Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Welding Safety**

**Arc Welding Safety:**

* Welding can be safe when sufficient measures are taken to protect yourself and others from potential hazards
* Students should read and understand the following before welding:
	+ *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*
	+ *Material Safety Data Sheets (MSDS)*
* Students should also be familiar with the following information
	+ *‘Safety in Welding, Cutting, and Allied Processes’ (ANSI Z49.1)*
	+ *Lincoln Electric’s ‘Arc Welding Safety’ (E205)*

**Warning Labels:**

* Understand and follow all warning labels found:
	+ *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*
	+ *With all consumable packaging*
	+ *Within instruction manuals*
* Material Safety Data Sheets (MSDS) are:
	+ *Required by law and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*
	+ *Created by the manufacturer of a product per OSHA guidelines*
	+ *Designed to inform users*
	+ *Shipped with every box of Lincoln Electric consumable product*
	+ *Available free online at:*

[*www.lincolnelectric.com/products/msds/*](http://www.lincolnelectric.com/products/msds/)

* MSDS outlines a product’s:
	+ - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Potential hazards
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Handling information
		- Manufacturer contact information

**ANSI Z49.1**

* ANSI Z49.1: Safety in Welding, Cutting, and Allied Processes
	+ ***A safety document published by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_that covers safe practices in the welding environment***
	+ ***To get your free copy, go to:***
		- [www.aws.org/technical/facts/Z49.1-2005-all.pdf](http://www.aws.org/technical/facts/Z49.1-2005-all.pdf)
* E205: Arc Welding Safety
	+ ***A safety document summarizing many of the hazards and safe practices for welding***
	+ ***Download and print your own copy at:***
		- <http://content.lincolnelectric.com/pdfs/products/literature/e205.pdf>
	+ ***Free copies available from Lincoln Electric at:***
		- [www.lincolnelectric.com/products/litrequest](http://www.lincolnelectric.com/products/litrequest)

**Arc Welding Safety:**

* Protect yourself and others from potential hazards including:
	+ *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*
	+ *Electric Shock*
	+ *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*
	+ *Fire and Explosion Hazards*
	+ *Noise*
	+ *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

**Fumes & Gases:**

* Fumes and gases can be hazardous to your health
* Keep your head out of the fumes
* Use enough \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, exhaust at the arc, or both, to keep fumes and gases from your breathing zone and the general area
* See product labeling and MSDS for ventilation and respirator requirements

**Electric Shock:**

* Electric shock can \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Do not touch live electrical parts
	+ *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ –230, 460 volt input power*
	+ *Secondary Voltage – 6 to 100 volts for welding*
* Insulate yourself from work and ground
* Follow all warnings on welding equipment

**Arc Welding:**

* *The welding arc is brighter than the sun*
* *Precaution must be taken to protect your eyes and skin from UV radiation*
* *Wear correct eye and body protection*

**Fire & Explosion Hazard:**

* Welding sparks can cause fires and explosions
* Sparks and spatter from the welding arc can spray up to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_from your work
* Flammable materials should be removed from the welding area or shielded from sparks and spatter
* Have a fire extinguisher ready
* Inspect area for fires 30 minutes after welding

**Noise**:

* Loud noises can damage your hearing
* Keep loud noises at a safe level by using proper hearing protection such as:
	+ *Ear muffs*

**Protective Clothing:**

Welders must wear protective clothing for

* + *Protection from sparks, spatter and UV radiation*
	+ *Insulation from electric shock*
	+ Protective clothing includes …
	+ *Fire-proof clothing without rolled sleeves, cuffs or frays*
	+ *Work boots*
	+ *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, jackets, bibs, and fire-proof pants*
	+ *Welding cap, helmet and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*
	+ *Ear protection – ear plugs and muffs*

