

magnetic silly putty

by [mikeasaurus](#) on June 5, 2011

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Author: [mikeasaurus](#) [michaelsaurus.com](#)

My projects have been featured on Wired, Make, Hack-a-Day, Lifehacker, Gizmodo, Betty Crocker and Craftzine. As well as published in The Best of Instructables - Volume 1. I'm also the author of the "Man Crafts" column at DollarStoreCrafts.com

I like remixing old ideas with new, and reusing things not for their intended purpose. When not making projects I can be found on the rainy streets of Vancouver, BC.
Subscribe or follow, then try a few of my projects for yourself.

Intro: Magnetic silly putty

Thinking Putty (also known as *Silly Putty*) is a silicone polymer children's toy. Silly putty is fun because it has some unique properties: it is viscoelastic, meaning it can be stretched and shaped and mashed back together again; and as its apparent viscosity increases directly with respect to the amount of force applied (read: it can be torn or shattered with impact). Silly putty is a non-Newtonian viscoelastic polymer, better characterized as a **dilatant** fluid. Also, it bounces.

Ok, enough science. I'm sure we've all played with Thinking Putty in our youth, but how about magnetic silly putty?

By adding a ferrous component to an already wacky toy we can keep all characteristics of the original putty, but now have the additional dimension of magnetism! I've seen magnetic thinking putty for sale on [other websites](#), but I'll show you how you can make your own for a fraction of the price and in about 20 minutes.

Enough talk, let's make some magnetic putty!



Step 1: Tools + materials

tools:

- disposable gloves (latex or other)
- disposable face mask
- disposable work area (paper plate)

materials:

- Thinking Putty (\$2.00 or less) - any colour
- ferric iron oxide powder (artist supply stores)
- neodymium magnet

The secret ingredient that makes the putty magnetic is an iron oxide powder, which is ferric (magnetic). Ferric iron oxide is a fine powder used as black pigment and can be found at art stores. If your local artist supply store doesn't carry it, you can always purchase it [online](#).



Step 2: Prepare putty

Start by clearing a space to work, make sure it is well ventilated. Iron oxide powder is very fine and inhaling it is probably not such a good idea. Put on your gloves and face mask before you begin.

Open the thinking putty and remove from the container. Work the putty in your hands a little to warm it up, then stretch it out like a sheet and lay it on your disposable work surface (sheet of paper or paper plate).



Step 3: Add iron oxide

Thinking Putty comes in different sizes, depending on where you purchase it. I found mine in a local toy shop, it comes in an egg-shaped container and is about 24 grams (0.8 oz).

For this size, I used about a tablespoon of iron oxide, you may require more or less depending on your putty size and amount of magnetism desired.

Carefully spoon the iron oxide into centre of putty sheet, then close lid on iron oxide powder to reduce excess iron dust escaping.



Step 4: Work it

Gently fold edges of putty sheet into centre and work the powder into the putty. Go slow, the powder produces lots of dust.

After a minute of massaging the putty it will lose its colour and begin to look black as pitch. Keep massaging putty for about 3-4 minutes.

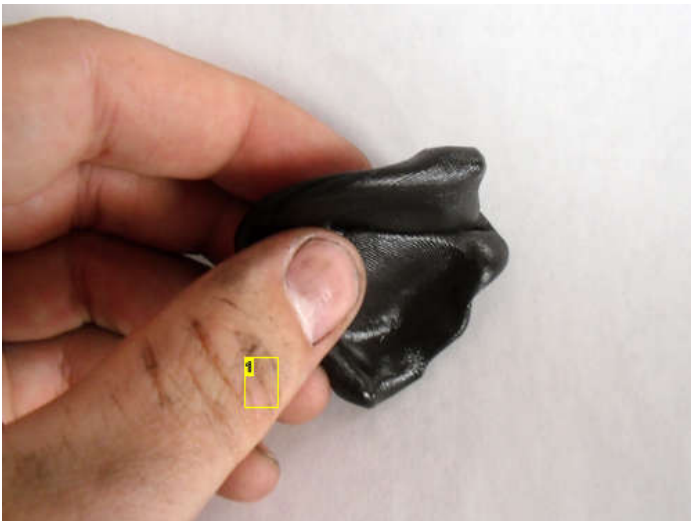


Image Notes

1. seriously, wear gloves.

Step 5: Experiment and have fun!

That's it, you're done! Grab your magnet and start experimenting with your new magnetic putty.

You can stretch out a strand and make it follow your magnet, you can polarize your putty to work as a magnet itself, and then there's the classic of placing the magnet directly on the putty and watching it envelop the magnet. There's plenty of fun to be had, check out the video I made with some of the fun you can do.



Some frames have been sped-up to illustrate magnetic properties.

Of course, aside from being magnetic your putty still retains all the properties of the original Silly Putty.

Caution:

Putty has been known to leave a residue on some surfaces, even more so with the iron oxide powder. Use caution when playing with your magnetic putty.

If you get magnetic putty stuck to fabric you can try placing the magnet on top of the fabric and the putty may work it's way out (wait 24 hours). Alternatively you can apply rubbing alcohol to area and work out the putty, try a concealed test-area first. WD-40 may also work. If all else fails, take the fabric to the dry cleaners and tell them it's a silicone-based stain.

What are you waiting for? Get going and make your own magnetic putty!

Place a picture or video of your version of magnetic putty in the comments below and earn yourself a digital patch and a 3-month Pro Membership to Instructables.com!

Have fun!

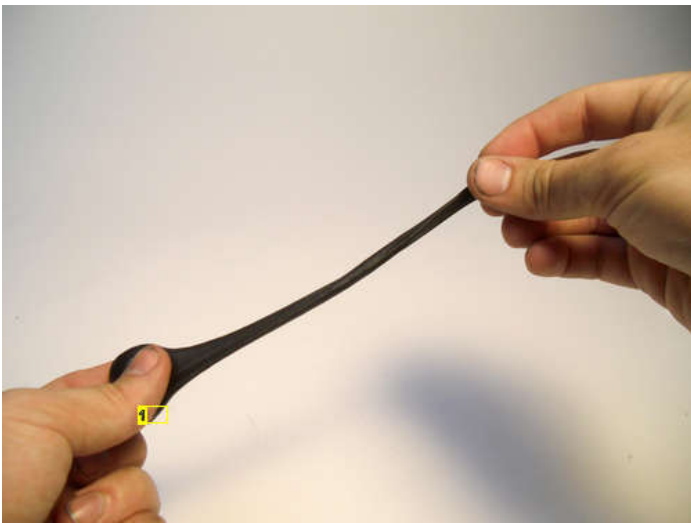


Image Notes

1. putty retains its stretching properties



Image Notes

1. ...and it's sheer force properties

Related Instructables



How to make a silly putty man by clint



Way to Organize/Store Makeup (or Almost Anything) on Your Mirror by sourcherry99



LED Handie by liketoblowthingsup



How To Make Silly Putty (video) by twj



Disassemble A Transformer easily! (video) by rtty21



Making Imitation Silly Putty (video) by kentchemistry.com

Comments

50 comments

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mikeasaurus says:

Jun 10, 2011. 9:55 PM [REPLY](#)

No.

Oxide powder is found in lots of pigments and is a descriptive term used for the mashed up minerals used to create what particular pigmentation, not all oxides are magnetic. Iron oxide is ferrous (magnetic) and is found in black or red.

But iron isn't the only magnetic mineral that is used in pigments. There might be another colour that works! Why not bring a magnet to the store and see which ones are magnetic? (hint, hint!)

I'll even double the 3-Month membership and throw down mad patches to anyone to post a colour other than black!!



lobo_pal says:

Jun 14, 2011. 12:48 PM [REPLY](#)

Didn't you just copy this from household hackers?
<http://www.youtube.com/watch?v=tJHM5LCPt4w>



hebbbers says:

Jun 14, 2011. 3:45 AM [REPLY](#)

what are the costs for this (black) iron oxide?
i am very interested!



timmy310m says:

Jun 13, 2011. 3:16 PM [REPLY](#)

I dunno where to get iron oxide powder and shipping sucks to hawaii.
I do however had a bunch of flameless mre heaters.
I think i read somewhere they are made of iron magnesium and sodium.
Do you think its safe to use a magnet to try like filter out the iron bits from the rest of them to use for this?



minomom says:

Jun 13, 2011. 5:50 AM [REPLY](#)

What's your soundtrack?
Love the stretch.



bubblebut says:

Jun 11, 2011. 8:49 AM [REPLY](#)

I was wondering where you bought you powder because I looked online and found some but I was wondering what kind of art stores ot would be sold at.



Whacko says:

Jun 12, 2011. 4:33 PM [REPLY](#)

There is a link right at the end of the tutorial to an eBay seller that seems to have very reasonable prices, although I don't think he intends his products to be used in Silly Putty by the look of his other auctions :)

http://compare.ebay.com/like/270341402365?var=lv<yp=AllFixedPriceltemTypes&var=sbar&_lwgsi=y



R.Blakely says:

Jun 12, 2011. 11:29 AM [REPLY](#)

One important use for the magnetic putty is in rotating seals, and in piston seals. For example, the putty can be used to seal a piston of a Stirling air engine. Using a thinner silicone oil allows the oil to seal a piston without significant friction loss like a normal piston ring has. The particles in the putty do not separate because Brownian motion keeps them in suspension. This means that heat moves the oxide particles up against the force of gravity, and heat moves the particles away from a magnet. A tube filled with the putty, above a magnet, should in theory be colder at its top than at its bottom near the magnet. This is because the oxide particles fight magnetic force to rise, and so they cool.



BlackFang171 says:

Jun 10, 2011. 1:02 AM [REPLY](#)

Wouldn't it be completely amazing to crush neodymium magnets into a powder, and mix the silly putty with a combination of that and graphite? You should come out with a conductive and highly magnetic putty.

Real world uses for a substance like this...GO!



psibbald says:

Jun 10, 2011. 2:43 PM [REPLY](#)

Be careful. Neodymium magnets are extremely brittle which means they are likely to shatter violently if you try crushing them. The pieces also have very sharp edges (I know that from experience!). To make matters worse, the powder produced is highly reductive and can oxidise so rapidly that it ignites.

You also need to bear in mind that if the attraction between the magnetic particles and the surface you put the putty on is greater than the adhesive properties of the putty itself then the particles will be left behind and you'll eventually end up with magnetic powder all over your house.

As for they idea of the putty becoming conductive with the addition of conductive powders, there would need to be a continuous path of conductive particles from one terminal to the other. I doubt that there would be enough putty in such a mixture to retain its putty properties.

Sorry to be such a downer.



macrumpton says:

Jun 12, 2011. 11:26 AM [REPLY](#)

"if the attraction between the magnetic particles and the surface you put the putty on is greater than the adhesive properties of the putty itself then the particles will be left behind and you'll eventually end up with magnetic powder all over your house."

Wouldn't the magnetic powder just move towards itself to form a ball in the center of the putty?

Re the conductivity, there are lots of non particulate conductors, like saltwater, and also you can buy conductive rubber, so it must be possible to do.

I concur on the shattering of the magnets. I have cut myself many times on broken magnets. Strongly magnetic knives are a bad idea.



ElectroFrank says:

Jun 10, 2011. 4:30 PM [REPLY](#)

Downer number two: It won't work anyway.

A magnet is only magnetic because all the microscopic magnetic domains are all lined up the same way.

If you crushed a magnet into powder and mixed it in, there would be no overall magnetic effect, because all the magnetic domains would be randomly aligned, and would cancel each other out.

The only effective "magnetic" powder you can mix in must be "paramagnetic", that is, attracted by magnet, but not a magnet itself.

(Yoda voice:) No sorry ! In science class, more attention you must pay, young Smilewalker !



BlackFang171 says:

Jun 10, 2011. 8:34 PM [REPLY](#)

you could have conductivity as long as the voltage were high enough to arc from particle to particle within the putty. even air becomes conductive at a high enough voltage, its just a matter of how much voltage you would need to make that jump. Unfortunately the only magnetism I was ever good with in school was electromagnetism. What can I say? I'm a computer geek, not a physics major.



psibald says:

Jun 11, 2011. 1:49 AM [REPLY](#)

Seriously?!

You're talking about enough voltage to arc between tiny conductive particles surrounded by a non-conductive medium. Odds are you would get an arc between the terminals without the modified putty. Either way, I wouldn't want to be anywhere near it when you turn the juice on.



Light_Lab says:

Jun 12, 2011. 6:40 PM [REPLY](#)

I agree it is counter intuitive, but at work I have made use of electrically conductive paints made from silver particles or graphite particles dispersed in a polymeric binder and solvent. There is even a company making a conductive printing ink based on finely divided copper particles. I guess you can get a sufficiently continuous path of connecting particles if they are small enough and of a very high concentration. I would imagine though that at this level of concentration the VE properties of the silly-putty would be lost.



Harrson says:

Jun 11, 2011. 10:57 AM [REPLY](#)

Yeah, I can only think that arcing within the putty would put bits of it all over the room.

That could be fun too, though.



ElectroFrank says:

Jun 12, 2011. 3:46 AM [REPLY](#)

A car engine spark plug takes about 20,000 Volts to reliably cross a (fairly clear) air gap of about 1/25 of an inch (1mm).

For BlackFang's putty to conduct, the voltage would need to be sufficient high to cross the sum of all the gaps between the particles, impeded by the insulation of the putty. Do the math if you want to !

BlackFang, I advise a welder's mask at the very least !

I shall be with psibald, on the other side of the (steel) door.



psibald says:

Jun 12, 2011. 3:18 PM [REPLY](#)

Steel be bugged. Glass is an electrical insulator and we could watch the fun.



ElectroFrank says:

Jun 12, 2011. 7:23 PM [REPLY](#)

Can we compromise: Transparent Aluminium ? I've always wanted to try some. It is bulletproof, but I'm not sure about it's conductivity.



E_MAN says:

Jun 12, 2011. 6:10 AM [REPLY](#)

Nice Instructable. I like how it can just eat magnets....





TheWaddleWaaddle says:


Jun 11, 2011. 2:09 PM [REPLY](#)


The video reminded me of Spiderman 3 :D


-TheWaddleWaaddle

 **thalass** says: Jun 11, 2011. 8:35 AM [REPLY](#)
Very interesting. Has anyone tried this magnetic silly putty in a coilgun?

 **Akayuki-Lucifel** says: Jun 11, 2011. 7:31 AM [REPLY](#)
Is that offer with membership still available? It's not that hard to figure out another colour...
Also another idea to collect ferum dust is an electro magnet, which incidentally, are heaps fun to make and play around with as well d:

 **bubblebut** says: Jun 10, 2011. 5:00 PM [REPLY](#)
would it be bad if i went to buy iron oxide powder and it only said oxide powder also if it was colored would it make a difference please respond soon I would love to get started on this awesome project

 **jnaude1** says: Jun 8, 2011. 8:01 PM [REPLY](#)
I have a recipe for making silly putty so I'm going to experiment with doing it for scratch. Plus this gives me great ideas for making all my non-newtonian recipies magnetic! (magnetic gak, moon sand, etc... :D)


 **Arc413** says: Jun 9, 2011. 7:03 PM [REPLY](#)
What is the recipe? I've just had a quick hunt, and couldn't find any.
Care to share? :)


 **mikeasaurus** says: Jun 10, 2011. 10:13 AM [REPLY](#)
There's a search bar on the top of this page:


- <http://www.instructables.com/id/How-To-Make-Silly-Putty/>
- <http://www.instructables.com/id/Making-Imitation-Silly-Putty/>

 **hwatson2** says: Jun 10, 2011. 4:04 AM [REPLY](#)
<http://www.filthwizardry.com/2008/06/silly-putty.html>


 **turbotonic27** says: Jun 10, 2011. 12:17 AM [REPLY](#)
you got this idea from Householdhacker.right?


 **mikeasaurus** says: Jun 10, 2011. 10:10 AM [REPLY](#)
Nope, I got this idea when I saw the stuff for sale at ThinkGeek.

 **Guytron** says: Jun 8, 2011. 4:44 PM [REPLY](#)
Any rule of thumb for how much powder the putty will take up? I'm thinking of adding some graphite to try including conductivity in the putty's behavior.

 **reoozeit** says: Jun 10, 2011. 8:12 AM [REPLY](#)
Any idea for how you will figure out the ampacity (a.k.a. the amount of electrical current it can handle)? the thought of projectile putty if you exceeded it could be scary! ;) Also, current flow is the free electrons moving through a conductive material. What would happen if the material also moves unlike a somewhat rigid copper or aluminum that retains it's shape? electricity moves at the speed of light. I sure hope your putty does not (could be cool, but dangerous:) I think you need to try this and do an instructable that shows the results! As always, be careful.

 **multifacetedval** says: Jun 9, 2011. 2:17 PM [REPLY](#)
Do let us know what happens. Will you use pencil dust?

 **mikeasaurus** says: Jun 8, 2011. 9:07 PM [REPLY](#)
Surprisingly, the putty absorbed all the powder I added with no loss of consistency. I imagine you could add double what I show with minimal performance issues.
A mix of graphite sounds promising, you must share your results!

 **multifacetedval** says: Jun 9, 2011. 2:17 PM [REPLY](#)
This is really shaping up into ideas for science fair projects! I need to link to this page from my blog!



mikeasaurus says:

Thanks, would love the link-back when you do!

Jun 9, 2011. 2:20 PM [REPLY](#)



tgrable says:

Here's the backlink. Notice how I invited students to read the comments for science fair ideas.
<http://soapboxbyval.blogspot.com/2011/06/what-if-you-could-control-flow-of-slime.html>

Jun 13, 2011. 12:33 PM [REPLY](#)



dombeef says:

Wow!

Is there a substitute for the Iron Oxide? I have recently acquired a bunch of gilfcards, the bar in it is magnetic. Or old tapes? Could I crush and cut it up to a kinda fine powder?

Jun 7, 2011. 12:46 PM [REPLY](#)



randofo says:

You can dissolve the glue off of audio cassette tapes with acetone and filter out the powder. There is an Instructable on it somewhere. Buying this pigment is easier.

Jun 7, 2011. 3:27 PM [REPLY](#)



dombeef says:

Ok, thanks!

Could I use nail polish? It has acetone the last time I checked.

Jun 7, 2011. 4:23 PM [REPLY](#)



Aethereal says:

Nail polish remover should work fine, although it may take a little longer because it's weaker than standard acetone. Also, you can buy acetone pretty cheaply at boat stores and places like Home Depot. Or B&Q or Mitchell's, if you're in the UK.

Here's a decent instructable: [http://www.instructables.com/id/New-way-of-making-a-ferrofluid.-Cost-only-1.00\\$/](http://www.instructables.com/id/New-way-of-making-a-ferrofluid.-Cost-only-1.00$/)

Hope this helps:)

Jun 7, 2011. 5:42 PM [REPLY](#)



dombeef says:

Thanks! Though I was hoping for a little project without the need for buying new stuff, thanks for showing the instructable!

Jun 7, 2011. 5:51 PM [REPLY](#)



Aethereal says:

Welcome:) Happy making!

Jun 10, 2011. 6:28 AM [REPLY](#)



St Jimmy says:

Anyone else seen Smart putty on Thinkgeek? Do they make it in magnetic form?

Jun 9, 2011. 10:12 PM [REPLY](#)



Z.Backas says:

This is a great idea! I've always loved that thinkgeek magnetic silly putty, but it's so dang expensive! This instructable is gold, and not to mention, a really great writeup!
What about using printer ink instead of the powder? I've seen it used in ferromagnetic fluid before, would it work for this application? or vice versa, would the oxide work in ferromagnetic fluid?

Jun 9, 2011. 9:36 PM [REPLY](#)



jeffstitt says:

This is the beginning of the "World of goo: Real Life version" :P

YES, YES it is... (insert evil scientist laugh!)

Please someone post the recipe for the homemade silly putty!! :)

Jun 9, 2011. 8:39 PM [REPLY](#)



kelseymh says:

Wow. That stuff looks disturbingly like Armus. Hope you don't have a time-travelling Tasha Yar hanging around!

Jun 7, 2011. 10:00 PM [REPLY](#)



wscottc60 says:

wow... very nice obscure reference

Jun 9, 2011. 5:48 PM [REPLY](#)



ELuTionist says:

Go to beach.
With strong magnet, collect black sand.
Use mortar and pestle to grind into powder.
It's the perfect alternative to buying iron oxide powder for those who live near the ocean!

Jun 9, 2011. 12:18 PM [REPLY](#)



kikiorg says:

You don't need a beach! We did this when I was a kid in Atlanta in the sandy parts of curbside ditches. The human world is full of iron! The iron is always crumbling into tiny pieces and blowing around. You can collect iron sand pretty much anywhere reasonably urban.

Jun 9, 2011. 1:27 PM [REPLY](#)

Tip: put your magnet into a baggie, then pull it out to release the iron. Otherwise you'll go crazy trying to get it all off the magnet!

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