

How to solder

by [noahw](#) on January 10, 2007

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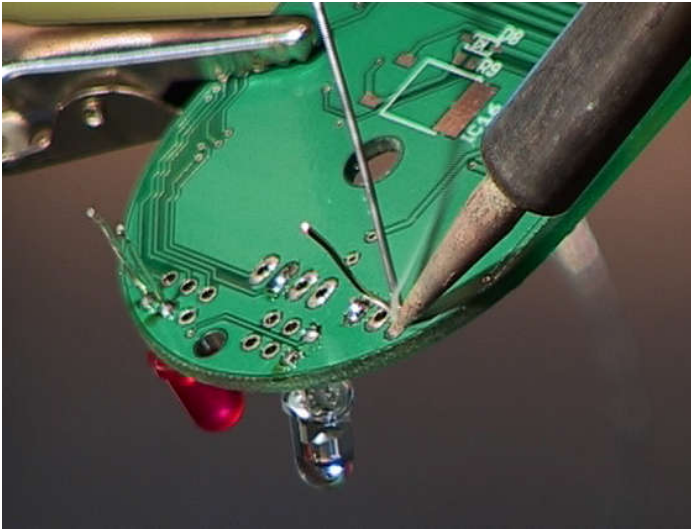
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intro: How to solder

This guide focuses on soldering for the beginner and explains how you can solder a variety of components using a few different techniques - from the classy to the downright caveman. Although soldering can seem daunting at first, once you give it a try you will see that in most applications it's quite simple to do.

Please note: this instructable is written for beginners, and contains lots of very basic information. If you have lots of experience soldering, please use the comments to share your knowledge. Clarifications and corrections are especially welcome.

This Instructable was the lead-off for "How to Solder" month, where we rewarded soldering tutorials with Instructables patches. See the original call for project here at [submitting a How to Solder Instructable](#) or just check out all the other soldering Instructables here at the [How to Solder group](#).



step 1: Tools and materials

Soldering is the process of using a filler material (solder) to join pieces of metal together. Soldering occurs at relatively low temperatures (around 400 degrees Fahrenheit) as compared to brazing and welding, which actually melt and fuse the materials themselves at higher temperatures. In soldering the filler material becomes liquid, coats the pieces it is brought into contact with, and is then allowed to cool. As the solder cools it hardens, and the two materials are joined. Soldering is a quick way to join many types of materials, from copper pipe to stained glass. It creates an electrically conductive strong bond between components that can be re-heated (desoldered) if you should ever want to disconnect two items joined together. It's great for joining electrical components and wires and is used in just about everything electronic. In this Instructable I explain how to solder the basics you see in most Instructables: electrical components and wires.

For further information and some more technical specs on soldering check out the [wikipedia article](#).

As with many skills, having the right tools for the job effects the quality of the work being done. When it comes to soldering you can end up using a lot of fancy tools, or just a few simple items you can pick up at the hardware store for a couple of bucks. I am going to use a couple of different soldering tools in this Instructable; there are many ways to solder, and you should use what works for you.

At the very minimum you will need the solder and a heat source to melt it - preferably something small which can get to 600-800 degrees Fahrenheit. If you've got that, you're ready to make a connection. That being said, there are a wide range of soldering tools and accessories that can be really helpful if you're going to be soldering frequently. Ladyada has compiled a nice [list of equipment](#) and sources to buy the tools on her site. I got together a solid supply of soldering tools by raiding the Squid Labs soldering station. Here is the complete list of what I used...

1. Soldering iron

Most people opt for using a soldering iron to solder. It's a great heat source that heats up and cools down quickly and can maintain a pretty constant temperature. Soldering irons can be purchased from a variety of places. I have picked up some at Radioshack - evil yes, but convenient, some from the hardware store, some from garage sales and a bunch more from retailers online. Low wattage (15-40 watt) soldering irons work best for soldering components on circuit boards while more powerful (60-140 watt) soldering irons work well joining thicker materials like braided speaker wire. If you use too powerful of a soldering iron on a circuit board you might damage the components you are trying to join. I like to keep a low-wattage iron around for detail work, and a high-wattage iron that I can use when I am not too concerned about exposing the material I am working with to high temperatures. It's a real pain to solder thick wires without a powerful soldering iron.

The soldering iron in most of the pictures is made by Weller, and has a variable temperature control. This is the best of both worlds since you can set the heat exactly where you want it, but it's significantly more expensive than fixed-temperature irons. If you're just going to do some occasional soldering it isn't a must have by any means. Anyone interested in modding a soldering iron should check out [DIY Hot Air Soldering Iron](#) by charper.

2. Solder

There are lots of kinds of solder available. They come in different thicknesses from around .02" to some really thick stuff you would only use on copper pipe with a butane torch. You use thin solder for detailed work like putting resistors onto circuit boards and thicker solder for joining larger materials like speaker wire. I use solder around .025" for most jobs. Most solder is made from a combination of tin and lead - it's about a 60% tin, 40% lead mix depending on what solder you're using. Recent international health codes from Japan and the EU (California and New York have adopted similar policies as well) mandate that lead solder be phased out of certain commercial products and substituted with a lead-free alternative. The manufacturing deadline was this past July so we should be seeing the changes now. Even if you don't live in California or New York it's still worth staying away from lead solder since lead has been known to cause all kinds of nasty health effects from birth defects to severe developmental and neurological damage. Plus it's pretty easy to find the lead-free stuff.

Some solder will contain a small amount of silver. This pushes the melting temperature up a bit, but the silver helps the solder to flow and makes a stronger joint. If you are worried about burning whatever you're working with, try to stay away from solder with silver in it, but it works very well if you're just joining wires or something that won't be easily damaged. The last thing to know about solder is that you want to use a solder that has a rosin core. The rosin acts as a flux when soldering and helps the connection - it's also the kind that's most readily available at the hardware store and from electronics suppliers.

3. Soldering iron tips

Soldering irons come with a tip, so you don't have to go out and get a special one, but it's important to know the differences between them and make sure you're using

<http://www.instructables.com/id/How-to-solder/>

the right tip for the kind of soldering you're doing. Some small-wattage irons come with conical pointed tips for detail work, while most high-wattage irons come with a flatter screwdriver-style tip that works well on wires. You want your tip to be a little smaller than whatever you are soldering so you have good control of what you heat up and what you leave alone. You can even use a piece of sand paper, a file, or a powered grinding wheel to shape the tip of your soldering iron into whatever works best for you.

4. Soldering iron holder and cleaning sponge

It's nice to have a safe place to put the soldering iron down in between soldering. A soldering stand safely holds the iron and gives you a place to clean the tip. Some soldering irons come with their own holders. If yours doesn't have one, you can buy one or make one. [jaime9999](#) has a [Homemade nearly-free Soldering Iron Stand](#) that is pretty much identical to what you can buy. The stand isn't a necessity for learning how to solder, but it does help.

5. Tools to work with wires

I have a go-to stock of tools that I round up when working with wires or electrical components. They consist of wire cutters, a wire stripper, needle nose pliers, and an automatic wire stripper (courtesy of the Squid Labs soldering station.) The automatic wire stripper is really convenient if you're going to be stripping lots and lots of wire, but by no means necessary. I have stripped lots and lots of speaker wire using my teeth (not the best idea, I know I know.)

6. Clips to hold your work

Often called "third hands" or "helping hands," these little guys help a whole lot when soldering. You have to hold the soldering iron with one hand and the solder wire in the other, so it really helps to have something else to hold the components you're actually trying to join. You can use alligator clips, clamps, or even some tape to hold things in place if you need to. The third hand is generally a good investment if your going to be soldering regularly, and there are plenty of Instructables with ideas to modify them if you do happen to pick one up. Check out: [Make a 3 degree of freedom 'hand' to help with soldering / gluing work and make your 'helping hands' 100x more useful for soldering / gluing small parts by leevonk to start.](#)

If you would like to make a set of helping hands of your own there are already a number of good Instructables on that too. Quick helper for surface-mount soldering by <http://www.instructables.com/member/bikeNomad/bikeNomad>, QuickMods - Soldering Arms by Aeshir and Build a Pair of Helping Hands by john otto should get things started.

7. Exhaust fan

I do most of my soldering at a soldering station that is equipped with an exhaust fan. It's really not such a good idea to breathe in solder fumes, and soldering does produce fumes. Any kind of ventilation/fan you can rig up will help. Vent the fumes outside or use an indoor fan with a filter if you can't vent them outdoors. Here is a [Window-mounted solder fume extractor \(not just for RVs!\)](#) posted by bikeNomad. Also check out Dr. Solomon's low tech, but functional [Solder Fume Extractor](#) if you're looking to build something that you can place right on your table. If you're just doing a quick soldering job, the fumes won't kill you by any means. I have certainly done my fair share of soldering without a vent, but anyone doing repetitive soldering should definitely pick one up or make one.

8. Safety goggles

I hadn't ever used goggles before while soldering, but while doing research for this post I saw it mentioned elsewhere and agree that it's a good idea. Little molten bits of solder tend to fly out of the soldering joint when you're feeding in the solder, and if it landed in your eye it wouldn't feel too good.

9. The materials that you want to join together

I was just messing around, and mostly soldering for the purpose of this Instructable so my materials didn't necessarily make anything. You can solder wire, electrical components like resistors and capacitors, circuits, breadboards, electrodes, small pieces of metal and whatever else you can think of. Don't know if it can be soldered? Give it a try - you won't blow anything up.

Once I have got my tools and materials rounded up, I like to pretend that I am a pilot and begin my pre-flight/solder checklist.

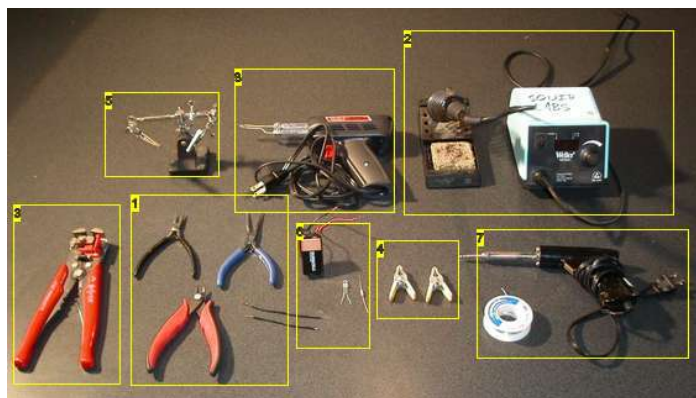


Image Notes

1. Tools for working with wire - needle nose pliers, wire cutters, and wire stripper.
2. Weller variable temperature soldering iron - the Cadillac of the soldering world.
3. Automatic wire strippers. Fantastically helpful, but not necessary by any means.
4. small clamps to hold materials while soldering
5. Helping hand tool
6. Materials to solder
7. Cheapo gun style soldering iron I bought from Radioshack. Its better as a prop for a futuristic space gun than as a soldering iron. I don't recommend these if your going to go out and buy yourself one.
8. Medium priced gun style soldering iron. This iron doesn't have variable temperature control, but it does have a low 100 watt setting and high 140 watt setting. This is my soldering iron of choice for soldering heavy gauge wire.



Image Notes

1. I like to use lead free solder when possible

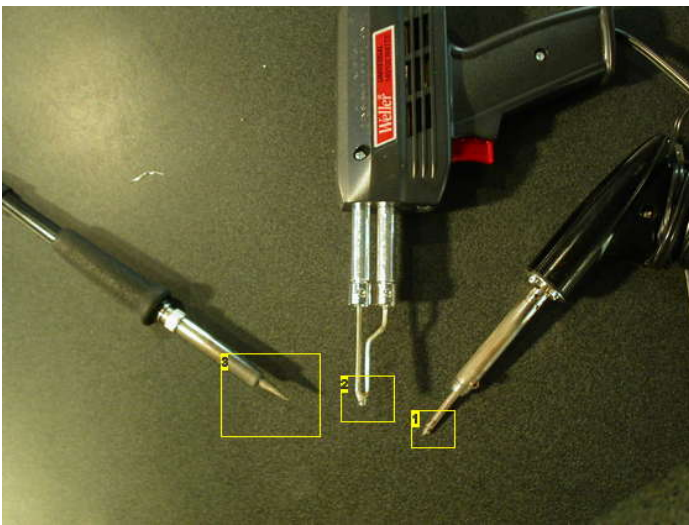


Image Notes

1. blunt conical pointed tip
2. screwdriver or chisel style tip
3. conical pointed tip



Image Notes

1. These tools are really helpful while soldering but are by no means a necessity. They are part of the group of tools I raided from the squid labs soldering station.

step 2: Getting ready

Once I get my tools rounded up I like to plug in my soldering iron and let it heat up while prepping my materials.

First things first, the tip of the soldering gets hot - up to 800 degrees Fahrenheit, so don't touch it. I know this seems obvious, but many people seem to burn themselves at some point while soldering.

If you're using a new soldering iron you will want to put a small amount of solder on the tip of the hot iron before you start working. This is called *tinning the iron* and you only have to do it with a new iron. Once you start using it will usually have some solder on it already and be ready to go.

Once the iron reaches temperature (some irons take minutes to do this and some irons take seconds), I like to clean the tip of my iron on a wet sponge. You can wet the sponge on your soldering base if you have one, or you can just use a damp sponge or steel wool. Gently touch the tip of the soldering iron to the sponge and clean off any old bits of solder that might be stuck to it. It will sizzle a bit; this is normal.

I asked Mitch, a soldering expert who works at the control tower by day and is *numberandom* by night, for some tips. Mitch showed me a good idea for how to hold solder wire: he cuts a piece of it off the roll, and then makes a coil at one end with a short lead at the other. This helps him hold it steady and apply just the right amount of solder. This is a way better idea than trying to hold the whole spool of solder or grab onto just one thin strand.

Next it's time to pay some attention to the material you're soldering. If you're soldering wire, you'll need to strip back about 1/2" of insulation to expose the bare wire. If your joints are going to be wire-to-wire or wire-to-lead, you can twist them together tightly before soldering. Electrical components placed on a circuit board don't need much prep work; just seat them where you want them and find a way to hold them in place with clips or by bending the leads outward slightly so they stay put when you turn the circuit board over.

Finally, place what you want to solder into the clips on the helping hand, or on a surface you don't mind getting a little burn mark on - scrap wood works well. Basically you just don't want the components moving around on you when you go to solder them. There are lots of ways to orient the wires/components so you don't have to hold them in place while you solder them. Find what works best for you.

Hopefully your soldering iron has reached temperature by now, because you're ready to solder!



Image Notes

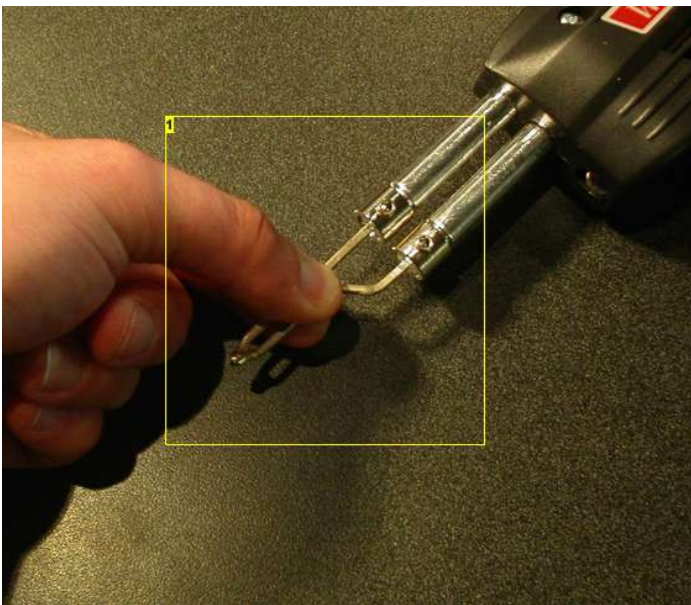


Image Notes

1. The soldering tip gets hot! Don't touch it!



1. Moisten the sponge to clean the tip of your soldering iron. If you don't have a cleaning station like this one you can use any old sponge.

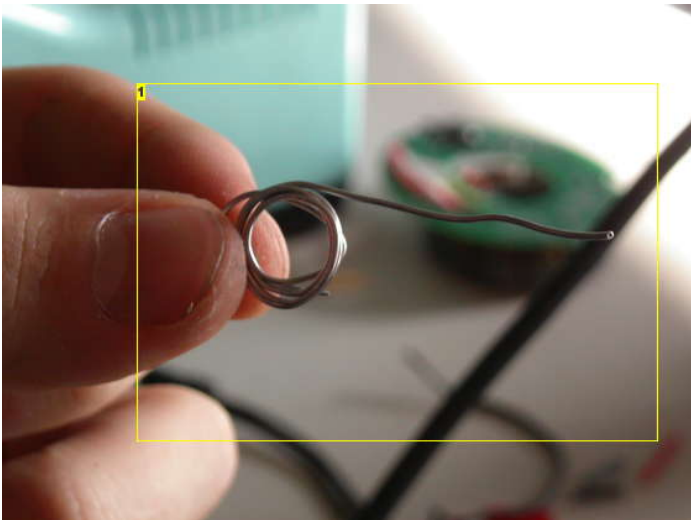


Image Notes

1. Mitch likes to coil his solder with a short lead to hold it steady while he solders.

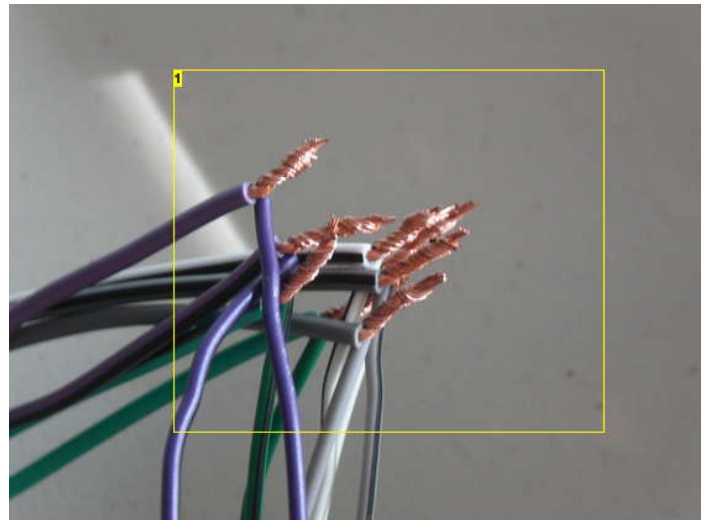


Image Notes

1. Prep your wires so that they are tightly twisted together and ready to be soldered.

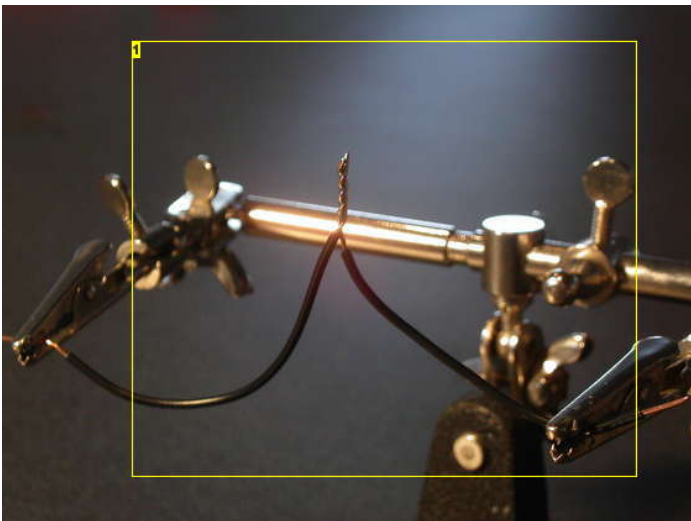


Image Notes

<http://www.instructables.com/id/How-to-solder/>

1. Utilize the third hand holding tool if you have one. This leaves your hands free to operate the soldering gun and feed the solder wire into your joint.

step 3: Soldering wire

I started soldering just two pieces of wire together because it's the most forgiving way to learn. You can't really get the wires too hot - the insulation might start to melt a bit, but you're not going to hurt the wire.

With the wires you want to join twisted together and held in place, pick up your soldering iron in one hand and your solder in the other.

Touch the tip of the soldering iron to the wires and keep it there.

The wires will begin to heat up. At some point over the next 2-10 seconds (depending on how hot your iron is) the wires will be hot enough to melt the solder. You can touch the solder to the wires (not to the tip of the iron!) periodically to see if it's hot enough. It's tempting to just touch the solder to the tip of the iron and melt it right away, **but don't!** You will end up making what's called a *cold solder joint*. This occurs when you melt the solder around the joint, but you aren't melting the solder into your joint or onto your components to make a good connection. It's much better to wait the few seconds and melt the solder onto the hot wire itself.

If you touch the solder to the wire and it begins to smoke and melt, the wires are hot enough. Add the tip of your solder to the joint as necessary. You want to introduce enough solder to cover the wires, but not so much that you create a big glob of solder at the bottom of the joint.

Once you've got what you think is enough solder on the joint, pull the solder away and then remove the soldering iron. If you're using a gun style soldering iron like I was, release the trigger to turn it off. If you're using the kind that doesn't have a trigger the iron will stay hot, so just place it back into the holder.

Here is a video of wire being soldered. The whole process happens pretty fast, and isn't nearly as complicated as you may have expected.



Here is a close-up video of the same process.



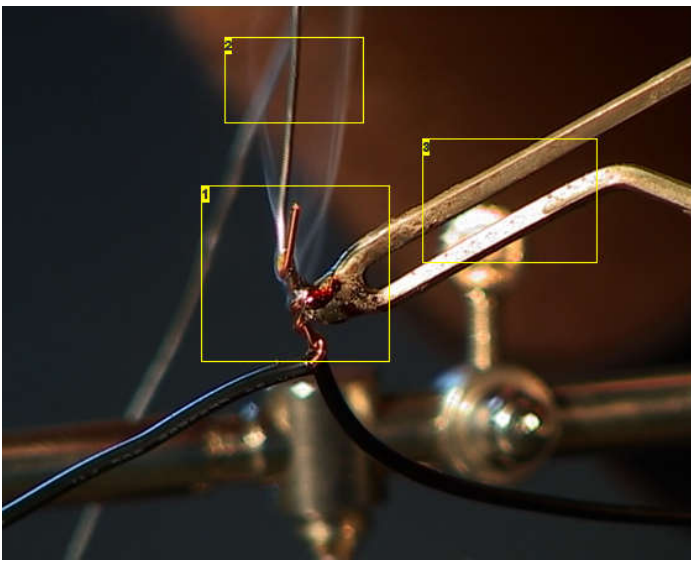


Image Notes

1. Introduce the solder to the joint where the wires are twisted together - not to the tip of the iron.
2. solder wire
3. soldering iron tip

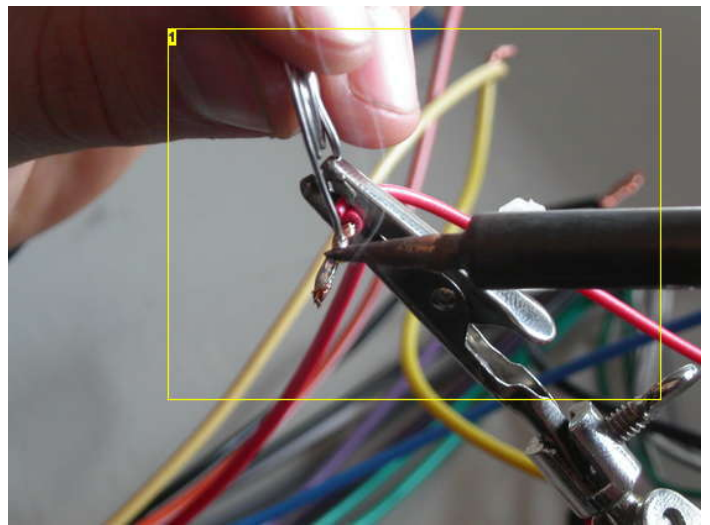


Image Notes

1. Here Mitch is soldering a wiring harness for a car stereo - just one of the infinite uses for soldering.

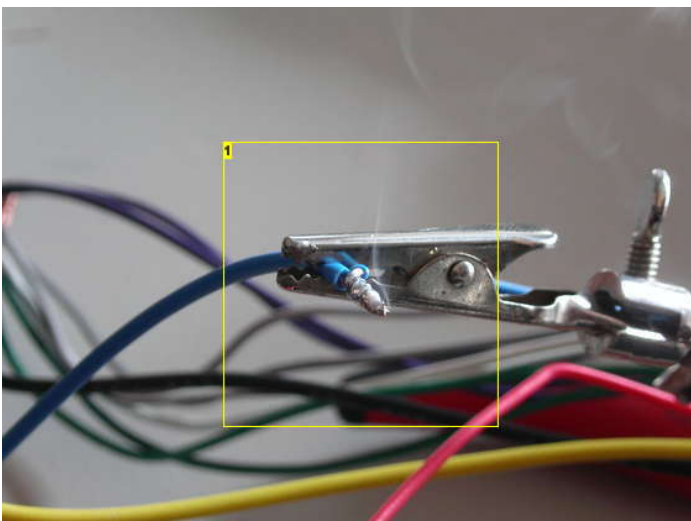
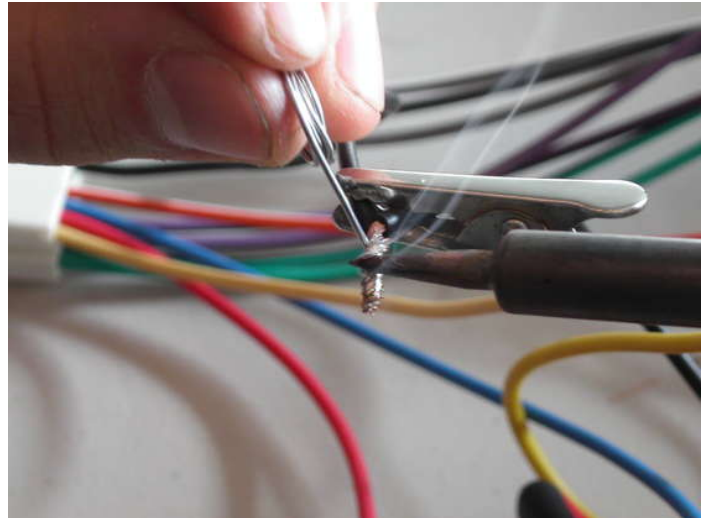
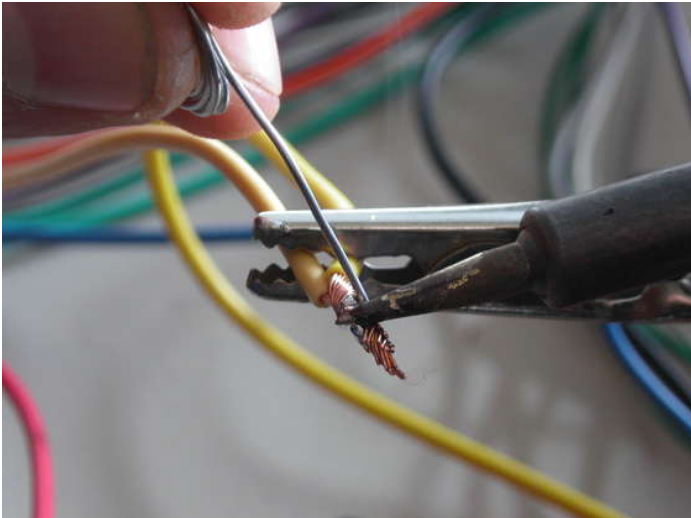


Image Notes

1. A nicely soldered connection. Not too much solder so there are globs of it, but plenty to cover the entire connection.

step 4: Soldering components onto a circuit board

Up until pretty recently I spent most of my life soldering speaker wire and crossover components for speakers. This meant mostly wires twisted around wires or big resistor leads twisted around inductors and capacitors. At that level soldering doesn't really get any more complicated than what I did in the previous step. Lots of the projects on Instructables, however, use smaller electrical components and circuit boards, so I figured I would give that a try too.

Soldering on a circuit board takes a little more care and attention, but it's still very doable. I pushed a few of the leads from some spare LEDs and resistors that I had from my LEDs for beginners post through some open holes in a circuit board that was lying around. I soldered the leads onto the bottom of the circuit board where the electrodes push through. This is called *through hole component soldering*.

To solder the LEDs and the small resistors to the circuit board I switched to the adjustable temperature soldering iron. The tip was smaller so it would be easier to get the solder right where I wanted it, and using the soldering gun on a circuit board is probably way more heat than necessary and it could end up damaging the components. I set the temperature of the iron to 675 degrees Fahrenheit and waited for the tip to heat up. I then loaded the circuit board into the alligator clips and got myself ready to solder - iron in one hand, coil of solder in the other.

When soldering leads into circuit boards you want to heat the metal contact on the board and the lead itself. Applying too much heat can damage the circuit board or even your components. The surfaces being joined in this application were much smaller than the twisted wire, so things heated up a lot faster.

I touched the tip of the iron to the crack between the lead and the metal pad on the circuit board. After waiting a couple of seconds, I dipped the tip of the solder into the joint and placed a very small amount of solder at the connection - no more than the head of a pin or so.

Once the solder pooled a bit and soaked into the joint I removed the solder wire and then the iron. I remove the solder a second or two before I remove the iron so that the tip of the solder doesn't get stuck to the joint. The solder begins to harden as soon as you remove the iron.

Using the proper amount of solder is more important while soldering small components on a circuit board than when soldering wires. If you apply too much solder and it pools up outside of the metal pad, it can cause a short. Too little solder and your component won't make a good connection with the circuit board and might not work the way you want it to. When you've got the right amount of solder it looks like a small ant hill that forms right at the base of the lead and the circuit board.

Here is a video of the process.

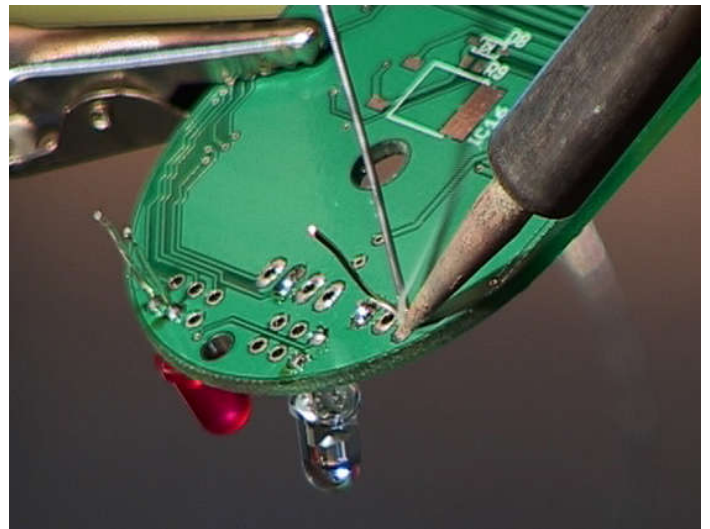
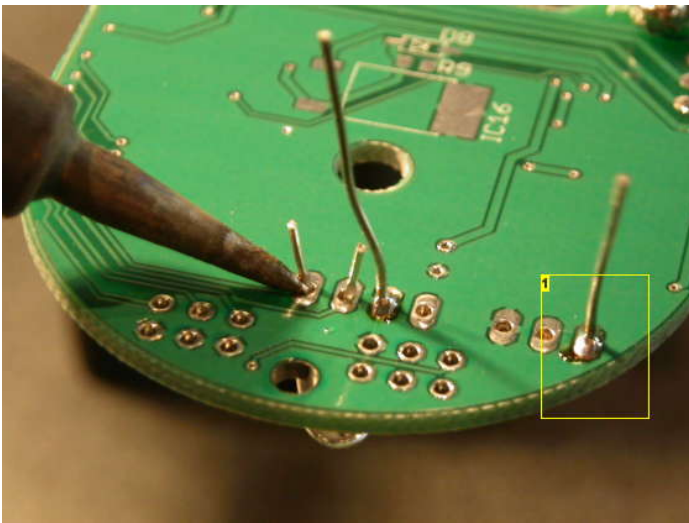


Image Notes

1. The solder creates a small "hill" but is still contained on the metal pad. You don't want it to extend beyond this size, otherwise you run the risk of it touching the pad next to it and causing a short.

step 5: Cutting the leads

Once you've got your components soldered into the circuit board, you can go back and cut off the excess leads. This is pretty easy to do, and there isn't much technique here. Just a few quick tips before you snip:

It's best to use a sharp wire cutter that has just one side of its cutting edge beveled. This way you can get a smooth flat cut when you cut off the lead.

It's also a good idea to cut the leads pretty close to the circuit board to minimize the risk of creating a short.

Although I didn't do it in the video below, holding onto the excess lead when you cut it off is a good way to keep the little ends from getting all over the place.

Once you've got your leads cut you're pretty much done with soldering and ready to move on.

Here is some riveting video of the leads getting cut off:

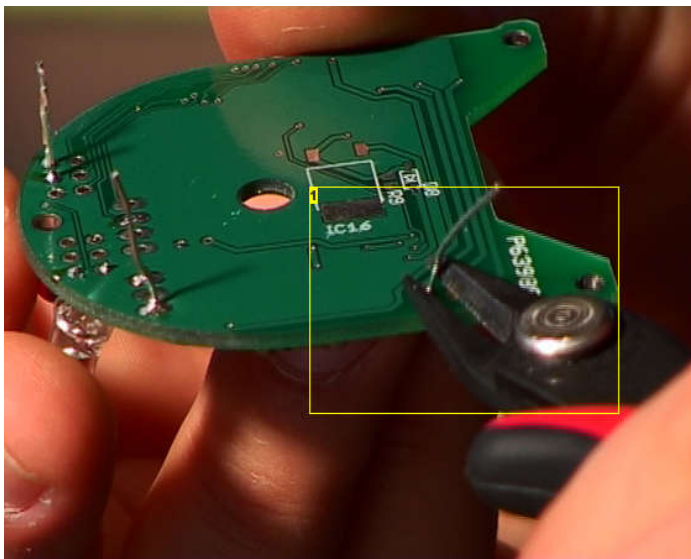


Image Notes

1. Cut the excess lead as close as you can to the circuit board - don't worry about cutting off a little solder off either, if you did a good job of getting the solder to penetrate the joint there will plenty more solder in the hole to hold it the component in place.

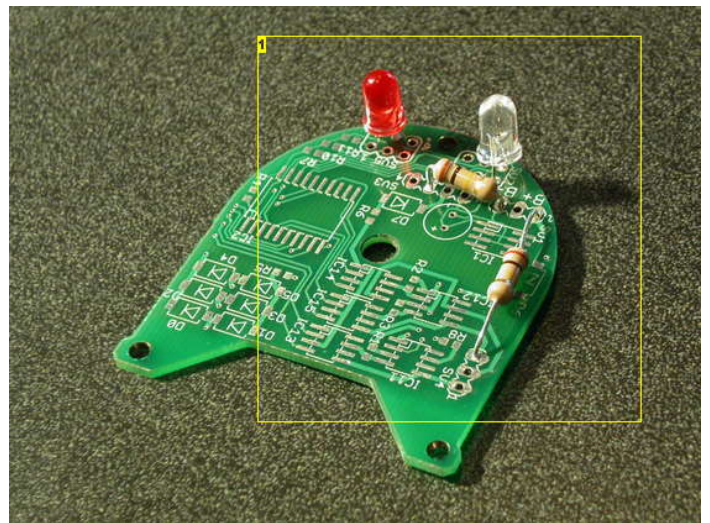


Image Notes

1. This circuit does absolutely nothing.

step 6: Surface mounting components onto a circuit board

Soldering components onto a circuit board when the leads can be pushed through holes in the board is the easier of the two methods of soldering small components onto boards. Many circuit components need to be surface mounted on circuit boards, which forces you to be a little more precise than when you can work on the bottom side of the board.

To solder something onto the surface of a circuit requires a process called *tinning*. Tinning is when you apply a small amount of solder onto the materials you are joining before you connect them. In this case, it involves putting some solder on a contact on the surface of the circuit board then attaching the component to the solder pool. Mitch showed me how this process is done.

First he touched the tip of the iron onto the small pad on the top of the circuit board. He then introduced a small amount of solder onto the pad and took the iron away.

Then, a few seconds later he picked up the component he wanted to solder with a set of tweezers, heated up the small glob of solder that he had just placed down, and gently lowered the contact on the component into the pool of hot solder.

He took the iron away, held the component in place a few seconds longer, and released the component from the tweezers.

He then went to the other side of the component and finished making the connection by soldering the remaining two contacts together.

Surface soldering is done like this because you need to lower the component into place by hand, so it's hard to hold the iron, the tweezer and the solder all at the same time. Additionally, tinning is just a good thing to do while soldering small components. I didn't tin the wires before I soldered them because they were so big I was sure I was going to be apply enough solder to make a good connection. However, when soldering small components or doing surface mount soldering like this, tinning can be really helpful because you basically already have your solder applied to your pieces before you go to connect them. There is no need to glob on more solder and run the risk of getting it in a place where you don't want it to be.

The picture series below shows the process unfolding step-by-step.

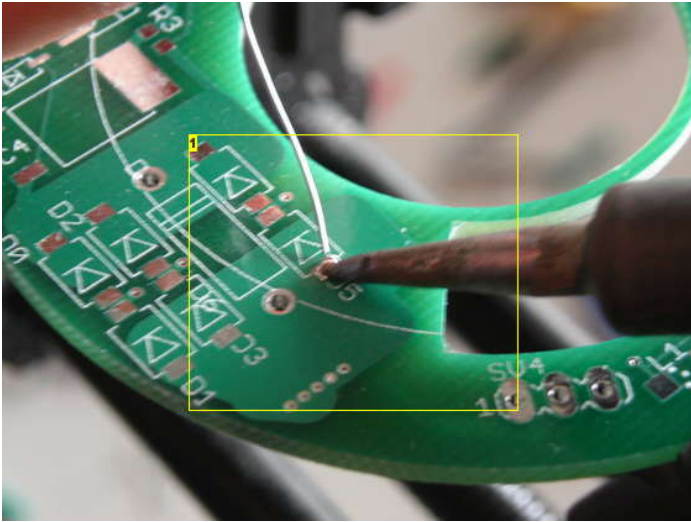


Image Notes

1. No component here yet, just tinning the contact to get it ready to attach the component.

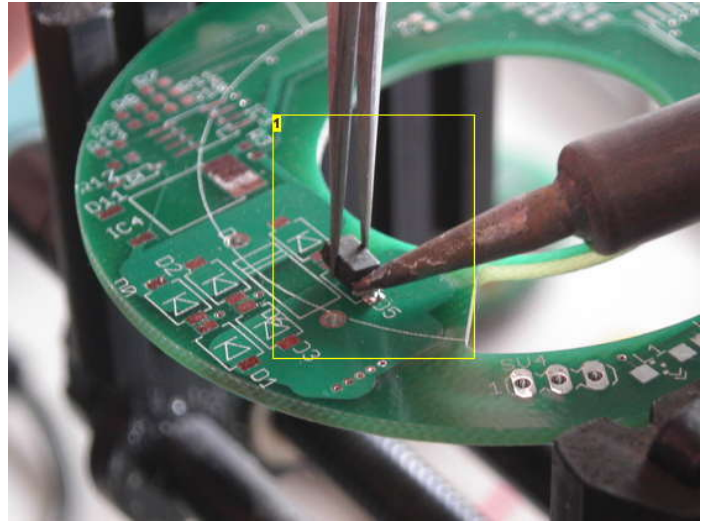


Image Notes

1. Mitch re-heats the glob of solder and lowers the component into place.

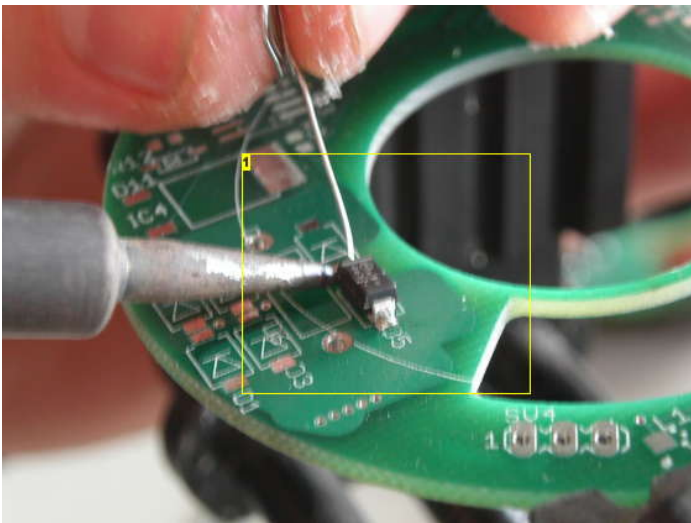
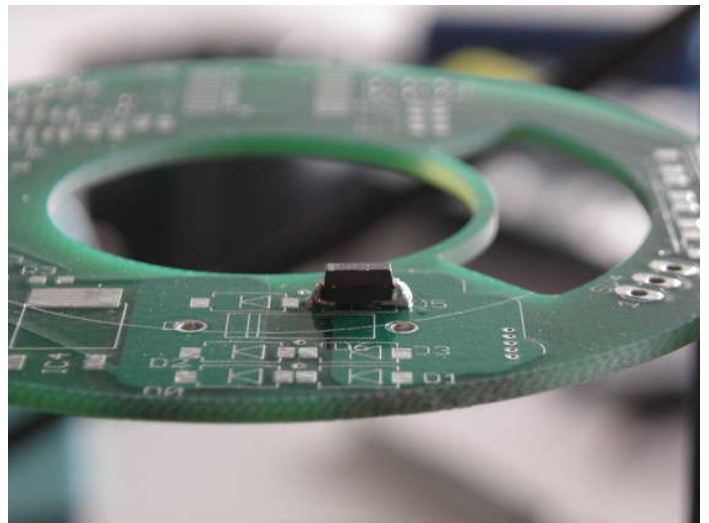


Image Notes

1. The other side of the component then gets soldered into place.



step 7: Soldering with a lighter

Everything that I have explained how to do up until now has hopefully been pretty close to how things should be done "the right way" when soldering. Soldering, however, is just a process of joining things together to make a connection. If you don't have all the tools to solder, but still want to learn how to solder something, never fear, with just solder and some wire you can practice bare bones soldering.

Bare bones soldering comes in handy when you're stuck on a desert island and you need to make a repair to your headphones so you can watch the sun go down while being serenaded by your most recent whale songs cd. It's also a cool trick to pull off next time your decide to be MacGuyver for Halloween.

I took some pieces of wire and stripped them with my teeth - the best method for doing this I have found is use my molars. I just grab the insulation with my teeth, try to sever the insulation a bit, and then pull on the wire. It's easiest to do with braided wires, and it certainly takes a little practice to apply the right tension so you don't just rip the wire apart entirely. But once you get the hang of it it's actually a pretty functional method. (WARNING: I do not encourage stripping wire your teeth at all, and it will probably lead to expensive dentistry work if you do it enough.)

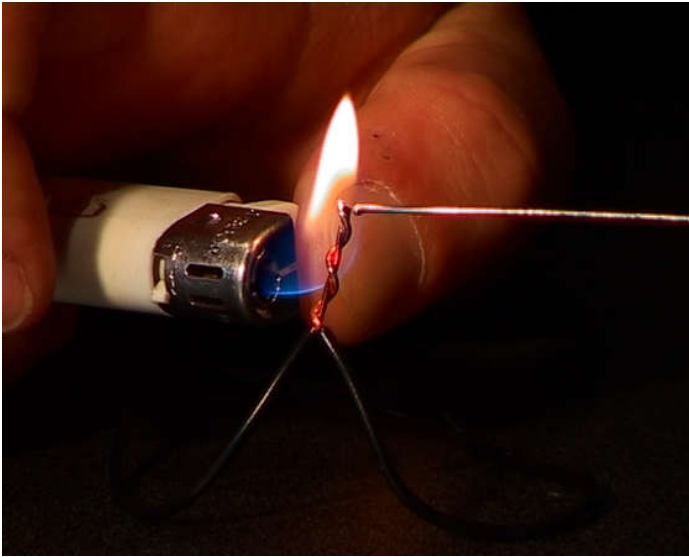
Once I had the wires stripped and twisted together I got a lighter and a bit of solder and went to work heating up the wires I wanted to join. It took the lighter about as long to heat up the wires as it did when I used the iron. I then fed a little solder into the joint, continued heating the wire to smooth things out, and then turned off the flame.

It worked just as well as it would have had I used an iron. Of course it's harder, if not impossible ,to use this method on circuit boards, but it sure does the job on wire. I

<http://www.instructables.com/id/How-to-solder/>

have heard that using matches also works well when soldering wires.

Here is some video of bare-bones soldering with a lighter.



step 8: Desoldering, fixing mistakes and extrapolation

Desoldering:

Desoldering is the process of removing solder at a joint to disconnect two components, wires or materials. You might have to do this if you want to replace a component that's gone bad, or if you want to change something about your design once it's already soldered into place. To desolder wires you can usually just heat up the connection and wiggle them around until they come free. Better yet, if you have the slack, just cut the wire at the connections, strip, and resolder as necessary.

With leads that are mounted through holes on a circuit board it takes a little more finesse. To desolder something delicate its best to use a desoldering pump, or bulb which will actually suck up the molten solder and remove it from the joint. Soldering wicks or braided copper wire also work well to suck up unwanted solder. For more complete guides on desoldering check out [Make Magazine's Learn How To Solder Skill Building Work Shop Video](#) and [this site](#) here.

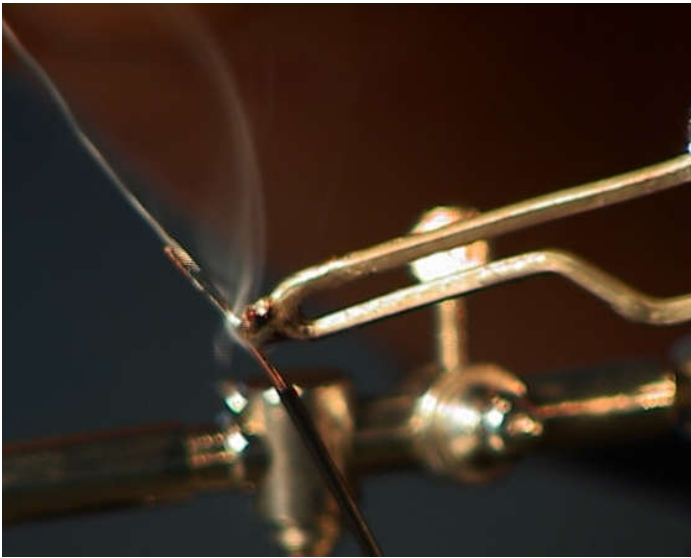
Fixing mistakes:

Soldering is pretty forgiving, and its usually pretty easy to fix a mistake. If you put down a little too much solder or position something incorrectly you can usually reheat your joint, melt the solder, and then reposition your component as necessary. Solder can be heated and cooled as many times as you need to get your joint the way you want it. So don't be discouraged if it takes you a couple of tries to get it down - you will still end up with a good connection if you stick with it.

Extrapolation:

Soldering is a pretty straight forward process but there is no limit to what you could create with it. Try to join things together. It works well for making jewelry, doing basic arts and crafts with small metal objects, or re-wiring your toaster into a heating element for an infra-red sauna. If soldering has been keeping you away from experimenting with circuits or making a project, hopefully it doesn't have to anymore. Once you do it a few times you might even start to enjoy it.

If you would like to get started on a few basic soldering projects check out instructables user [Makekits](#) and the [Make Magazine Store](#) to build things like a MiniPOV or a Daisy MP3 Player.



Related Instructables



Soldering tips and tricks by Mr. M



How to Solder Videos: Why is soldering difficult sometimes? by CuriousInventor.co



Circuit Building 101 by CuriousInventor.co



What not to do when soldering by Ghondi



How To Solder: Beading by Aeshir



Soldering to large metal objects by T3h_Muffinator



Don't throw solder away by neelandan



small pen solder dispenser by cyber_meat



Comments

50 comments

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dUc0N says:

Feb 25, 2008. 11:54 AM [REPLY](#)

There is one other consideration that needs to be made when choosing between a soldering iron or a soldering gun. Because of the way the tip is heated in the gun, they tend to heat up a bit faster, but almost all of them carry some current through the tip itself. Be aware that this current can damage or destroy some delicate electronic parts! As a rule of thumb, if it came in an anti-static bag (they're silvery or pink usually, and have a warning label similar to the one in the picture) then do NOT use a soldering gun! Some of the really nice soldering irons (Weller, for example) have grounded tips as well, for extra safety. The only other piece of kit I keep handy for computer work (where most of my soldering is done) is an antistatic wristband. These can be had for around \$5, and there are versions that are connected to the ground of a power outlet, as well as a version that uses a capacitor and resistor sealed inside for freedom of movement.

Of course, none of this really applies with *basic* soldering (like for speaker wires, 'beginner' hobby kits, etc.)





LinuxH4x0r says:

If you have a gun like I do you are only heating it for short periods of time heat it up off the components and then apply it while it is still hot.

Sep 9, 2008. 8:44 PM [REPLY](#)



CarlW says:

Excellent posting. I'm going straight to the kitchen to rewire my toaster into an infra-red sauna (whatever that is).

Jan 12, 2007. 11:52 AM [REPLY](#)



Plasmana says:

LOL!! Then you will have no toast for breakfast!

Sep 3, 2008. 4:44 PM [REPLY](#)



jaime9999 says:

Beware of soldered joints in applications employing high heat (toasters, heaters, hair dryers, some engines, some motors). If the ambient temp exceeds the melting point of solder, it will come apart! :-(

Sep 20, 2007. 3:08 PM [REPLY](#)

Take apart a toaster or hair dryer and notice that all electrical joints are done by rivets, no solder in sight.



girrrrrrr2 says:

ok i got a coldheat as my first one...is that good...from radio shack...

May 3, 2007. 9:19 PM [REPLY](#)



sotsirh194 says:

cold heat is terrible took me hr to solder 2 wires onto a switch. you need to place it just right or it wont work no power either

Feb 20, 2008. 1:33 PM [REPLY](#)



Plasmana says:

Yeah, coolheat is bad, the tip is so brittle and I broken it... It cost me over \$10 to replace that damn tip!

Sep 3, 2008. 4:42 PM [REPLY](#)

Soldering irons are much better.



craz meanman says:

i got an 8 dollar one from R.S... works fine.

Feb 6, 2008. 7:28 PM [REPLY](#)



afcbasser says:

unfortunately tends to be more trouble than it's worth :(

Jan 26, 2008. 6:42 PM [REPLY](#)



gbosbiker says:

not really

Sep 3, 2007. 3:38 PM [REPLY](#)



mrjubjub says:

Hi.

Unfortunately I have the gun you said you wouldn't recommend :(It works okay, but I'm new to soldering.

Question: the metal tip on my gun and the 'shaft' i guess you would call it is turning black, like its burning. What should I do?

:(

Thanks in Advance

Jun 28, 2008. 4:56 PM [REPLY](#)



magicentral says:

It is called bluing (I think) and it is perfectly normal. look at pix of soldering irons and you will see that they all do it.

Sep 1, 2008. 8:15 PM [REPLY](#)



Fizzxwizz says:

if I can solder anything...what happens when I solder gunpowder, lighting fluid, or food? sounds like a fun thing to test lol.

Dec 24, 2007. 9:53 AM [REPLY](#)



nmw4825 says:
do it! do it! do it! do it! do it! then send me results!!!

Jun 27, 2008. 7:01 PM [REPLY](#)



pyro man says:
hey here's those results you wanted GO BOOM!!! Fizzxwizz is... no longer with us...

Aug 23, 2008. 8:30 PM [REPLY](#)



nmw4825 says:
so sad... well, i is going to try to solder lighter fluid and gunpowder see you!
after note: nmw4825 followed Fizzxwizz

Aug 25, 2008. 5:48 PM [REPLY](#)



MadScience#1 says:
MMmmmm Foooooooooooooooooooo

May 3, 2008. 12:41 AM [REPLY](#)



Plasmana says:
He is going to burn it with his soldering iron!

Sep 3, 2008. 4:38 PM [REPLY](#)



noahw says:
Ok,
almost anything.

Dec 24, 2007. 11:47 AM [REPLY](#)



luster123 says:
This has helped me alot

Aug 19, 2008. 9:06 AM [REPLY](#)



defiant1 says:
Freakin awesome. Thanks

Aug 18, 2008. 11:52 AM [REPLY](#)



Sarkazmo says:
Also, it should be noted (if it hasn't already,) that you should not move the joint being soldered until the solder has solidified (a few seconds) so as to not cause a cold solder joint that can cause resistance in the electrical connection and can cause the joint to fail and actually come apart.

Aug 4, 2008. 12:39 PM [REPLY](#)



drsteevo says:
Thanks for taking the time to put this together, it is very well written. I finally purchased a soldering iron and some solder and have successfully repaired a faulty charger that has been bugging me for over a year. Thanks!

Aug 3, 2008. 12:22 PM [REPLY](#)



nuclearscience says:
thanks for the Instructable now I can finish a project I've been working on

Jul 17, 2008. 12:05 AM [REPLY](#)



mackjr says:
cool helpful if your a soldering noob

Jul 8, 2008. 2:10 PM [REPLY](#)



archeryfreak says:
dude... thank... you.... i just got my first soldering gun and luckily its weller so im really going to have fun with it...
and again
thank you!!!!

Jul 8, 2008. 1:41 PM [REPLY](#)



Mr. Halloween says:
VERY NICE INSTRUCTABLE!!

Jun 29, 2008. 1:24 PM [REPLY](#)



omkar_hummer says:
how do i solder IC s?

Jun 26, 2008. 8:35 AM [REPLY](#)



alana000 says:
this was really useful
thanks heaps!

Jun 24, 2008. 12:40 AM [REPLY](#)



Kulawend says:
Whats the best way to desoder the wire from headphone speakers? I don't want to damage the speaker itself.

Jun 13, 2008. 2:22 PM [REPLY](#)



rainwolvves says:
yeah . i want to try this soon

Jun 7, 2008. 11:47 PM [REPLY](#)



Jawatech says:
mmmmm Solder...

May 6, 2007. 12:58 AM [REPLY](#)



punkatsub says:
what does the solder pen run on?

May 16, 2008. 7:01 AM [REPLY](#)



Jawatech says:
It runs on Butane like a cigarette lighter. The Temp is controlled by a knob on the bottom. Its extremely handy.

May 16, 2008. 7:09 AM [REPLY](#)



punkatsub says:
okay thanks

May 16, 2008. 8:02 PM [REPLY](#)



schetleft says:
yummy yummy! =)

Apr 30, 2008. 8:58 PM [REPLY](#)



mitch_mason77 says:
Does anyone have a suggestion for places to buy solder online or household items i can use for solder? (i live in a small town with approx. 500 people and no access to a major city so hobby shops and electronic stores are not really an option)

Mar 19, 2008. 11:23 PM [REPLY](#)



schetleft says:
try <http://www.radioshack.com> or <http://www.ebay.com>
i get everything from these places!

Apr 30, 2008. 8:29 PM [REPLY](#)



admiral001 says:
I really appreciate this Instructable. I think you did a really good job on it.

Apr 11, 2008. 2:55 PM [REPLY](#)



static says:
While you don't want to solder a connection by applying a molten blob of solder on the tip to the connection to be soldered. Having a small amount of molten solder at tip as you apply it to the connection will help with heat transfer to the connection and speed up the remaining process. Only with practice will you get the touch. After that, solder up a PC board full of components becomes, a relaxing distraction from the everyday crap.

May 17, 2007. 11:58 PM [REPLY](#)



DeusExMach says:
Unless SMT solder touch-up is your job... then it BECOMES the everyday crap...

Apr 8, 2008. 8:35 AM [REPLY](#)



alvincredible says:
would you be able to solder with a paperclip?

Jan 26, 2008. 1:53 PM [REPLY](#)



codykage says:
the clip probly wouldnt "melt" as such like the solder does.

Apr 8, 2008. 8:10 AM [REPLY](#)

probably just go red and weaken and bend.



FlyingMonkieBoy says:
I'm confused, do we **need** solder or can we just solder two wires together?

Apr 7, 2008. 7:21 PM [REPLY](#)



codykage says:
itd have to be pretty hot to fuse the two wires. and youd have to cut the connection if you didnt want it, where as with solder, you can just melt the flux again and bobs your uncle.

Apr 8, 2008. 8:08 AM [REPLY](#)

if your not going to use solder or dont have it or whatever, you can always use clamps, which just clamp the two wires together.



The magical duct tape kid says:
You have an amazing set of soldering guns-irons!

Feb 11, 2008. 5:12 PM [REPLY](#)



briviere2 says:
That was awesome! I especially like the MacGuyver soldering with a lighter and some baking soda haha, cheers!

Feb 10, 2007. 6:03 PM [REPLY](#)



darkstar24 says:
u need baking soda to use a lighter to solder?

Mar 11, 2007. 12:44 PM [REPLY](#)



noahw says:
To solder with a lighter you just need the wires, the lighter, and some solder. No baking soap necessary. I'm not too sure what you could even use it for, besides putting out a fire if your wire went up in flames...

Mar 21, 2007. 6:27 PM [REPLY](#)

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