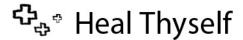
Name	Period	Date	



STEM Sims

Lesson 1: Self-Healers

Many objects in the world can be broken, worn down, or deteriorate over time. They do not possess the ability to heal themselves. Wouldn't it be a great idea to incorporate the ability to self-heal into objects that are commonly damaged to prevent deterioration? Look at biology for example. If a bone breaks, it heals. If you get a cut, a scab forms over it and it heals. Can you help concoct a good self-healing material for your surfboard?

Doing the Science

- 1. Start the Heal Thyself Simulation by clicking on the "Sim" tab.
- 2. Click on the "Mix" button to go to the mixing station.
- 3. Click on "2.5%" under the Microcapsules section and "2.5%" under the Catalyst section.
- 4. Click on the "Mix" button to mix the epoxy and create your surfboard.
- 5. Click on the "Test" button to go to the testing center.
- 6. Click on the green "Start" button to begin punching holes into your surfboard.
- 7. After the machine is finished, click on the "Analyze" button to look at the results.
- 8. On a scale of 1 10 (1 being the best and 10 being the worst), rate how well the crack healed. Record your results in Table 1.
- 9. Repeat steps 2-8, changing the microcapsule and/or catalyst percentage concentration. Remember, that a good experimental strategy is to hold one variable constant for a given test and change the other variable. Make sure to test all possible combinations and to record your data in Table 1.

Table 1.

Microcapsule Concentration (%)	Catalyst Concentration (%)	Rating
2.5	2.5	

Do You Understand?

1. Which combination of microcapsules and catalyst provided the best self-healing material?