GOT YOU COVERED!
PRESENTER'S GUIDE

Dear Presenter,

The U.S. Bureau of Labor Statistics predicts that employment in STEM occupations will increase by more than 1 million from 2012 to 2022. That's faster than the growth for all other occupations. But further data show that the number of American students earning degrees in science and engineering is actually decreasing[1]. Minorities and women, in particular, are underrepresented in these fields: They account for less than 45 percent of STEM degrees.

This is an important concern for the coatings industry, where a recent survey found a gap in the availability of experienced, knowledgeable employees to take on senior management positions beyond the next 10 years and in the decades that follow.

Today's students are tomorrow's scientists, thinkers, and leaders. Reaching this audience as they are just beginning to explore different career paths is an ideal time to secure a strong, effective workforce for the future. And research shows that, as early as middle school, it is possible to identify those students who demonstrate the curiosity, initiative, and aptitude required for success in STEM careers.

Your classroom visit and presentation are a critical part of our efforts to energize curious minds about pursuing careers in coatings science and technology. This Presenter's Guide is designed to help you achieve that goal. Through a set of age-appropriate, interactive lessons, you will have the opportunity to introduce students to the integral part coatings play in our everyday lives. This guide will help you deliver the message that STEM is for everyone, and that career opportunities are unlimited across the spectrum of STEM specialties.

We thank you for your commitment to inspiring the next generation of scientists, engineers, and thought leaders, and we hope this guide serves as a useful tool for a lively, engaging classroom visit.

Sincerely,

The American Coatings Association

American Coatings ASSOCIATION℠

"We recognize that highly innovative scientists and engineers are often inspired by great teachers in their lives who cultivate their natural curiosity and push them to have the courage to be creative."

— Marshall Moore, OMNOVA Solutions

[1] Alan Neuhauser, "Foreign Students Outpacing Americans for STEM Graduate Degrees," U.S. News (May 17, 2016). www.usnews.com/news/articles/2016-05-17/more-stem-degrees-going-to-foreign-students

Getting Started

If you are making your own arrangements for a school presentation, use the suggestions that follow. If arrangements have already been made on your behalf, skip ahead to **Planning the Visit** below.

Making Arrangements with Schools

Unless you have already been invited to visit the school, your starting point to arrange a visit should be the principal's office. Contact the principal, introduce yourself, and explain that you would like to give a presentation to students about the science behind coatings technology and careers in the coatings industry and related science fields, as part of the American Coatings Association's initiative to promote student interest in STEM subjects. Provide some background about why you're reaching out to this age group and the learning resources you will bring with you. Indicate whether you would prefer to meet with one class at a time or a larger group, and ask the principal to suggest a date and time that would be convenient. If you have trouble contacting the principal, try reaching out to a guidance counselor, science department faculty, or a PTA member.

Planning the Visit

- Remember, educators are busy people. Be prepared to accommodate your presentation to the school's schedule (class breaks, lunch time, dismissal, etc.).
- Be sure to introduce yourself in advance to the classroom teacher and/or your contact person (they may not be the same person) by phone or email.
- Give your contact a brief overview of your plans for activities, etc., and make sure there will be space and time available and that you are allowed to conduct any proposed experiments.
- Find out what students have been studying in class and what material they already have covered in the context of your planned lessons. For example, do they have background knowledge about electrons and ionization or waves? Ask if teachers have a preference for which activity/lesson you present.
- Ask how much time you will have, how many students will be present, and how your visit will be structured.

Organizing Your Presentation

- Gear your presentation to be very interactive, with questions and answers, and make sure all of the materials you will need are organized and accessible. Students should have gloves for Activities 4 and 5; safety glasses are recommended for Activity 4.
- After you finish your presentation, distribute the career handout sheet or arrange in advance with the teacher to do so. Tell students that they can find information on the sheet about careers in coatings and other science fields that relate directly to their interests. You may want to leave a few copies with the school guidance counselor, as well.
- If you are making this presentation as a complement to the ***Got You Covered!*** classroom program already presented by the teacher, be sure to coordinate with them the material you will be covering. **This guide includes the same three activities that are part of the classroom program, plus two new activities, so you will want to avoid overlap or duplicate efforts.**

Talking Points

- Middle school students are just beginning to consider what they want to do as a career; they need some guidance and a sense of realism about what they need to do to get ahead. It is very important to tell students how you decided on your career and what you studied in high school and college to get where you are today. It's also important to guide them toward the types of classes they should take and the extracurricular activities that will benefit them.
- Although the goal should be to encourage student interest in *all* areas of scientific research and development, be mindful of encouraging students to increase their awareness of the opportunities available in the coatings industry.

TIPS FOR TALKING TO TEENS[2]

- **JUMP-START THEIR ENGAGEMENT.** It's your job to get their attention, so get them involved right away with a survey or question that gets them to stand up, raise hands, and speak out. Model the enthusiasm and curiosity you hope to instill.
- **KEEP IT SHORT AND ACTIVE.** Get to the point and keep things moving!
- **CONNECT.** Make the presentation as much about them as possible — find their areas of interest and bring those topics into the discussion.
- **BE FLEXIBLE.** Expect unexpected events or insightful student questions. These "teachable moments" often leave the deepest impression.
- **CALL THEM OUT TO KEEP THINGS FOCUSED.** Set expectations from the beginning and then gently draw their attention back to the topic at hand.
- **BE HUMAN.** Youth audiences respond to ideals and emotion. They can also see through you as if you're plastic wrap! Talking about your personal experiences will increase their interest and connection.
- **TREAT THEM RESPECTFULLY.** Today's youth are savvy and aware. Show students the respect you'd give any other audience.
- **BE AVAILABLE.** Teens may be shy about asking questions in front of their peers, so if possible, leave time or a follow-up opportunity for them to reach out personally.

[2] Theaccidentalcommunicator.com

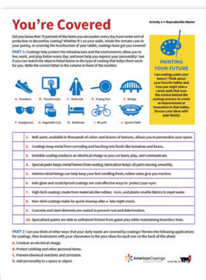
This Presenter’s Guide contains:

- These four pages of tips on approaching schools and presenting to teen audiences.
- A choice of five reproducible activity masters, three of which are already included in the *Got You Covered!* classroom program sent to teachers.
- A two-page reproducible career guide.

Using the Student Activity Masters

The following are instructions for using each of the five activity masters included in this guide. As you use the activities, be sure to link the concepts with examples from your own experience and across the coatings industry. When you are done, collect all reusable materials for future use.

For follow-up activities that build on the activity sheets, visit **ymiclassroom.com/aca**.


You’re Covered

Activity 1 • You’re Covered

Begin by asking students for examples of coatings. They might name different kinds of paint, polyurethane, shellac, etc. Then ask students to speculate on the roles they think coatings play in their lives. Distribute the activity sheet and have them complete **Part 1** to test their awareness, then ask if any of the answers were a surprise.

Answers: A. 5; B. 3; C. 7; D. 8; E. 9; F. 6; G. 2; H. 1; I. 4; J. 10.

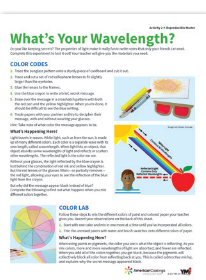
Complete **Part 2** as a group. ***Possible answers:***

A. Glass and plastics on television and tablet screens; wireless charging stations; defibrillator

B. Antimicrobial, odor-fighting sneaker liners; polyurethane (PU) faux leather on pants and purses; PU breathable “wet bags” to carry wet clothing and diapers; anti-glare eyeglass coating; washable linings on lunch bags; reflective vests

C. Food storage can and carton liners; galvanized finishes on steel and iron; enamel finishes on cast-iron pans; Teflon coating on non-stick pans; automobile paint; grease on bicycle chains; stain on wood floors and furniture

D. Nail polish; wall paint in gloss, magnetic, or other finishes


What’s Your Wavelength?

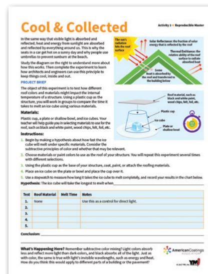
Activity 2 • What’s Your Wavelength?

Prior to introducing this exercise, obtain the materials listed in **Part 1** below and practice creating and decoding your own messages. As you will see, it works best with light pressure and a cyan or light blue crayon and very precise cross-hatching with red ink and yellow highlighter over top. We also recommend setting specific guidelines, based on the school’s code of conduct, for the content of the secret messages. (Note: Decoder glasses are available at ideastage.com.)

Begin the lesson by asking students what they already know about the science behind color.

Part 1: Provide paired-off students with cardboard, a pattern for glasses, red acetate or cellophane (available from Amazon, Walmart, and most craft or photography shops), blue crayons, red ink pens, and yellow highlighters. Provide time for them to make and decorate their glasses (you can have them do this at home to save time), and to write and disguise their secret messages. Then, have them trade and decode their papers. Provide some guidance as they experiment with the density of the cross-hatching and highlighter to get this to work well.

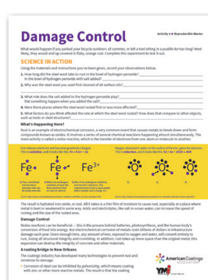
Part 2: Divide the class into groups. Distribute a set of watercolor paints and colored construction paper and allow time for students to experiment. If possible, use cyan, magenta, and yellow to replicate how printers and other subtractive mixing systems work. If time is short, you can complete this activity as a demonstration.


Cool & Collected

Activity 3 • Cool & Collected

Begin this lesson by reminding students about the subtractive mixing experiment they completed, and ask them to make a hypothesis about the impact dark and light colors would have on temperature. Then, divide the class into teams and give each group these materials — small transparent plastic cups, a plate or shallow bowl, and a variety of materials to use for the roof (plastic wrap, aluminum foil, Styrofoam, cardboard, white and black paint, and felt or fabric in 2-3 colors of varying darkness). Students will create structures by turning the cup upside down on top of the plate, so that the bottom of the cup becomes the top of the structure. The roof materials will then be placed on the cup. When their structures are complete, they will place an ice cube (try to have ice cubes of a consistent size) on the plate and then put the cup back on top. If doing this experiment indoors, placing the structures in direct sunlight (such as on a windowsill) or using heat lamps will mimic performing the experiment outside. Provide time to discuss the results of the experiment. As students work, make suggestions such as painting certain parts of the cup black vs. painting the entire cup, or using a variety of roofing materials.

Conclusion: Remember that black objects appear black because they are absorbing all colors of light, while white objects appear white because they are reflecting all colors of light. How comfortable would students feel wearing all-black clothing on a hot day?


Damage Control

Activity 4 • Damage Control

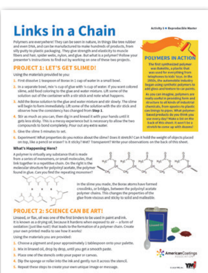
Begin by asking students about places where they’ve commonly seen rust, such as on patio furniture, gardening tools, or street signs. Divide the class into teams of 2-4 and hand out the materials. Be sure that students have safety glasses and gloves for this activity. Each group will need a piece of cleaned steel wool (make sure any coating oils have been removed), two clean glass bowls or jars, and pre-measured amounts of hydrogen peroxide and table salt. Have students pour the peroxide into each bowl and add the table salt to just one bowl, stirring until it is dissolved. Then, have them carefully place a piece of cleaned steel wool halfway into each bowl. The steel wool in the bowl with salt should rust almost immediately. Allow the piece of steel wool in the bowl with just hydrogen peroxide to sit while you review the remainder of the activity — it can take up to 30 minutes for a good layer of rust to build up. (Later, you can perform the experiment with coated steel wool to demonstrate the effect of coatings.)

Next, introduce the basics of redox reactions. Explain that oxidation and reduction are two stages in the process by which electrons move from one chemical species to another. The final part of the presentation should focus on the damage corrosion causes to personal property and infrastructure, and how the coatings industry is working to prevent loss and damage due to corrosion. An excellent visual would be a slide show of images of rust damage to automobiles, bridges, and other structures. Prompt students to cite examples of rust they might have seen on infrastructure in their area.

Answers: 1. With salt, rust should happen immediately; without salt, it can take up to 30 minutes; 2. Steel wool is cleaned because surface oils will protect against rust; 3. Salt should immediately bubble in the hydrogen peroxide. It acts as a catalyst to speed up the reaction; 4. Steel wool should rust first where the hydrogen peroxide meets the air. 5. Steel wool rusts quickly because it has a high surface area.

The following videos can give you some ideas for explaining rust in simple terms:

- The Basics of How Corrosion Occurs, **youtu.be/T4pSuflO9fk** (2:52)
- Rust: Prevention and Treatment (experiment), **youtu.be/jQoE_9x37mQ** (4:50)



Activity 5 • Links in a Chain

Choose one of the two projects shown on the activity sheet as time permits to help explain the value of polymers to coating applications. For either project below, be sure that students have gloves.

Begin by asking students to think about what things like DNA, spider webs, billiard balls, paint, and plastic all have in common. Explain that they are all made of polymers, defined as chemicals or substances made of many repeating units.

Offer students a brief background on crosslinking, which is the linking of one polymer chain to another. Explain that crosslinking changes the properties of the polymer. Crosslinking can cause the material to become more resilient and pliable or hard and brittle. Direct students to the following links for more information on polymers and crosslinking:

- **https://youtu.be/rHxxLYzJ8Sw**
- **https://youtu.be/dXT1r5WA6SM**
- **http://www.pslc.ws/macrog/xlink.htm**

Project 1: Slime is fun for kids of all ages! Divide the class into groups and hand out the materials. For a class, you will need a gallon or more of school glue, a box of Borax, mixing bowls, stir sticks, and water. Food coloring is optional. You may want to dissolve the Borax in advance, and give each group pre-measured ingredients. Allow time for students to make and play with their slime, all while leading them in observations about how the mixtures come together and how the texture changes over time. Ask them to observe and record the properties of their slime.

Explain to students that they just completed a simple polymer synthesis by making the molecules in the Borax crosslink the polymers in the glue. Briefly describe the importance of polymers in giving form and texture to coatings applications. You might bring in samples of different materials so that students can touch and examine the many qualities of polymers.

Project 2: Science can also be art! You will need a supply of linseed oil, pigments, sponges or rollers, a variety of stencils in different shapes and, for each student, a glass plate, disposable plastic plate, or plastic palette, and a piece of card stock or canvas. Although a variety of linseed oil products will work for this activity, boiled linseed oil is much less expensive than other options such as refined linseed oil. You can purchase boiled linseed oil from most hardware stores or Amazon for about \$8/L. Powdered artist pigments are also available on Amazon or at most craft stores. Based on your budget and schedule, you can substitute or supplement with a variety of finely ground materials such as chalk (try to avoid washable sidewalk chalk), glitter, cosmetics, etc. This image shows how different combinations might impact results.

Working with the teacher, help each student measure out the pigments and linseed oil. Lay out the other materials for students to take on their own. As they mix their paints, point out how the texture changes with the addition of the linseed oil. Allow 10-15 minutes for them to create their designs.

Linseed oil is known as a drying oil because it can polymerize (turn into a polymer like glue or rubber) when exposed to air. It dries through oxidation, which is the same chemical reaction that causes metal to rust. In this case, the addition of oxygen atoms creates crosslinks, or bridges, between the linseed oil molecules. The oxygen bridges turn the oil into a solid film, a perfect binder for the finely ground materials or pigments.

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You're Covered

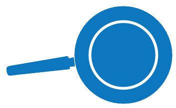
Did you know that 70 percent of the items you encounter every day have some sort of protective or decorative coating? Whether it's on your walls, inside the tomato cans in your pantry, or covering the touchscreen of your tablet, coatings have got you covered!

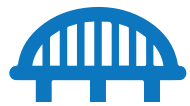
PART 1: Coatings help protect the infrastructure and the environment; allow you to live, work, and play better every day; and even help you express your personality! See if you can match the objects listed below to the type of coating that helps them work for you. Write the correct letter in the column in front of the number.

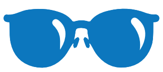

A. Sneakers


B. Touchscreen


C. Raincoat


D. Frying Pan


E. Bridge

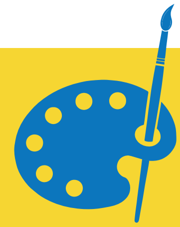

F. Sunglasses


G. Vegetable Can


H. Bedroom


I. Bicycle


J. Sports Field



PAINTING YOUR FUTURE

Can coatings paint your future? Think about your favorite hobby and how you might plan a career path that uses the science behind the coatings process to create an improvement or innovation in that hobby. Discuss your ideas with your family!

	1. Wall paint, available in thousands of colors and dozens of textures, allows you to personalize your space.
	2. Coatings keep metal from corroding and leeching into foods like tomatoes and beans.
	3. Invisible coating conducts an electrical charge so you can learn, play, and communicate.
	4. Special paint keeps metal frames from rusting; lubrication keeps all parts moving smoothly.
	5. Antimicrobial linings can help keep your feet smelling fresh; rubber soles give you traction.
	6. Anti-glare and scratchproof coatings are cost-effective ways to protect your eyes.
	7. High-tech coatings made from materials like rubber, resin, and plastic enable fabrics to repel water.
	8. Non-stick coatings make for quick cleanup after a late-night snack.
	9. Concrete and steel elements are coated to prevent rust and deterioration.
	10. Specialized paints are able to withstand friction from game play while maintaining boundary lines.

PART 2: Can you think of other ways that your daily needs are covered by coatings? Review the following applications for coatings, then brainstorm with your classmates to list your ideas for each one on the back of this sheet:

A. Conduct an electrical charge.

B. Protect clothing and other personal items.

C. Prevent chemical reactions and corrosion.

D. Add personality to a space or object.

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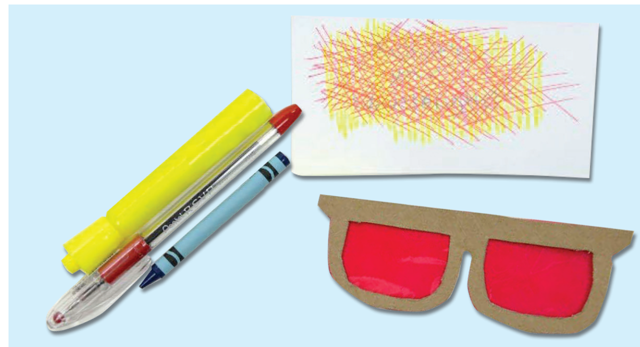
What's Your Wavelength?

Do you like keeping secrets? The properties of light make it really fun to write notes that only your friends can read. Complete this experiment to test it out! Your teacher will give you the materials you need.

COLOR CODES

1. Trace the sunglass pattern onto a sturdy piece of cardboard and cut it out.
2. Trace and cut a set of red cellophane lenses to fit slightly larger than the eyeholes.
3. Glue the lenses to the frames.
4. Use the blue crayon to write a brief, secret message.
5. Draw over the message in a crosshatch pattern with both the red pen and the yellow highlighter. When you're done, it should be difficult to see the blue writing.
6. Trade papers with your partner and try to decipher their message, with and without wearing your glasses.

Hint: Take note of what color the message appears to be.

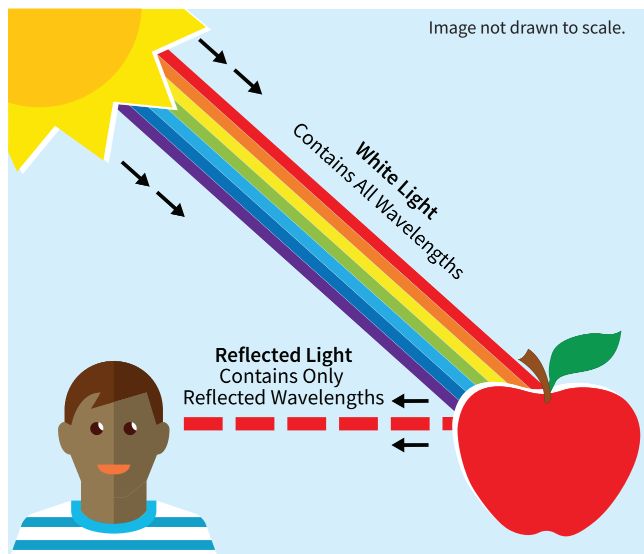


What's Happening Here?

Light travels in waves. White light, such as from the sun, is made up of many different colors. Each color is a separate wave with its own length, called a wavelength. When light hits an object, that object absorbs some wavelengths of light and reflects or scatters other wavelengths. The reflected light is the color we see.

Without your glasses, the light reflected by the blue crayon is lost behind the combination of red ink and yellow highlighter. With your glasses, no light reaches your eye from the blue crayon; the crayon is only reflecting blue light, but the red lenses of the glasses only let red light through. This makes the blue writing appear black (no light reaching your eye), allowing you to clearly read the hidden message amid the red ink and yellow highlighter!

Complete the following to find out why the blue writing appeared black and what happens when you mix different colors together.



COLOR LAB

Follow these steps to mix the different colors of paint and colored paper your teacher gives you. Record your observations on the back of this sheet.

1. Start with one color and one piece of paper of a different color.
2. Then try other combinations of paint and paper as well as mixing together colors of paint.

What's Happening Here?

When using paints or pigments, the color you see is the light the object is reflecting. As you mix colors, more and more wavelengths of light are absorbed, and fewer are reflected. When you add all of the colors together, you get black, because the pigments will collectively block all color from reflecting back at you. This is called *subtractive mixing*, and explains why the secret message appeared black.

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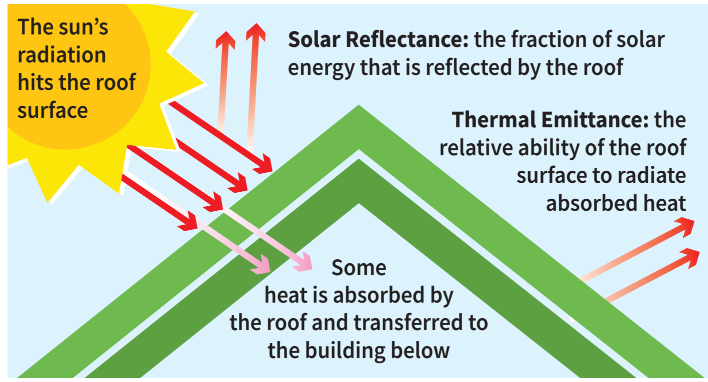
Cool & Collected

Activity 3 • Reproducible Master

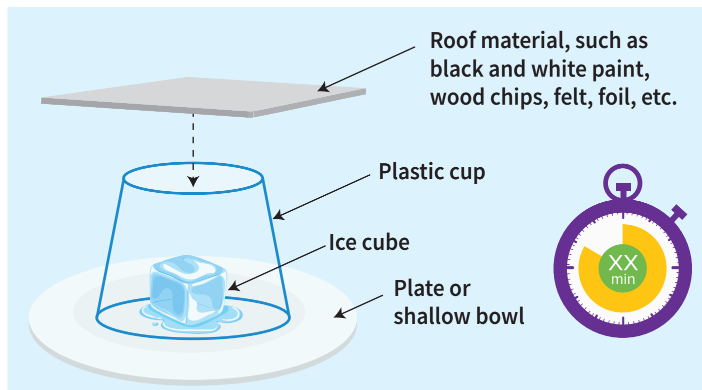
In the same way that visible light is absorbed and reflected, heat and energy from sunlight are absorbed and reflected by everything around us. This is why the seats in a car get hot on a sunny day and why people use umbrellas to prevent sunburn at the beach.

Study the diagram on the right to understand more about how this works. Then complete the experiment to learn how architects and engineers can use this principle to keep things cool, inside and out.



PROJECT BRIEF

The object of this experiment is to test how different roof colors and materials might impact the internal temperature of a structure. Using a plastic cup as the structure, you will work in groups to compare the time it takes to melt an ice cube using various materials.



Materials:

Plastic cup, a plate or shallow bowl, and ice cubes. Your teacher will help guide you in selecting materials to use for the roof, such as black and white paint, wood chips, felt, foil, etc.

Instructions:

1. Begin by making a hypothesis about how fast the ice cube will melt under specific materials. Consider the subtractive principles of color and whether that may be relevant.
2. Choose materials or paint colors to use as the roof of your structure. You will repeat this experiment several times with different selections.
3. Using the plastic cup as the base of your structure, coat, paint, or attach the roofing materials.
4. Place an ice cube on the plate or bowl and place the cup over it.
5. Use a stopwatch to measure how long it takes the ice cube to melt completely, and record your results in the chart below.

Hypothesis: The ice cube will take the longest to melt when______________________________________

Test	Roof Material	Melt Time	Notes
1.	None		Use this as a control for direct light.
2.			
3.			
4.			
5.			

Conclusion: ____

What's Happening Here? Remember subtractive color mixing? Light colors absorb less and reflect more light than dark colors, and black absorbs all of the light. Just as with color, the same is true with light's invisible wavelengths, such as infrared and ultraviolet light. How do you think this would apply to different parts of a building or the pavement?

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Damage Control

What would happen if you parked your bicycle outdoors all summer, or left a tool sitting in a puddle for too long? Most likely, they would end up covered in flaky, orange rust. Complete this experiment to test it out.

SCIENCE IN ACTION

Using the materials and instructions you've been given, record your observations below.

1. How long did the steel wool take to rust in the bowl of hydrogen peroxide? ______________________

In the bowl of hydrogen peroxide with salt added? ______________________

2. Why was the steel wool you used first cleaned of all surface oils? ______________________

____

3. What role does the added salt play? ______________________

Did something happen when you added the salt? ______________________

4. Were there places where the steel wool rusted first or rusted more? ______________________

____

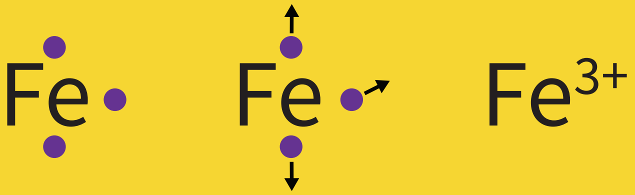
5. What factors do you think affected the rate at which the steel wool rusted? How does that compare to other objects, such as tools or steel structures? ______________________

What's Happening Here?

Rust is an example of electrochemical corrosion, a very common event that causes metals to break down and form compounds known as oxides. It involves a series of chemical reactions. The main activity is called an oxidation-reduction reaction, or *redox reaction*, which is the transfer of electrons from one atom or molecule to another.

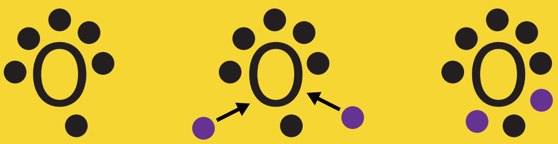
The result is hydrated iron oxide, or rust. All it takes is a thin film of moisture for rust to occur, especially at a place where metal is bent or weakened in some way. Acids and electrolytes, like salt in ocean water, can increase the speed of rusting and the size of the rusted area.

Iron releases electrons and becomes positively charged. This is **oxidation**, and it looks like this: $Fe \rightarrow Fe^{3+} + 3e^-$



Source: http://study.com/academy/lesson/what-is-oxidation-definition-process-examples.html

Oxygen on the iron's surface, dissolved in water or just from the air, gains the electrons. This is **reduction**, and it looks like this: $O_2 + 4e^- + 2H_2O \rightarrow 4OH^-$



Source: http://study.com/academy/lesson/reduction-in-chemistry-definition-lesson-quiz.html

Damage Control

Redox reactions can be beneficial — this is the reaction behind batteries, photosynthesis, and the human body's conversion of food into energy. But electrochemical corrosion of metals costs billions of dollars in infrastructure damage each year. Given enough time, any amount of iron, exposed to oxygen and water, will convert entirely to rust, losing all structural integrity and crumbling. In addition, rust takes up more space than the original metal; this expansion can destroy the integrity of concrete and other materials.

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YMI YOUNG MINDS INSPIRED

Links in a Chain

Polymers are everywhere! They can be seen in nature, in things like tree rubber and even DNA, and can be manufactured to make hundreds of products, from silly putty to plastic packaging. They give strength and elasticity to muscle fibers and hair, spider webs, nylon, and glue. But what is a polymer? Follow your presenter's instructions to find out by working on one of these two projects.

POLYMERS IN ACTION

The first synthesized polymer was Bakelite, a plastic that was used for everything from telephones to kids' toys. In the 1950s, the automobile industry began using synthetic polymers to add gloss and texture to car paints.

As you can imagine, polymers are really useful in providing form and structure to all kinds of industrial chemicals, from epoxies to plastic can linings to pipes. What polymer-based products do you think you use every day? Make a list on the back of this sheet. It won't be a stretch to come up with dozens!

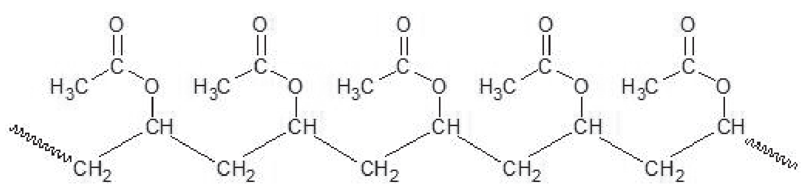
PROJECT 1: LET'S GET SLIMED!

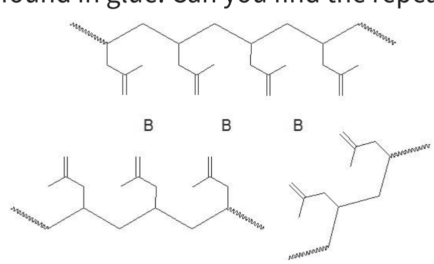
Using the materials provided to you:

1. First dissolve 1 teaspoon of Borax in 1 cup of water in a small bowl.
2. In a separate bowl, mix ¼ cup of glue with ¼ cup of water. If you want colored slime, add food coloring to the glue and water mixture. Lift some of the solution out of the container with a stir stick and note what happens.
3. Add the Borax solution to the glue and water mixture and stir slowly. The slime will begin to form immediately. Lift some of the solution with the stir stick and observe how the consistency has changed from **Step 1**.
4. Stir as much as you can, then dig in and knead it with your hands until it gets less sticky. This is a messy experience but is necessary to allow the two compounds to bond completely. Pour out any extra water.
5. Give the slime 5 minutes to set.
6. Experiment! What properties do you notice about the slime? Does it stretch? Can it hold the weight of objects placed on top, like a pencil or eraser? Is it sticky? Wet? Transparent? Write your observations on the back of this sheet.

What's Happening Here?

A polymer is virtually any substance that is made from a series of monomers, or small molecules, that link together in a repetitive chain. On the right is the molecular structure for polyvinyl acetate, the polymer found in glue. Can you find the repeating monomer?





In the slime you made, the Borax atoms have formed crosslinks, or bridges, between the polyvinyl acetate polymer chains. This changes the properties of the glue from viscous and sticky to solid and malleable.

PROJECT 2: SCIENCE CAN BE ART!

Linseed, or flax, oil was one of the first binders to be used in paint and ink. It is known as a drying oil, because it hardens when exposed to air — a form of oxidation (just like rust!) that leads to the formation of a polymer chain. Create your own printed media to see how it works!

Using the materials you are provided:

1. Choose a pigment and pour approximately 1 tablespoon onto your palette.
2. Mix in linseed oil, drop by drop, until you get a smooth paste.
3. Place one of the stencils onto your paper or canvas.
4. Dip the sponge or roller into the ink and gently run it across the stencil.
5. Repeat these steps to create your own unique image or message.

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