

## Portable Power Technology – Batteries

**Acknowledgements:** Developed by Laura Marmolejo, Faculty of Austin Community College, Austin, Texas

**Time Required:** 3 hours

### **Equipment & Tools**

- Computer with Internet Connection
- Standard browsing (web surfing) capabilities

**Team or Individual:** This is an individual activity.

### **Learning Objectives**

1. Use the Internet to gain a greater understanding of the operation of a battery.
2. Locate, gather, and organize information on battery specifications.
3. Research a battery MSDS to study information on battery handling and use.

### **Performance and Task Procedures:**

1. Access the Internet and go to the website: [www.howstuffworks.com](http://www.howstuffworks.com).
2. In their search window, type in “how batteries work” and hit “go”.
3. You should locate information on batteries and how they work. Read through their presentation.
4. Once you have reviewed the material, locate the specification data on batteries used in at least 3 different consumer products such as watches, m3p players and hearing aids. You can use the links found in the [www.howstuffworks.com](http://www.howstuffworks.com) website or go directly to vendor websites such as Duracell, Tadiran, Vencor or Cadex.
5. From the spec data, locate battery characteristics such as type of cell, Ah rating and power density. Enter the information on the table at the end of this drill down.
6. Go to the website: <http://www.chiefsupply.com/msds.html>
7. Open up the Material Data Safety Sheet (MSDS) for one of the following batteries listed: NiCd Radio, NiMH Radio, Power\*Rite NiCd, Power\*Rite Sealed Lead Acid, Power\*Rite Lithium, or Duracell Procell Alkaline. Summarize and enter the information on the table at the end of this drill down.

Note: The Material Data Safety Sheet provides information concerning a hazardous material. The material is prepared in accordance with OSHA (Occupational Safety and Health Administrations) standards.

8. Answer the drill down questions at the end. If further information is needed, continue to use the Internet to find the information requested.

### **Deliverables:**

- Completed table on battery specifications and websites accessed.
- Answers to the drill down questions.

### **Scoring or Grading Criteria:**

The criteria for grading the student, is left to the discretion of the instructor.

**Specification Data**

	Battery #1	Battery #2	Battery #3
Website			
Part Number			
Application			
Battery Type (primary or secondary)			
Chemistry			
Nominal Voltage			
Capacity			
Energy Density (if given)			
Other Specifications			

**MSDS Information**

<b>Battery Type Researched</b>	
<b>Fire and Explosion Data</b>	
<b>Health Hazard Data</b>	
<b>Safe Handling and Use Recommendations</b>	
<b>Recycling and Disposal Requirements</b>	



### **DRILL DOWN QUESTIONS**

1. Can you throw all batteries in the garbage can when they are used up? Why or why not
2. Do all batteries last the same amount of time? Why or why not.
3. Is it better to replace batteries in a device one at a time or all together? Why?
4. What is a silver oxide battery and where is it used?
5. What type of battery do most newer cell phones use?
6. What type of battery do most power tools use?
7. What are the disadvantages of the lithium ion batteries?
8. What is a prismatic battery?
9. What is the difference between Ni-MH and Ni-Cd batteries?
10. Why do some devices have the batteries lined up head to tail and others have them side-by-side?



11. What should you do if someone inhales the contents of an open battery?
  
12. What should you do if someone swallows (ingests) the contents of an open battery?
  
13. What should you do if someone gets the contents of an open battery on their skin?
  
14. What special protection gear is needed when working with the batteries?