay there for a really long time the

**[00:18:17]** waterproofness of this coating is not

**[00:18:19]** going to rub

**[00:18:23]** off I think this is pretty waterproof

**[00:18:31]** [Applause]

**[00:18:34]** one of the ways to deal with the powder

**[00:18:36]** coat that's left over on these sheets

**[00:18:38]** after treatment with the iron is to use

**[00:18:40]** a little heat now a direct flame is

**[00:18:43]** maybe not the best option a hairir dryer

**[00:18:46]** would also work a flame is a little bit

**[00:18:48]** risky because these sheets of course are

**[00:18:50]** a little bit more flammable than they

**[00:18:52]** used to be now that they're coated in

**[00:18:53]** wax we'll do some flammability tests in

**[00:18:55]** a moment to show that they're not that

**[00:18:57]** flammable and a spark is really unlikely

**[00:19:00]** to ignite them you can heat this over a

**[00:19:02]** fire just try to keep it out of direct

**[00:19:04]** contact with the

**[00:19:06]** Flames the trick here to this secondary

**[00:19:08]** heat treatment is to watch for the color

**[00:19:11]** change you can really tell the

**[00:19:12]** difference in darkness between the areas

**[00:19:14]** which still have that light powder coat

**[00:19:17]** of wax on the surface versus the much

**[00:19:19]** darker areas where that wax has been

**[00:19:21]** reabsorbed into the fibers once this

**[00:19:23]** tarp has become warm enough by the fire

**[00:19:26]** to actually melt that wax you'll

**[00:19:28]** definitely itely be able to see the

**[00:19:31]** difference well I know that many of you

**[00:19:33]** are going to be interested to see an

**[00:19:34]** actual demonstration of the flammability

**[00:19:37]** of this fabric because just like you

**[00:19:39]** would expect from a piece of cotton or

**[00:19:42]** polyester soaked in wax well it burns

**[00:19:45]** pretty much as well as a candle wick

**[00:19:48]** that's basically what it is on the small

**[00:19:50]** scale it's not too difficult to deal

**[00:19:52]** with a fire I can just extinguish that

**[00:19:54]** with my fingers but if a large tarp

**[00:19:56]** actually caught fire it would be quite

**[00:19:58]** Blaze we could expect a tarp that's

**[00:20:01]** going to be used for camping to at least

**[00:20:02]** be exposed to Sparks fairly regularly so

**[00:20:06]** let's see how easy it is to catch one of

**[00:20:07]** these tarps on fire with a

**[00:20:15]** spark well it seems like Metal Sparks

**[00:20:18]** didn't do any damage I have a little

**[00:20:20]** frayed area on the cloth right here

**[00:20:22]** which I thought might catch a spark and

**[00:20:24]** be a little more likely to catch fire

**[00:20:26]** let's try some charcoal Sparks

**[00:20:36]** ouch hurt

**[00:20:46]** myself well there we have it the Embers

**[00:20:48]** went out of their own accord without

**[00:20:50]** starting a fire on this tarp I even blew

**[00:20:53]** on them a little bit to try to Kindle a

**[00:20:55]** flame and that didn't do it now that's

**[00:20:57]** not to say that under no circumstances

**[00:20:59]** could a fire be started with an ember on

**[00:21:01]** one of these tarps is just to show that

**[00:21:04]** it's not an easy thing or a likely thing

**[00:21:06]** to occur obviously you still need to use

**[00:21:08]** common sense try to put your tarp

**[00:21:10]** further away from the fire than you

**[00:21:12]** expect Sparks to fly of course that goes

**[00:21:14]** for plastic tarps too all the advice you

**[00:21:16]** would normally use to keep your plastic

**[00:21:18]** tarps safe from fire should be adequate

**[00:21:20]** protection for one of these wax coated

**[00:21:24]** [Applause]

**[00:21:27]** tarps this result is so far beyond my

**[00:21:30]** expectations when I started this project

**[00:21:33]** this is not only the best wax waterproof

**[00:21:35]** coating that I've seen this competes

**[00:21:37]** with the silicone one from earlier I've

**[00:21:40]** had a lot of friends that have made wax

**[00:21:41]** canvas using some of the more

**[00:21:43]** traditional methods they do not compare

**[00:21:45]** to this they lack the flexibility the

**[00:21:47]** durability of the coating this has

**[00:21:50]** everything and it's using really cheap

**[00:21:52]** ingredients I love this method but then

**[00:21:56]** again this is a very simple

**[00:21:59]** application when it comes to

**[00:22:00]** waterproofing a more complex fabric item

**[00:22:03]** like this jacket I had to switch to a

**[00:22:06]** different technique I started off by

**[00:22:08]** trying the same thing that works really

**[00:22:10]** well for a tarp I tried melting the wax

**[00:22:13]** into the fabric using my iron but for

**[00:22:16]** the same reason that this method works

**[00:22:18]** really well for a tarp that is we get to

**[00:22:21]** waterproof multiple layers at the same

**[00:22:23]** time that made it really bad for this

**[00:22:26]** jacket this has two layers of fabric we

**[00:22:29]** have the heavy denim layer on the

**[00:22:31]** outside and then a lighter cotton layer

**[00:22:33]** on the inside and the iron sent the wax

**[00:22:36]** straight through both layers and so this

**[00:22:39]** jacket sucked up so much more wax than

**[00:22:42]** was really necessary we only need wax in

**[00:22:44]** the outside layer to prevent water from

**[00:22:46]** getting inside any extra is just a waste

**[00:22:50]** so because I used the iron starting off

**[00:22:52]** on the back of this jacket this sucked

**[00:22:55]** up almost a full pound of wax and most

**[00:22:57]** of it is in the back where I used the

**[00:22:59]** iron so I decided to change methods and

**[00:23:02]** use a recommendation that I've seen in

**[00:23:04]** several comments on my previous video

**[00:23:07]** those who have used wax to treat fabric

**[00:23:09]** before have come up with some

**[00:23:10]** interesting methods like using a cheese

**[00:23:12]** grater to powderize the wax before

**[00:23:15]** applying it you then sprinkle the

**[00:23:17]** powdered wax over the jacket and hit it

**[00:23:19]** with a heat gun because this wax is

**[00:23:22]** mixed with oil and has a really low

**[00:23:23]** melting point you could actually just

**[00:23:25]** use an ordinary hair dryer even on low I

**[00:23:28]** bet it would be enough to melt the wax

**[00:23:29]** into this fabric this worked okay but

**[00:23:32]** it's not my favorite method it sort of

**[00:23:35]** soaked in in patches the wax started

**[00:23:38]** beating together with itself before

**[00:23:39]** actually soaking into the fibers so I

**[00:23:42]** ended up having to apply it multiple

**[00:23:43]** times to the same areas a better method

**[00:23:46]** which I switched to on the other side

**[00:23:48]** was to start applying this wax as a

**[00:23:51]** paste it's actually extremely soft

**[00:23:53]** because we've mixed it with the oil and

**[00:23:55]** so you can use it almost like a very

**[00:23:57]** soft CR Bran or really hard toothpaste

**[00:24:01]** you can really smear this on in a thick

**[00:24:03]** coat and then once you apply heat from

**[00:24:05]** the heat gun it really absorbs well and

**[00:24:08]** evenly also I can go over the seams a

**[00:24:11]** little bit more with the wax and just

**[00:24:12]** keep hitting it with the heat gun a

**[00:24:14]** little at a time to make sure I get

**[00:24:15]** enough wax in all the areas this worked

**[00:24:18]** so well and none of it absorbed all the

**[00:24:21]** way through into that inner layer

**[00:24:23]** without the pressure of the iron that

**[00:24:25]** inner layer of fabric just doesn't get

**[00:24:27]** warm enough to absorb the wax it stays

**[00:24:29]** all on the outside where I want it this

**[00:24:31]** was the perfect option and this is what

**[00:24:33]** I would recommend if you wanted to coat

**[00:24:35]** your own jacket or maybe a backpack

**[00:24:38]** anything that is in odd shape and isn't

**[00:24:40]** necessarily ideal for an iron which is

**[00:24:42]** going to drive that wax through multiple

**[00:24:44]** layers this is how you apply the wax

**[00:24:46]** only to the outside layer where you

**[00:24:49]** really need it to be

**[00:24:56]** waterproof well since some of you might

**[00:24:58]** be here watching this without having

**[00:25:00]** seen my earlier video I feel a little

**[00:25:02]** bit obligated to demonstrate a fan

**[00:25:04]** favorite that is button technology not

**[00:25:08]** modern buttons like you'd see on this

**[00:25:10]** jacket or an old sweater we're talking

**[00:25:12]** about an ancient technology that uses

**[00:25:14]** something like this a marble a stone an

**[00:25:18]** acorn any small object that you can push

**[00:25:21]** through the backside of a piece of

**[00:25:23]** fabric so you end up having it contained

**[00:25:26]** in a little pocket you then take a slip

**[00:25:29]** knot in a rope and slip it over that

**[00:25:32]** button and what you end up with is an

**[00:25:35]** extremely strong tie down point that can

**[00:25:38]** be used in place of a grommet on an

**[00:25:40]** ordinary tarp this is actually much

**[00:25:43]** stronger than a grommet because it

**[00:25:44]** doesn't have to punch a hole through the

**[00:25:46]** fabric to hold it down it can even be

**[00:25:49]** used through multiple layers of fabric

**[00:25:51]** to hold them together like this

**[00:25:58]** penguin

**[00:26:00]** [Laughter]

**[00:26:02]** mode this is actually extremely warm

**[00:26:05]** it's wind resistant it keeps the heat in

**[00:26:07]** I can see why people used these in

**[00:26:09]** ancient times one button just a stone or

**[00:26:13]** a pebble into piece of string you have a

**[00:26:19]** cloak let's do a little bonus lesson in

**[00:26:21]** order to use button technology you need

**[00:26:24]** to have a good slip knot and my favorite

**[00:26:27]** knot for this and for many other

**[00:26:29]** purposes is the tot line hitch this is a

**[00:26:32]** knot that you can pull on as hard as you

**[00:26:34]** want and it will not slip but grab onto

**[00:26:37]** the knot

**[00:26:39]** itself and we can slide it Right Down

**[00:26:41]** the Line This is why it's called the tot

**[00:26:43]** line hitch because using this you can

**[00:26:46]** really tighten up a rope by sliding that

**[00:26:48]** knot and then we can loosen it just by

**[00:26:50]** pulling it down this way and you can

**[00:26:52]** also tighten it around a button and end

**[00:26:55]** up with a very secure hold

**[00:26:59]** so to tie our tot line hitch take the

**[00:27:02]** end of your rope and double it back like

**[00:27:04]** this next take this tail and go over the

**[00:27:08]** other side like so take this and go

**[00:27:12]** around this side twice to make a double

**[00:27:16]** Loop just like that a double twist

**[00:27:19]** around this line now take this tail and

**[00:27:22]** go over this side of the twist go down

**[00:27:27]** and under this side of the Rope take a

**[00:27:29]** careful look at this you'll be able to

**[00:27:31]** figure that out I think then take this

**[00:27:34]** tail and go

**[00:27:36]** back through this Loop you've just

**[00:27:39]** formed that is your totline hitch super

**[00:27:43]** tight when pulling from the end of the

**[00:27:44]** loop but the knot slides

**[00:27:49]** freely this is one of my very favorite

**[00:27:52]** knots I use it all the time it's great

**[00:27:55]** for tying buttons into fabric it's

**[00:27:57]** awesome for tightening up tarps so that

**[00:27:59]** they're super tight good for tying down

**[00:28:01]** tents and stuff into the back of a truck

**[00:28:04]** anytime you need a line to be super

**[00:28:06]** tight this is the knot you

**[00:28:08]** want good thumbnail let's give it a

**[00:28:16]** [Laughter]

**[00:28:19]** try it's a good thing my jacket's

**[00:28:24]** waterproof let me know what part of this

**[00:28:27]** video you most enjoy let me know what

**[00:28:29]** you least enjoy also leave me a comment

**[00:28:31]** below I'd really love your feedback so I

**[00:28:33]** can continue to improve thanks to all of

**[00:28:35]** you who continue to leave me comments I

**[00:28:37]** still read all of them I really do and

**[00:28:39]** thanks to all of you also who support me

**[00:28:41]** on patreon that is what really makes

**[00:28:43]** these videos happen thank you so much

**[00:28:45]** for watching I'll see you next time

# Full Text (without timestamps)

two years ago we made what I claimed were the best waterproof tarps from recycled bed sheets and silicone dissolved in a solvent in this video we'll see how those tarps have survived the last 2 years being exposed to the elements we'll see how an ordinary plastic tarp compared over that same amount of time and we'll learn a brand new fabric waterproofing method that works just as well is less expensive and uses non-toxic ingredients I used that method on this very jacket my shoe isn't waterproof a lot of water just got in there hi I'm Ben thank you for being with me let's get started well here is the bed sheet tarp that we made in my earlier video this is an ordinary poly blend bed sheet coated in silicone and it has lived on this wood pile for the past 2 years apart from a few stains it is still in pretty good shape there's a few holes where I have tossed logs on top very roughly but otherwise let's see if it still sheds water except for the water that just got in my shoe again that worked [Laughter] perfectly one of the key benefits of using a fabric tarp as compared to a plastic one is increased flexibility take a look at this this tarp is not much older than the one we just looked at and it is in tatters and that is because these tarps are made out of an array a grid of plastic ribbons which Bend IN very particular ways along those grid lines as they're being beaten by the wind and so once you get a weak point in one of these tarps it'll keep flexing in that same spot over and over again until you end up with these straight tears this is completely useless now if we want a tarp that can actually survive constant continuous use in the elements we need to go with fabric the loads of the wind will be distributed much more evenly throughout all the fibers and you don't end up with these tatters and tears well if my previous version of this project worked so well and the tarps have stood the test of time as we've seen what are we doing back here in the workshop trying to make waterproof fabric well it comes down to this stuff the solvent that I used to dissolve the silicone in my previous video this is Napa it's basically a petroleum distillate similar to gasoline and it's being banned in many places because like gasoline it's similarly carcinogen IC now that's not really a problem at a gas pump where you're only exposed to a little bit of it but apparently they don't want us messing with this stuff anymore in the workshop where you might receive a much higher dose at a time now in my earlier process I think that we did handle this solvent fairly safely by containing the fumes in a plastic bag however it would be obviously better if we used a process to make our waterproof tarps that was completely non-toxic and didn't use any solvent at all and so I thought we would go back to a much more ancient technique in this video that is coating Fabric in wax now this is a process that is hundreds of years old it used to be done with beeswax and now we have much cheaper paraffin wax that can also be used and there's many recipes online and in old books to do this wax treatment options for Fabrics span the gamut in terms of complexity it's a technique that goes back hundreds of years and so there's bound to be well at least a recipe for every year that this technique has existed and so we have recipes that call for things like pinear iron oxide boiled linseed oil all kinds of stuff that is either needlessly expensive or just unnecessary other recipes call for just straight wax either beeswax or paraffin however that undercuts our purpose to a certain extent because as we saw in the intro to this video flexibility is a key feature of a fabric tar well let me show you a piece of fabric that has been treated with 100% paraffin how flexible does that look to you it's actually not as bad as it looks this piece of fabric which has been treated with a 100% paraffin wax coating well it actually has some interesting properties people actually use this stuff as kind of a more organic version of Saran Wrap you can ball it up or put it over a container of food and it will maintain its shape the problem is when we unfold this we see some serious issues about using this as a tarp we see these white lines where the fabric has been folded and on the microscopic level these white stripes are actually the wax powdering turning into a powder in a state where it can just fall right off the fibers now this would maintain its water resistance for a while but being beaten over and over by the wind this wax is just going to fall off it also has the same problem as we saw in the plastic tarp where wherever these white lines are that is now a seam that is more flexible than the surrounding Fabric and so it will repeatedly Bend in the same places until we end up with a weak spot that is more likely to tear the ideal wax waterproofing method would not leave any of these white marks along the areas where the fabric has been previously bent and if you take a look at this jacket which has been treated with with my new waterproofing method we don't see any of this damage this is in perfect condition even along the most bent areas this is my secret weapon for the perfect wax coating mineral oil this has the excellent property when mixed with molten paraffin wax of causing it to become softer more flexible so that when we coat fabric the flexibility of the wax matches the flexibility of the fabric itself and you don't get that crumbl effect along the fold lines we can add increasing amounts of oil to increase the flexibility of our wax and so I did a bunch of different tests at the lowest quantity of oil we get fabric that is a little bit softer than the original 100% wax coating this is one cup of oil for every 2 lbs of wax and this is a pretty good sample we still get some white marks along the fold lines but unlike the original 100% wax coating a little bit of pressure on this Fabric and those white marks go away this already has obtained some self-healing properties giving it a huge advantage over 100% wax on the other end of the spectrum we have this sample using four cups of oil for every 2 lbs of wax that's a whole liter of oil per kilogram this has great flexibility it's as flexible as the original fabric without being treated however this leaves an oil slick on my fingers adding more oil lowers the melting point of the wax and this melts right around my body temperature so if we used this mixture to coat something like a jacket I would end up very oily stepping out of it this could be appropriate in a very cold weather environment because wax gets stiffer in colder weather this being very soft at room temperature and body temperature would retain its flexibility even in the coldest of environments so there is still a use for this type of wax coating however the best coating I found for everyday use uses this recipe 2 cups of oil for every 2 lb of wax that's 500 ml per kogam this has some excellent properties it's a little bit stiffer than the ordinary fabric but we don't get any white marks along fold lines and it also doesn't leave any oil slick on my hands this is the perfect coating for clothing and normal weather tarps this is excellent and conveniently it uses exactly 1 16 o bottle of mineral oil per two boxes of wax no measuring needed at least if you're in the US my sponsor for this video is delete me I want you to take a look at this list these are just some of the data Brokers that sced the internet compiling public and government records of my personal information like my phone number address email and who I'm related to and packaged it into a product that they could sell to anyone willing to pay for these personal detail details most often the buyers for this kind of data are advertisers like telemarketers and scammers fishing attempts are a lot more effective when the scammer knows your history and the data Brokers on this list who are selling my information almost certainly are doing the same to you this is why delete me exists you could Google yourself try to find each of these sites and manually fill out their required forms to submit takedown requests for the removal of your data but this is a big list with more brok appearing all the time delete me regularly scans the internet for your data and submits takedown requests for you whenever your information appears this list is just what they submitted takedowns for on my behalf in the first few weeks that I used them if you'd like to make it a lot harder on telemarketers scammers and identity thieves to get your information and that of those you care about check out delete me you can get a 20% discount on a US consumer plan by using my link join delet me.com Nighthawk and using the code Nighthawk on checkout the first step of this waterproofing process is to prepare the wax mixture and this is really straightforward you just melt the oil and wax together and this is best done in something like a double boiler so I have here an electric hot plate and then in this lower dish I have water to even out the heat on this second container this little pot here which is where we'll melt our wax this double boiler setup prevents the wax from overheating Ing and smoking or causing a fire as long as there's water in this pan this will never exceed the boiling point of water so there we go 2 lb of wax to 2 cups of mineral oil 500 mL of oil per kilogram of wax and that will make the perfect waterproofing mixture all right let's give this a stir make sure the oil is mixed in and this will take quite a long time to cool and resolidify well I've let this wax set up now it will take about 2 to 3 hours for the wax to solidify at room temperature molten wax can hold on to a lot of heat and that heat is released again when it turns back into a solid it could actually be useful for a lot of other purposes like holding on to latent heat overnight to keep a building warm that could be an interesting experiment for the future so now we're left with just a solid chunk of wax in the bottom of this container and to get this out I'm going to first try to just tap this upside down on the table here hopefully it'll just slip right out if not an easy trick is throw the whole thing into a freezer for 5 or 10 minutes that'll cause the steel to shrink which will break its connection with the wax at the same time the wax will harden from the cold so it's less sticky and that will usually cause it to pop out and here it is a block of the perfect wax for fabric waterproofing so I have another piece here that I have prepared earlier and cutting this stuff is really easy let me show you I'll start with this piece so I have a metal ruler you can use anything hard in metal including a knife but you don't need anything sharp to do this because this wax is very soft just take something like a ruler and press it down through the wax just like that you can cut it just like a bar of soap and that's all there is to it to Preparing the actual wax mixture now the form fact after you want this stuff in depends on how you're going to use it first I'll show you how to make a waterproof tarp using this wax and then we'll move on to something more advanced like this jacket to start with for a tarp what you'll need is a cheap iron this I've had for years I'm sure I didn't spend more than $20 on it you don't want to use your favorite iron on this if you have a favorite iron I guess that's probably a thing people have uh you want something that you're willing to get a lot of wax on I wouldn't use this anymore to iron regular clothes the first consideration before beginning this process is protecting your work surface this is a wooden tabletop which would absorb a lot of wax if we allowed it to so instead I've protected it with a sheet of freezer paper you can buy this stuff at any grocery store it's kind of similar to wax paper but instead of wax it uses a thin layer of plastic on one side so it's a piece of paper that's completely impervious to both water and wax making it perfect for this process the first step here is to cut the wax into 1in cubes which the iron will easily be able to melt meanwhile we can also get this iron warming up at its lowest heat setting you might be able to creep the temperature up warmer as this project progresses and you get a better feel for how it's going but start at that lowest setting just to be safe and maybe you can increase the temperature from there this process consists of taking a few cubes of our wax at a time and melting them into the sheet with the iron the purpose of using an iron rather than pouring on the wax already molten is that the iron is a nice surface that can actually push the wax around it can force it into the fibers of the fabric so we treat multiple layers of this sheet at once and if we end up with excess wax in any area of this sheet we'll actually be able to use the iron to push that excess wax into other areas so we get a very even coating it's a really easy proc process this does require quite a lot of wax I'll end up using probably a little bit more than half a pound for this twins siiz sheet a queen will take about a pound and in order to make sure that this goes as smoothly as possible we also want to make sure that the sheet is well folded any place where there's a wrinkle or an extra layer of fabric is a place where the wax is going to have a harder time absorbing than the rest of the surface and so once we unfold it we'll see a bunch of spots that were never treated and we'll have to go back over those again individually the less of that you have to do the better so make sure the sheet is well folded now you can also see the reason for keeping this iron on a low setting in order to cause the wax to melt through all the layers of this sheet we need to keep the heat applied for a good amount of time if the iron were set too high we might cause the wax to smoke I know I'm not done yet but let's take a look at the other side I don't expect we'll have soaked through much no not hardly any so we're about halfway through with some of this Fabric and we need to work on this side applying quite a bit more wax working from this side down now and see if you can make the wax meet in the middle well with that little bit along the edge there finished I think that about covered all the dry spots that I can see from the outside on this sheet so now what I'm going to do is slowly work my iron across the entire surface of this sheet now that we have enough wax absorbed into the fabric I just want to make sure that it's spread evenly so little by little I'm going to work from my right to the left see how soft and flexible the fabric is over here that's because the wax is molten all the way through and I can be fairly confident at this point that we have penetrated the fabric fully with that wax now this should be a finished sheet let's take a look inside see if there's any dry spots left left over I think we have a perfect coating right where two folds met there's a little bit of a dry spot so what I'll do is I'll take a little piece of wax rub it on there and just hit it one more time with the iron and it's gone perfectly coated the sides of the tarp can stick to one another a little bit after that first ironing but there we have it how exactly am I supposed to demonstrate how waterproof this is when the water is solid notice how flexible this is even in subzero temperatures it's cold out here and this it's soft the wax did not harden up and it feels just like ordinary fabric maybe a little bit of a waxy texture but nothing comes off on your hands this is awesome this is the perfect wax waterproofing recipe look at how it beads up on [Laughter] there look at that look at those beads that's so cool by the way some of you may have noticed uh that there is that sort of white pattern on there that we said was a bad thing on the 100% wax coating this is not the same thing going on this is just a little bit of excess wax on the surface that wasn't quite smeared off with the pressure from the iron this excess wax actually brushes right off and once it's gone what's absorbed into the fibers is going to stay there for a really long time the waterproofness of this coating is not going to rub off I think this is pretty waterproof [Applause] one of the ways to deal with the powder coat that's left over on these sheets after treatment with the iron is to use a little heat now a direct flame is maybe not the best option a hairir dryer would also work a flame is a little bit risky because these sheets of course are a little bit more flammable than they used to be now that they're coated in wax we'll do some flammability tests in a moment to show that they're not that flammable and a spark is really unlikely to ignite them you can heat this over a fire just try to keep it out of direct contact with the Flames the trick here to this secondary heat treatment is to watch for the color change you can really tell the difference in darkness between the areas which still have that light powder coat of wax on the surface versus the much darker areas where that wax has been reabsorbed into the fibers once this tarp has become warm enough by the fire to actually melt that wax you'll definitely itely be able to see the difference well I know that many of you are going to be interested to see an actual demonstration of the flammability of this fabric because just like you would expect from a piece of cotton or polyester soaked in wax well it burns pretty much as well as a candle wick that's basically what it is on the small scale it's not too difficult to deal with a fire I can just extinguish that with my fingers but if a large tarp actually caught fire it would be quite Blaze we could expect a tarp that's going to be used for camping to at least be exposed to Sparks fairly regularly so let's see how easy it is to catch one of these tarps on fire with a spark well it seems like Metal Sparks didn't do any damage I have a little frayed area on the cloth right here which I thought might catch a spark and be a little more likely to catch fire let's try some charcoal Sparks ouch hurt myself well there we have it the Embers went out of their own accord without starting a fire on this tarp I even blew on them a little bit to try to Kindle a flame and that didn't do it now that's not to say that under no circumstances could a fire be started with an ember on one of these tarps is just to show that it's not an easy thing or a likely thing to occur obviously you still need to use common sense try to put your tarp further away from the fire than you expect Sparks to fly of course that goes for plastic tarps too all the advice you would normally use to keep your plastic tarps safe from fire should be adequate protection for one of these wax coated [Applause] tarps this result is so far beyond my expectations when I started this project this is not only the best wax waterproof coating that I've seen this competes with the silicone one from earlier I've had a lot of friends that have made wax canvas using some of the more traditional methods they do not compare to this they lack the flexibility the durability of the coating this has everything and it's using really cheap ingredients I love this method but then again this is a very simple application when it comes to waterproofing a more complex fabric item like this jacket I had to switch to a different technique I started off by trying the same thing that works really well for a tarp I tried melting the wax into the fabric using my iron but for the same reason that this method works really well for a tarp that is we get to waterproof multiple layers at the same time that made it really bad for this jacket this has two layers of fabric we have the heavy denim layer on the outside and then a lighter cotton layer on the inside and the iron sent the wax straight through both layers and so this jacket sucked up so much more wax than was really necessary we only need wax in the outside layer to prevent water from getting inside any extra is just a waste so because I used the iron starting off on the back of this jacket this sucked up almost a full pound of wax and most of it is in the back where I used the iron so I decided to change methods and use a recommendation that I've seen in several comments on my previous video those who have used wax to treat fabric before have come up with some interesting methods like using a cheese grater to powderize the wax before applying it you then sprinkle the powdered wax over the jacket and hit it with a heat gun because this wax is mixed with oil and has a really low melting point you could actually just use an ordinary hair dryer even on low I bet it would be enough to melt the wax into this fabric this worked okay but it's not my favorite method it sort of soaked in in patches the wax started beating together with itself before actually soaking into the fibers so I ended up having to apply it multiple times to the same areas a better method which I switched to on the other side was to start applying this wax as a paste it's actually extremely soft because we've mixed it with the oil and so you can use it almost like a very soft CR Bran or really hard toothpaste you can really smear this on in a thick coat and then once you apply heat from the heat gun it really absorbs well and evenly also I can go over the seams a little bit more with the wax and just keep hitting it with the heat gun a little at a time to make sure I get enough wax in all the areas this worked so well and none of it absorbed all the way through into that inner layer without the pressure of the iron that inner layer of fabric just doesn't get warm enough to absorb the wax it stays all on the outside where I want it this was the perfect option and this is what I would recommend if you wanted to coat your own jacket or maybe a backpack anything that is in odd shape and isn't necessarily ideal for an iron which is going to drive that wax through multiple layers this is how you apply the wax only to the outside layer where you really need it to be waterproof well since some of you might be here watching this without having seen my earlier video I feel a little bit obligated to demonstrate a fan favorite that is button technology not modern buttons like you'd see on this jacket or an old sweater we're talking about an ancient technology that uses something like this a marble a stone an acorn any small object that you can push through the backside of a piece of fabric so you end up having it contained in a little pocket you then take a slip knot in a rope and slip it over that button and what you end up with is an extremely strong tie down point that can be used in place of a grommet on an ordinary tarp this is actually much stronger than a grommet because it doesn't have to punch a hole through the fabric to hold it down it can even be used through multiple layers of fabric to hold them together like this penguin [Laughter] mode this is actually extremely warm it's wind resistant it keeps the heat in I can see why people used these in ancient times one button just a stone or a pebble into piece of string you have a cloak let's do a little bonus lesson in order to use button technology you need to have a good slip knot and my favorite knot for this and for many other purposes is the tot line hitch this is a knot that you can pull on as hard as you want and it will not slip but grab onto the knot itself and we can slide it Right Down the Line This is why it's called the tot line hitch because using this you can really tighten up a rope by sliding that knot and then we can loosen it just by pulling it down this way and you can also tighten it around a button and end up with a very secure hold so to tie our tot line hitch take the end of your rope and double it back like this next take this tail and go over the other side like so take this and go around this side twice to make a double Loop just like that a double twist around this line now take this tail and go over this side of the twist go down and under this side of the Rope take a careful look at this you'll be able to figure that out I think then take this tail and go back through this Loop you've just formed that is your totline hitch super tight when pulling from the end of the loop but the knot slides freely this is one of my very favorite knots I use it all the time it's great for tying buttons into fabric it's awesome for tightening up tarps so that they're super tight good for tying down tents and stuff into the back of a truck anytime you need a line to be super tight this is the knot you want good thumbnail let's give it a [Laughter] try it's a good thing my jacket's waterproof let me know what part of this video you most enjoy let me know what you least enjoy also leave me a comment below I'd really love your feedback so I can continue to improve thanks to all of you who continue to leave me comments I still read all of them I really do and thanks to all of you also who support me on patreon that is what really makes these videos happen thank you so much for watching I'll see you next time