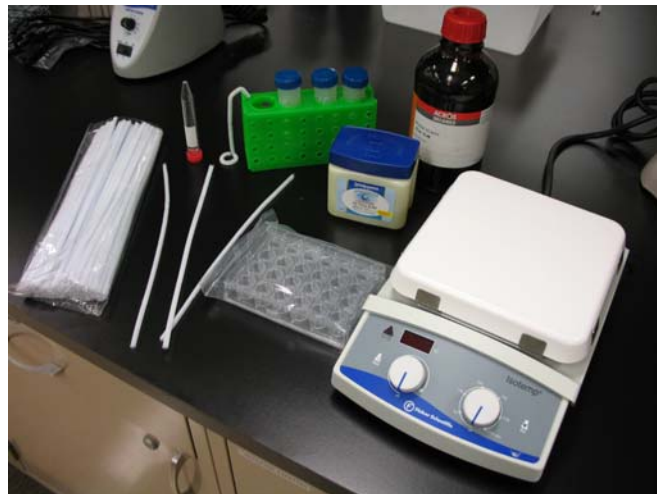


# Pipe cleaner method for greasing crystallization plates

## Materials needed:

- Vaseline (petroleum jelly, white petrolatum, soft paraffin)
- Mineral oil (optional, but recommended)
- Pipe cleaners (from arts & crafts store)
- Hotplate & beaker of water
- VDX plates
- ~1-2 hrs to grease 40-50 trays



## Step 1: Prepare the greasing material



You can use straight Vaseline (melting point of  $\sim 70^{\circ}\text{C}$ ) or make a 70/30 Vaseline/mineral oil mix (melting point of  $\sim 40^{\circ}\text{C}$ ). I recommend using the lower-melting-point mixture for ease of use and safety.

This mixture is most easily made by placing the Vaseline and mineral oil into a stainless steel beaker over a carefully controlled hot plate. *Very slowly* raise the heat until melted and mix well with a stir bar. If you turn the hotplate up too high, it will burn slightly on the bottom, give off a horrible smell and could catch fire if left unattended.

## Step 2: Prepare the pipe cleaner

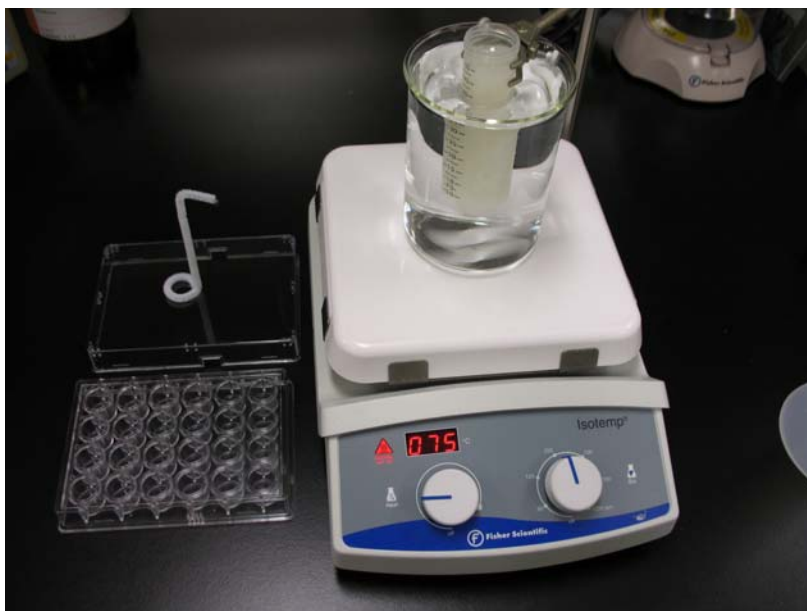
Roll the end of a new pipe cleaner around a 15 ml centrifuge tube to form a ring with the approximate dimensions of a well in a 24-well VDX plate. Adjust the radius to match the well by comparing it to a VDX plate (usually requires making the ring just slightly smaller). Finally, fold the ring so that it is perpendicular to the rest of the pipe cleaner.



### **Step 3:** Melt the greasing material

Place the greasing material into a beaker of water with a stir bar to function as a double boiler. Heat the water to warm the greasing material. If you used the Vaseline/mineral oil mix, you can keep it at  $\sim 75^{\circ}\text{C}$  for efficient greasing. If you use 100% Vaseline, it is recommended to boil the water slowly to keep the Vaseline adequately melted.

The key to good, complete greasing is very hot greasing material that flows easily off of the greasing tool.



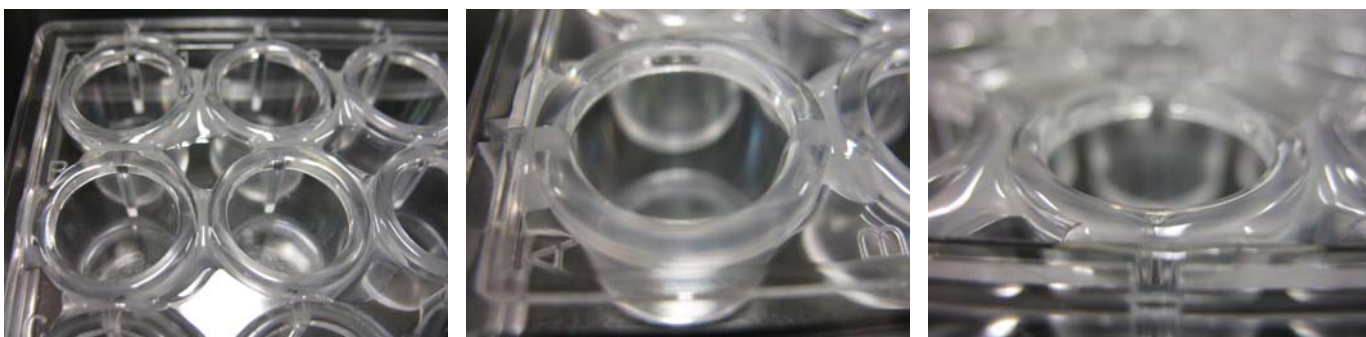
### **Step 4:** Apply the grease

Dip the greasing tool into the liquid greasing material. Make sure to dip deeply into the material and heat for smooth greasing. Next, lightly touch the greased tool for  $\sim 1$  second to the top of each well in a row. If the greasing material is warm enough, you can easily grease an entire row with one dip of the greasing tool. It should take under 1 minute to grease an entire 24-well VDX plate. A 50 mL aliquot of greasing material should easily grease  $\sim 40$ -50 trays.



### **Step 5:** Inspect the trays

The rings cool almost immediately. Inspect the ring to ensure a smooth ring of grease. If anything looks incomplete, just reapply the ring to that well to complete the greasing.



### *Acknowledgements:*

This greasing method was developed long ago in the laboratory of Dr. Michael Rossmann at Purdue University. The original developer's name has been lost to my memory, but Dr. Kay Choi (now at UTMB) originally showed me (Todd Geders).