Welding Materials

Vocabulary

Ex. 1. *Match the words with their definitions.*

1. spot welding 	a. a non-consumable electrode used in TIG welding to produce an electric arc for melting metal.
2. moisture	b. a person who creates objects by forging metal with tools and heat.
3. tungsten electrode	c. a pool of liquid metal created during the welding process.
4. torch welding 	d. a method of welding that utilizes a torch to generate intense heat for melting metal.
5. ground wire	e. a process of joining two pieces of metal together by applying pressure and heat to a specific area.
6. molten puddle	f. a type of welding that uses a wire electrode and shielding gas to join metals together.
7. mig welding	g. a large structure used for extracting oil from the ground, typically located offshore or in remote areas.
8. cornea	h. water vapor present in the air or absorbed by materials.
9. oil drilling rig	i. the end of a welding rod that is melted to create a bond between metals.
10. blacksmith	j. the transparent outer layer of the eye that covers the iris and pupil.
11. rod tip	k. a simple or unadorned surface without any decorative elements.
12. plain	l. a conductor used to connect a welding machine to the workpiece to prevent electrical shock.

Ex. 2. *Complete the sentences with the given words:*

plasma, feed rate, hand, cast, Out-of-position, protection, power source, bead, make a weld, valve, compatible, flux

He learned how to _____(1) in his welding class last week.

The company specializes in _____(2) iron welding for industrial projects.

The student practiced _____(3) weld techniques during the workshop.

It's important to use _____(4) materials for a strong weld.

She demonstrated _____(5) arc welding during the welding demonstration.

The pipe needed a new _____(6) after the welding repairs.

The welder checked the _____(7) before starting the project.

The _____(8) covering helped protect the weld from corrosion.

Adjusting the _____(9) improved the quality of the weld.

_____(10) welding requires a different approach than standard techniques.

The welder created a smooth _____(11) along the metal joint.

Proper _____(12) gear is essential when working with welding equipment.

Reading

Ex. 1. *Read the text.*

Welding Materials

Cast iron

Cast iron is a hard, brittle material that is difficult to weld. There are two main types of cast iron: white and gray. White CAST IRON is very hard and contains a lot of carbon. It cannot be welded. Gray CAST IRON is softer and more ductile, and it can be welded using special techniques.

Stainless Steel

Stainless steel is a corrosion-resistant alloy of iron, chromium, and sometimes other metals. It is commonly used in the construction of buildings, bridges, and automobiles. Stainless steel is relatively easy to weld, but it requires special welding techniques and equipment to prevent contamination and ensure a strong bond.

Aluminum

Aluminum is a lightweight, non-ferrous metal with good thermal and electrical conductivity. It is commonly used in the aerospace, automotive, and construction industries. Aluminum can be welded using various methods, including gas tungsten arc welding (GTAW) and gas metal arc welding (GMAW). However, it tends to crack and distort if not properly controlled during the welding process.

Copper

Copper is a soft, malleable metal with high thermal and electrical conductivity. It is commonly used in electrical wiring, plumbing, and heat exchangers. Copper can be welded using various methods, such as oxyfuel gas welding and GTAW. However, it is important to avoid overheating the copper, as this can cause it to become brittle and crack.

Titanium

Titanium is a lightweight, corrosion-resistant metal that is commonly used in the aerospace and medical industries. It has a high melting point and is difficult to weld. Titanium can be welded using specialized techniques, such as electron beam welding and laser beam

welding. These methods provide precise control over the heat input, resulting in strong, defect-free welds.

Inconel

Inconel is a family of nickel-based superalloys that are resistant to high temperatures and corrosion. They are commonly used in the aerospace, chemical, and nuclear industries. Inconel can be welded using various methods, including GTAW and GMAW. However, it is important to use filler metals that are compatible with the specific type of Inconel being welded, as different alloys have different properties.

These are just a few examples of the many different materials that can be welded. Each material has its own unique characteristics and requires specific techniques and equipment for successful welding.

Ex. 2. *Answer the questions.*

1. What are the two main types of cast iron and how do they differ in terms of weldability?

2. Why is stainless steel commonly used in the construction of buildings, bridges, and automobiles?

3. What special techniques and equipment are required to weld aluminum successfully?

4. How can overheating copper during welding affect its properties?

5. Why is titanium difficult to weld, and what specialized techniques are used for welding it?

6. In what industries are Inconel superalloys commonly used, and why are they preferred?

7. Why is it important to use compatible filler metals when welding different types of Inconel alloys?

Communication

Ex. 1. *Make sentences using the following words:*

1. Steel/common/material
2. Aluminum/metal/welding

3. Copper/conductor/electricity
4. Welding/heat/materials
5. Safety/equipment/essential
6. Welders/protective/gloves
7. Welder/fuses/materials
8. Strong/bonds/formed
9. Welding/repair/metal
10. Proper/training/necessary