

what you learn

**02**

what you need

**03**

before the  
exposure

**04**

how to use the  
vacuum bags

**05**

exposure in  
the sun

**06**

wash out soft  
emulsion

**07**

troubleshooting

**08**

tips and tricks

**09**

acknowledgements

**10**

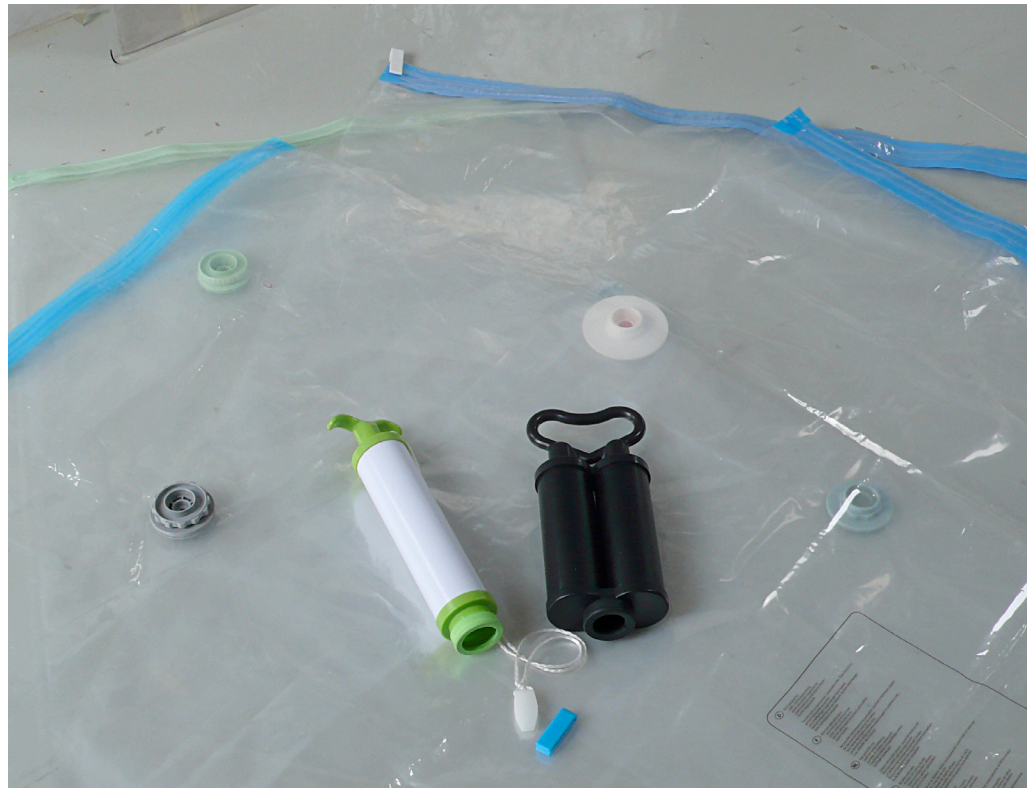
## what you learn:

This guide shows all the essential steps how to burn screens for screen printing if you have no access to the electrical grid and running water. This definitely is a very basic, Do-It-Yourself method and you will not get the same quality in your print as if you would make use of a print shop with professional equipment. Specially if you work with screens with a high mesh count and high resolution photo's. But for a simple design and a font size above 12 pt you will have good results on a 200 mesh. Being able not only to screen print on location but also to burn your screen can be extremely useful. It can serve you in your artistic practice but also in educational projects.

This guide doesn't show how to make your stencils, coat screens and doesn't teach screen printing basics. If you are a total newcomer to screen printing follow an introduction course or look for tutorials online.

what you need:

The first and crucial part in the entire process is the vacuum bag or space bag itself. Conduct an online search what is available in your region. Large chains like HOME DEPOT, and IKEA sell them, as well as many other stores. On amazon.com you find a long list of re-sellers. The bags look very similar but there are quality differences. Go for the better quality, specially the thicker plastic. Select the right size of bag for your screen. It should fit comfortably. If you intend to work with different screen sizes, get appropriate bags for each size.



Second part is the vacuum hand pump. Try to buy a package of vacuum bags that come with a hand pump, because every brand has different diameters of the valve opening and the hand pump. If they don't fit, you can't get the vacuum you need. Third thing you need is a piece of black card- or foam board that fits inside your screen.



vacuum bag



hand pump



foam board

Please watch the short instructional video on off-the-grid screen exposure at: [http://stefanhoffmann.nl/technical\\_offthegrid/foto0.html](http://stefanhoffmann.nl/technical_offthegrid/foto0.html)

## before the exposure

First check your screen, if the aluminium or wooden frame has any sharp edges and if so remove them, because they can puncture your vacuum bag. Sometimes the mesh is not fully glued up to the outer edge your frame. Check with your finger. If it feels sharp, remove the part or tape it down. As you probably do not have access to light safe facilities, there is one basic but crucial rule: as much as you need direct sunlight for the actual exposure, stay away from it when you are storing and handling a coated screen.

Coat your screen with one layer only from the back. As you don't have a real washout sink with running water, washing out the soft part of the emulsion is easier with only one coat. Use 'dual cure emulsion' it has a wider range for the exposure time.

As soon as your emulsion is dry store the screen in a heavy black garbage bag. Use transparencies with full dense black. This also gives you a wider range for the exposure.

Once you've taken the screen out of the bag, work fast to position your transparency with clear tape and get your vacuum bag ready.



no sunlight



position fast

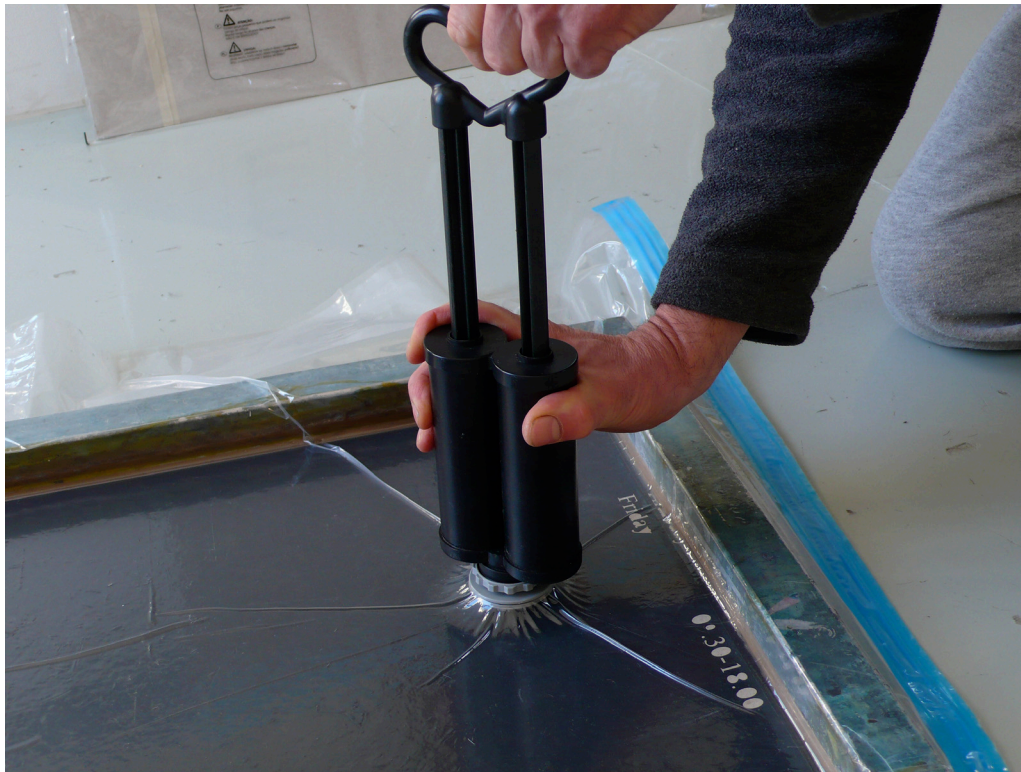


have bag ready

## how to use the vacuum bags

Keep in mind that what you are doing with the bags is not exactly what they are designed for! Vacuum or space bags are made to compress big piles of clothing which is soft and has no sharp edges. So try to avoid anything that could puncture your vacuum bag.

To begin with, work on a flat and clean surface. Once your transparency is positioned, flip the screen over and put the black foam board or card board inside the frame. Unfold the bag, open it and slide the bag over the screen. Close the airtight zipper with the slider that always comes with the bag. Go at least twice with the slider over the entire length of the zipper and check if it is properly closed. Now put the hand pump on the valve opening and



suck the air out. Push the plastic down into the edges of the screen while pumping, to avoid overstretching of the plastic. When the full vacuum is reached close the valve, flip over the screen again and remove any wrinkles in the plastic by gently pushing them towards the edge. You are ready for exposure!



place foam board



slide in bag



close zipper



pump air out

## exposure in the sun

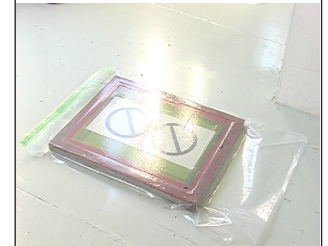
The best exposure results you reach with real sunlight. Position your screen in a right angle to the rays of the sun, your light source, depending on the suns position during the day. The light intensity of course varies during the day, the season, the geographical region, but between 45sec and 1 min. is a kind of average. If you stay inside a building behind glass roughly double the exposure time as the glass withholds part of the UV light. To determine the perfect exposure time for your specific circumstances you can use the light meter app for your smart phone to measure exact light intensity. Make sure there are no obstacles between your light source and the screen which could through any shadows on your screen.



Bring your screen immediately after exposure to your cleaning unit. If this is not possible or takes some time store your screen again in the black garbage bag.



expose outside:  
45sec. - 1min.



expose inside:  
2min. - 3min.

## washing out of the screen

To wash out the soft parts of the emulsion you need a simple cleaning unit. In the technical guide for window printing you find instructions how to build one. To check if the screen is correctly burned, the same rules as inside a printshop apply: if it is really slimy on the inside, exposure time is too short, if you can't wash out the details it is too long.

As soon as you take the screen out of the vacuum bag wet both sides of the screen completely with clean cold water. As soon as it is wet the exposure

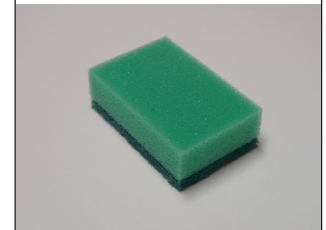
stops. Let it sit for half a minute. That makes washing out the undeveloped parts of the emulsion a lot easier. Use a soft sponge and lots of water to slowly massage the emulsion out. Work mainly from the backside of the screen, the print side. Hold screen against the light to see if all details of your design washed out properly. If not use two sponges and massage from both sides simultaneously. Ready to print!



Please watch the short instructional video on off-the-grid screen exposure at: [http://stefanhoffmann.nl/technical\\_offthegrid/foto0.html](http://stefanhoffmann.nl/technical_offthegrid/foto0.html)



immediately wet both sides of the screen



use soft sponge

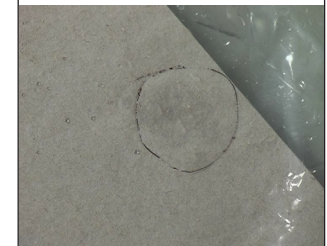
## troubleshooting

After some time your bag will start to fail, but there is quite a simple method to find out where the leak comes from: Cut a piece of uncoated cardboard exactly the size that will fit your failing vacuum bag. Put it in the bag, pump the air out and immediately spray clean water over it with a spray bottle. Use a soft sponge to evenly spread the water. After a short while darker spots will appear on the cardboard where the leak is. Mark the spot with a pen (not a permanent one!) because the spot will disappear pretty fast. Clean and dry the area around

the leak and use strong and thick industrial clear 2'' packaging tape for the repair. Repeat the procedure until all leaks are found and the bag holds the vacuum again.



leaks show



mark spot



## tips and tricks

-Bags from different brands are different and their airtight zippers as well. With each set of bags by a specific brand come small white or blue sliders and the inside of each one is shaped to close that one specific zipper. The sliders look very similar, but the wrong won't close your bag. Even worse, it will compromise your zipper. So mark the sliders and bags that go together.

-Sliders are also very small items and are easy to loose. Connect them with a cord to something you won't loose, like your hand pump or the bag itself.

-Black garbage bags come in different thickness. Hold it against the sunlight. If you see a color difference between one or two layers, light comes through, be on the safe side and use two garbage bags to store your coated screens. When you bring your screen with the bag outside in the sun for exposure, handle it with great care. Place it preferably on a soft surface, like a piece of cloth. If you put it out on the street without protection it is pretty likely that it will be punctured.

## acknowledgements

special thanks to Jane Sampson, from inkspot press in Brighton UK and Marijke Verhoef at Vrije Academie in The Hague NL for planting the initial idea for the use of vacuum bags.

Developing, testing and troubleshooting was possible through the support of Artists Image Resource and the Andy Warhol Museum, both in Pittsburgh PA in the US and the Stokroos Foundation and the Center for Visual Art Rotterdam in the Netherlands.

