

Hamilton-Junior lab-off-site learning packet day 1

Instructor Mark Hamilton

Date _____

Program/Class AEM Jr.

Period 1-4

State Indicator/Competency:

Unit 27: Power Saws

Competency 27.1: Differentiate between the various types of power saws.

27.1.2 Identify blade principles and configurations for power saws.

27.1.3 Identify and install the proper saw blade.

Instructional Objective(s):

1: students will explain how a saw blade is chosen for the type of material being cut with 80% accuracy

2: students will explain why a saw blade becomes dull with 80% accuracy

Materials:

Virtual machine shop

Method of Instruction:

Research

Activities:

Read through the hand out and answer the questions

Closure:

Answer the questions on the last page

Assessment:

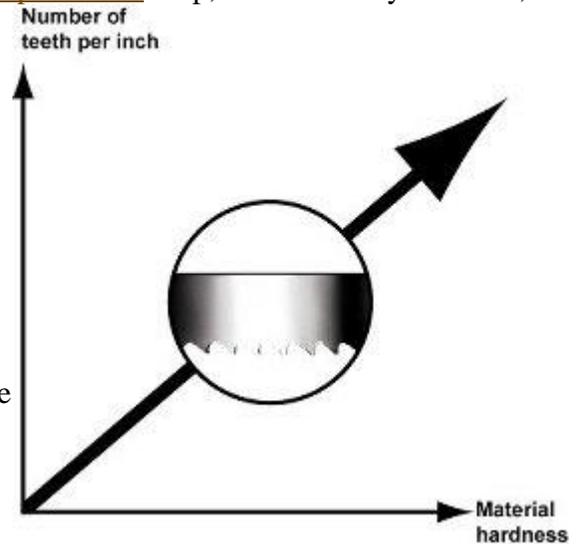
Answer sheet will be collected and is worth 10 points

Read through the hand out and answer the questions

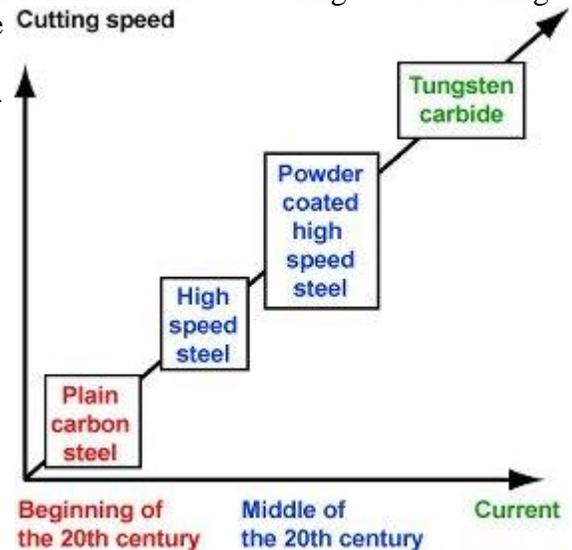
Development of high carbon steel strip in the 1920s paved the way for band saws to be used in metal* cutting. By selectively flame hardening the toothed edge of the saw, the combination of hard tooth and flexible body could be obtained from the same material. High speed steel strip, available 30 years later, was similarly selectively hardened. This new alternative - a composite material - was not commercially available until the 1960s.

Manufacturers of saw blades are researching areas featuring powder metallurgy, high speed steels, laser welded strip, shot peening (to improve fatigue resistance), and saw blades with exotic metal* coatings.

The type of saw blade is determined by the type of material being cut. Generally, the harder the material, the more teeth per inch of saw blade needed. For example a good blade to use while cutting aluminum is one with 4-6 teeth per inch. Mild steel is cut with a saw blade having anywhere from 18-24 teeth per inch of blade.



Very high temperatures are produced at the very tips of cutting tools. Loss of hardness at high temperatures is the main reason for the saw blade wearing out or breaking. Advances in metal* cutting tools throughout this century have addressed this problem. From plain carbon steels (hard but no heat or abrasion resistance), to high speed steels (hard & heat-resistant to around 600 degrees C), powder coated high speed steels (more resistant to wear and abrasion), and tungsten carbide (very hard/heat-resistant to around 800 degrees C (very abrasion resistant)). Some manufacturers in specialized industries have ceramic and gemstone cutting tools.



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Questions

Name _____

1. What were some of the first Band saw blades made of in the 1920s?
2. How is the type of saw blade determined?
3. How many teeth per inch are there for softer material such as aluminum?
4. How many teeth per inch for harder material such as steel?
5. What is the main reason for saw blade wear?