

Coatings in construction

Section of a 1 h library class meant to inspire ages 3+

Format

- **Activities/ demos** to intrigue
- **Discuss** observations
- **Explain** concepts
- **Connect** observations to theme

Coatings change surfaces

- **Coating:** A thin layer of material applied to the surface of another material to modify its properties.
- Some coatings are meant to stay on permanently, and others are meant to be temporary
- Let's learn about a coating we put on our decks



Coatings protect against corrosion

**Night
before:**

Immerse white eggs in dark colored
soda

Uncoated

Toothpasted



**Day of
reveal:**

Uncoated

Toothpasted

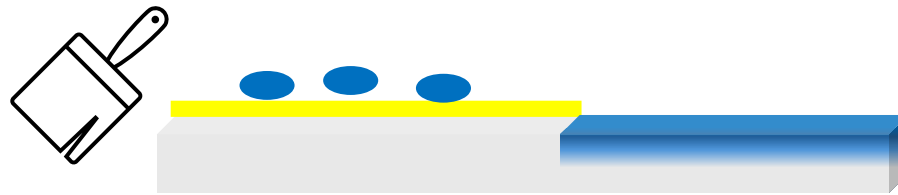


"Toothpaste Experiment With Eggs" reported by Siva Stephens in Sciencing on March 24, 2022

Varnish keeps wood from rotting



Add water drops

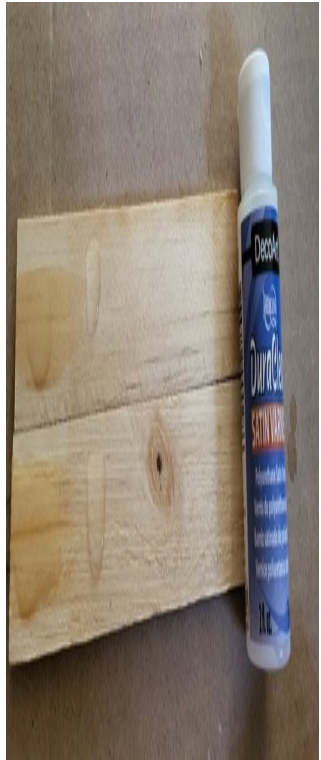


Brush water off

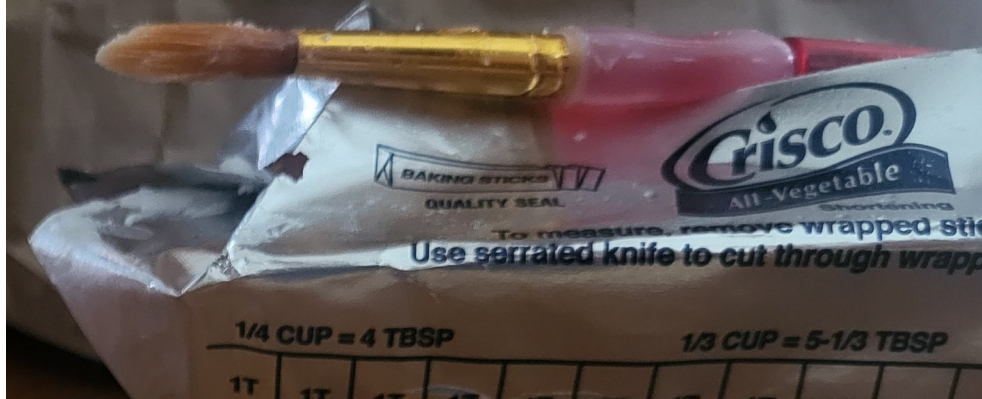


Varnish is water resistant

Find the spot we missed when varnishing the deck!



Kids coat with Crisco



Uncoated

Crisco

Uncoated

Crisco



Immediately



After one minute

Kids coat with maple flavored syrup

Maple Syrup



Uncoated

Maple flavored syrup coatings don't provide water resistance! Why?

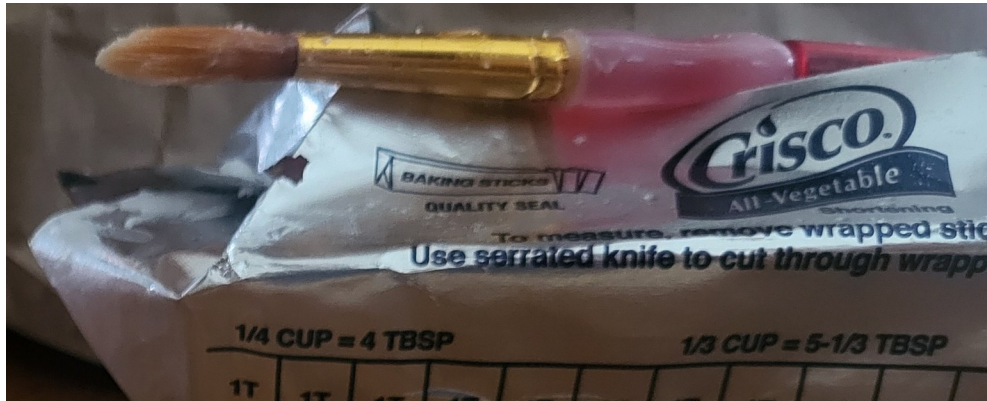
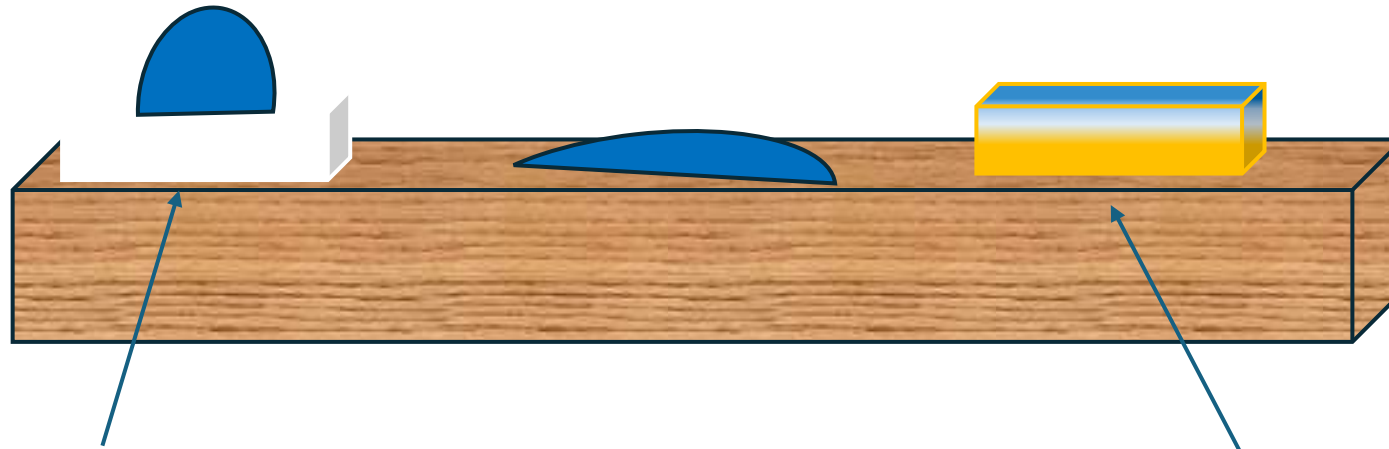


Dissolves in water



Add a droplet of water... No drying needed

Maple syrup coating is less water resistant, whereas Crisco coating is more water resistant, than uncoated wood! Coating performance depends on chemistry.



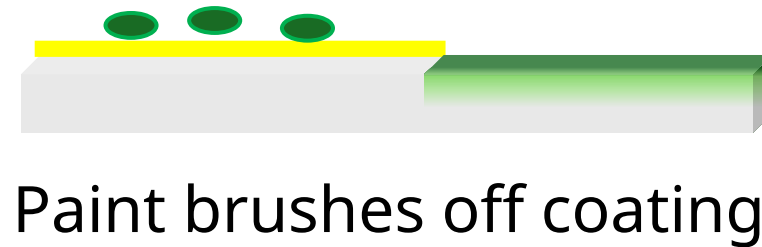
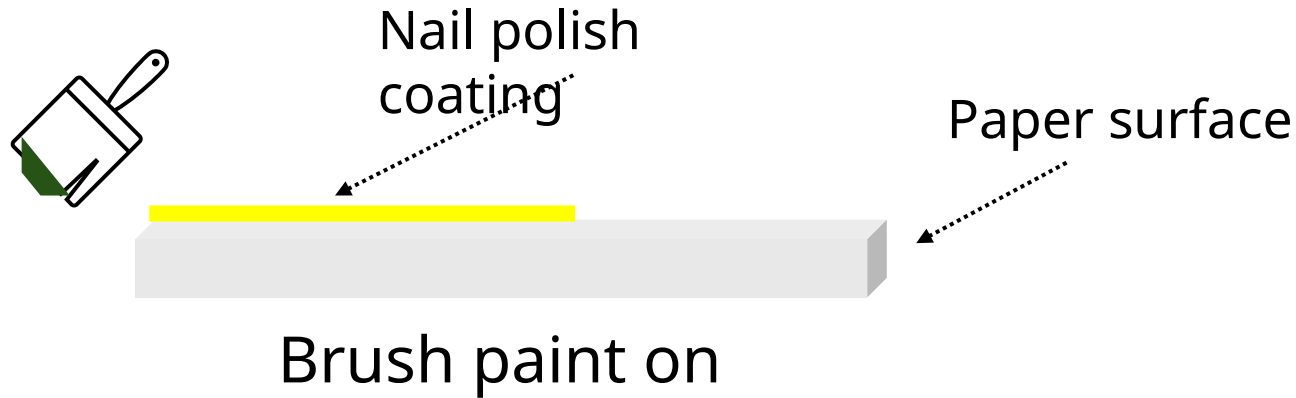
Construction connections: What am I and what do I do?

- I go on moving objects to prevent brown flecks breaking off. I am supposed to stay on, but I can be scratched off. [Car coating \(rust protection\)](#)
- I go on skin when you go outside. I am supposed to rub in and wash off. [Sunscreen \(UV resistant\)](#)
- I go on decks to keep them from rotting and yellowing. [Varnish \(water resistant, UV resistant\)](#).
- I keep barnacles from sticking to a hull. [Ship coating \(antifouling\)](#).
- I go on houses to improve the looks and keep mold out. Watch out for drips! [Paint](#)

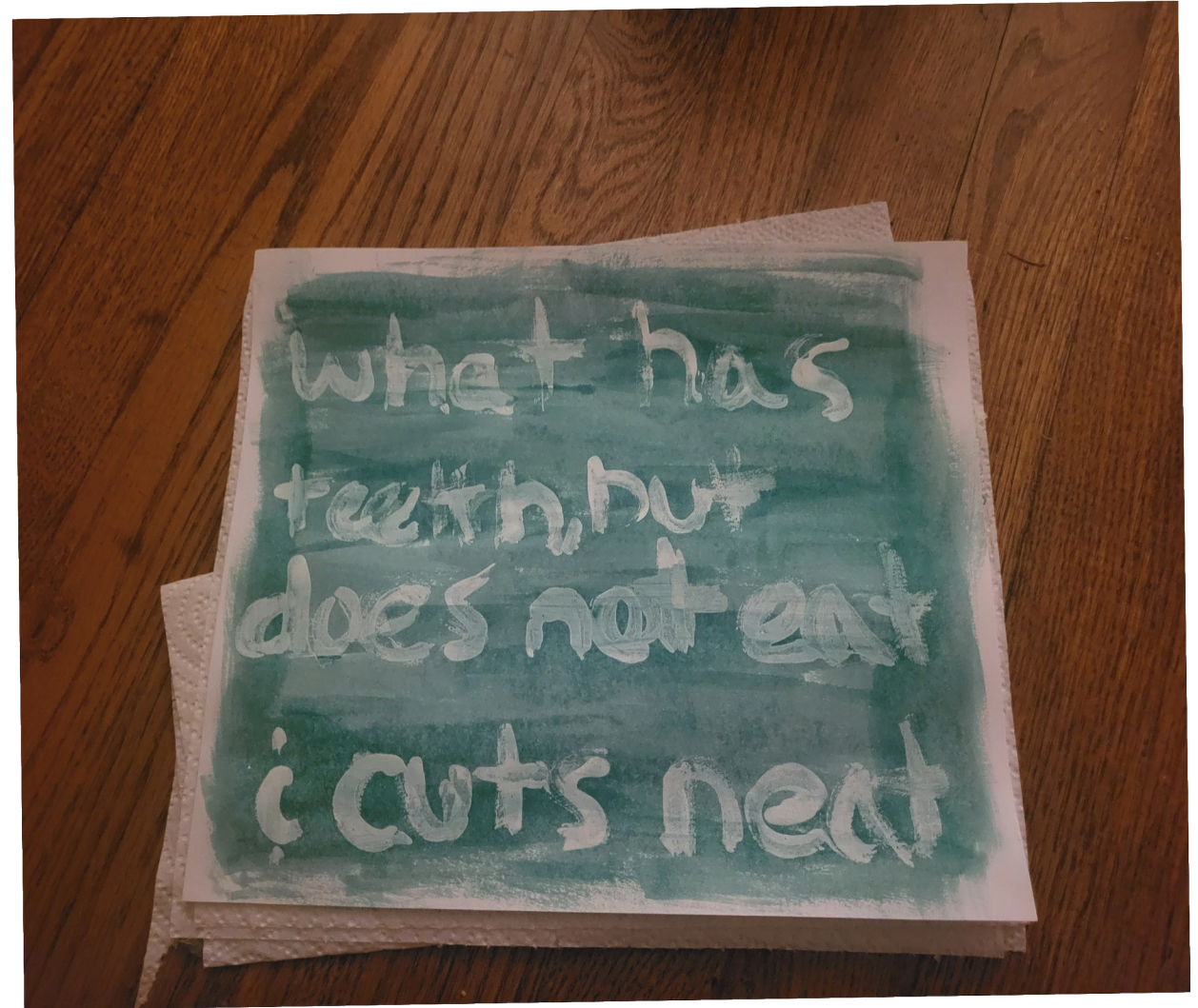
Bonus activity

Coatings change surface properties

Coating: A thin layer of material applied to the surface of another material to modify its properties.



Riddle revealed with paint



"What has teeth but does not eat & cuts neat?"

Riddle solutions revealed with water



Brush on water

"Hammer or Saw?"

Other considerations

Safety considerations:

- Make sure wood shims are smooth (prevent splintering; smoother coats better)
- To eliminate risk of improper use by kids, coat materials prior to class. Dry for 30 to 60 min.
 - Nail polish has hazard statements (SDS available).
 - Varnish is non-hazardous (SDS available).
- Offer food-safe non-latex gloves for kids (mess, food allergies).

\$60 budget per 20 stations (08/26 prices)

Item	Vendor	Cost
Cardstock	Walmart	\$4.97
Sally Hansen 3-in-1 quick dry nail polish white on time	Walmart	\$5.98
Great Value Maple Syrup	Walmart	\$3.12
Nelsons Wood shims (8 sets of 6)	Lowes	\$12.64
Washable finger paint	Meijers	\$5.99
DuraClear Varnish	Meijers	\$2.39
Royal & Langickel Crafts Choice 6 pc Glue and Adhesive Paintbrush Set (24 total)	Meijers	\$7.96
Pipette Set by Artist's Loft (20 total)	Meijers	\$7.98
6 eggs	Walmart	\$0.82
Soda 1 L	Walmart	\$1.82
Crisco	Walmart	\$3.92

Note: Kids gloves and sandpaper not included.