**Тема:**  «Роль иностранного языка для специалиста. Материалы. Металлы»

**Цель:** Повторить грамматический материал , продолжить изучать лексическую тему «свойства материалов».

**Задачи:** Отработать навык работы (в т.ч. перевода) с профессиональной лексикой по теме проф.блока «электричество, проводники», повторить тематический материал, актуализировать имеющиеся знания.

**Специальность:** 13.02.09 Монтаж эксплуатации линий электропередачи, 13.02.11 Техническая эксплуатация и обслуживание электрического и электромеханического оборудования (по отраслям)

**Время выполнения:** 180 минут

1. **Learn the glossary**
2. **Read the text**
3. **Do the tasks**

**METALS IN THE SERVICE OF MAN**

Let us consider why metals play such a great role in man’s activities. Wood and stone are both older in use, yet to a considerable extent they have been replaced by metals. In spite of the great progress of chemistry and increasing output of plastic materials metals are still used for most of machines, structures and instruments. If there were no metals, no railway, airplane, car, electric motor, turbine or pipeline could operate.

The reason for the increased use of metals is to be found in their characteristic properties. The most important of these properties is their strength or ability to support weight without bending or breaking. Resistance to atmospheric destruction, plasticity and the ability to be formed into desired shapes are remarkable as well. Some metals have also special properties – two of which are the ability to conduct electric current and the ability to be magnetized.

Nowadays we know that over three quarters of existing elements are metals. We know approximately over 80 metals and several thousand alloys.

Most metals are usually found in nature as minerals or ores, where they exist in chemical combinations with other substances. Metallic ores contain metals combined with oxygen, sulphur or other metals. Ores are usually mined and passed to the metallurgist for refining and purification. The ores are treated by fire or chemically by the process called smelting. Ores have to pass through this very complicated process before pure metals are obtained. But pure metals are comparatively seldom used because they are rather expensive and their strength is generally insufficient for the purposes of today. The most important way in which the strength of metals can be increased is alloying. Alloys are the most important engineering materials. Alloys are obtained by adding various metals or non-metals to the main metallic element.

1. **Answer the following questions:**

1. What are the oldest structural materials?

2. Why are metals widely used?

3. What characteristic properties have made metals such important and useful structural materials?

4. In what forms do metals exist in nature?

5. What method of obtaining metals from ores is used?

6. Why are pure metals comparatively seldom used in industry?

7. What are the most important engineering materials?

8. In what way can the strength of metals be increased?

9. What is an alloy?

10. How are alloys obtained?

1. **Translate the following sentences into Russian:**

1. Russian scientists are working on developing machines and units which improve the quality of the output through refining cast iron and steel and through powder metallurgy.

2. Over the past few years the weight of freight trains has been considerably increased.

3. Nowadays metals are considered the main engineering materials which are used on land, in outer space, in deep sea conditions.

4. In spite of the fact that titanium and its alloys are treated with some difficulties, their application in such industries as aircraft building, space industry and medicine is promising.

5. The ores which are mined in increased qualities are the sources of metals, but to a great extent metals are produced from scrap.

6. The metal production from ores in Russia is to be reduced by 6.9 per cent.

7. In spite of the fact that Russia holds one of the first places in the world for reserves of many minerals on land, new methods of extracting such elements as uranium, lithium, silver, gold, cesium and germanium from sea water are being developed.

1. **Match the word with it’s definition:**

|  |  |
| --- | --- |
| 1. heavy | 1. not easily bent or changed in shape; rigid. |
| 1. stiff | 1. unable to bend or be forced out of shape; not flexible. |
| 1. hard | 1. having a thick, sticky consistency between solid and liquid |
| 1. rigid | 1. solid, firm, and rigid; not easily broken, bent, or pierced. |
| 1. viscous | 1. of great density; thick or substantial. |
| 1. ductile | 1. hard but liable to break easily |
| 1. brittle | 1. able to be drawn out into a thin wire. |

1. **Tick the correct properties of metals:**

heavy,

stiff,

hard,

rigid,

non-combustible,

oily,

thick,

viscous,

corrosion-resistant,

light,

soft,

ductile,

conductive,

brittle,

breakable,

transparent

1. **Fill in the gaps using your glossary (the words may repeat):**
2. If we mix two or more different metals in different proportion, then we will get an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_water doesn’t conduct electrical current.
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is a reliable, but pretty fragile material, still it looks wonderful and sophisticated!
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is a material’s ability to deformation without breakage.
6. What are the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of gold? - Gold is a good conductor of electricity and heat. It has a melting point of 1,064 degrees Celsius and a boiling point of 2,807 degrees Celsius.
7. Our electric motor is already dead! I guess the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_has melted the conductor and a short circuit has happened.
8. Metals are usually not very corrosion resistant, that is why we use \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_better
9. As we know, metals are the best conductors for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Wires and cables are always made of it.
10. Arsenic \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_are intentionally minded only in China.
11. If you hit the fragile stuff, it will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and if you heat the metal one, it will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Metals are stiff and durable!
12. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is pretty expensive material, but still, it is the most reliable and good-looking stuff for house decoration.
13. There will be the new block of flats soon. But now builders are making groundworks, giving foundations and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ lying.
14. I think \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_metals is the most tough and dangerous work! Hell-high temperatures and severe and vivid reactions are the worst partners.