

Colten Lyons

Bio 209

### Citrus oils

I am going to make a green cleaning solution from the grapefruit citrus peels that are in Belize. I found some directions on how to make some cleaners from the peels online. I want to test the solution by using a clean white cotton shirt draw a black line down the middle and put a series of different types of dirt and grime on each side of the line. I am going to use some oxy clean on the other half. I will rub them in and then wait overnight and then rinse the shirt with water and a scrub brush and then see which one of the cleaners worked better and which stains they worked on. To see which worked better I will use a visual test and ask 25 people for results. I think that the Oxyclean will most likely work the best on all stains

#### Materials List:

2-3 grapefruits, 1 mortar and pestle, 2table spoons of course salt, 1 bottle with a removable lid, 1 cotton t-shirt, Oxyclean gel stick, 1 bottle of bottled water, one medium sized funnel, one cheese shredder( although I used the shredder that was in the kitchen in Belize).

#### Making the solution

1. First you take the peel off of the fruit. Then you can use a knife, vegetable peeler, or a cheese shredder to get the remove the zest off the peel. You will need 60.0 grams of peel. When you shred the zest it will have some oils, this should be left in.
2. Second you mash the zest in a mortar and pestle. You may add some course salt to break down the fibers in the zest. Once you break down your zest, from the mortar and pestle you can put the zest in a bowl so you can mix it with water. Pour cold water (you will

need 70.0 grams of water) into the mix. Once mixed, put it into a bottle with a large lid (like a big PowerAde Bottle), using a medium sized funnel, the mix is hard to put in a small water bottle or hole. Then put the bottle in the refrigerator for one day.

### Staining the shirt

Use one clean white cotton shirt and draw a grid with one line down the middle and two lines drawn sideways, then put mud in one section on both sides, engine oil in one section on both sides, and chili in one section on both sides. Let the shirt dry overnight. It is a good idea to stain the shirt and make the cleaning solution in the same day so that you can do the cleaning the next day.

### Cleaning the shirt

Take the shirt with the dry stains and get the grapefruit solution that you made the day before and also get the Oxyclean gel stick. Run the shirt under water to get it soaked first then use the grapefruit cleaner on all of the stains on one side and rub in. Next use the Oxyclean and do the same on the other side. Once you have both cleaners rubbed in thoroughly wash and rinse the shirt under water. When the soapy bubbles stop coming out of the shirt from the Oxyclean you can hang it up to dry.

### **Results**

My results are the following; I used 70.0 grams of water in the grapefruit solution, 60.0 grams of zest in the solution, this graph shows the number of people that I showed the results of the cleaning of the shirt. When the shirt dried the oils from the grapefruit zest gave the shirt a sort of orange tint to it, but the shirt didn't go through a washer and dryer.

	Mud	Chili	Engine Oil
Grapefruit	25	25	
Oxyclean			25

### **Conclusion**

In my conclusion I was right in that the Oxyclean worked better only on the engine oil. The grapefruit solution worked better on the chili and the mud. If I were to change or to follow up on this research project I would use oranges and I would try to put the shirt after the cleaners are applied, in the washer without any extra detergent.

### **Works Cited**

Mymukki. [How to make citrus oils for green cleaning](http://www.ehow.com). 30 october 2010 <<http://www.ehow.com>>.