

Тема занятия: «Сварка цветных металлов»

Цель занятия: выучить новый лексический материал по теме «Сварка цветных металлов»; совершенствовать навыки чтения и перевода текста профессионального направления; систематизировать знания, ответив на контрольные вопросы по теме занятия.

Уважаемые студенты! Ознакомьтесь с материалами практического занятия на тему «Сварка цветных металлов». Конспект практического занятия выполняйте в рабочей тетради письменно, обязательно указывая дату занятия, тему занятия, номер упражнения. Ответы предоставить преподавателю на проверку до 16. 02. 2023 г. в электронном виде (фотоотчёт) на e-mail mikagol2605@mail.ru. Телефон преподавателя для консультации и возникающих вопросов: 072-14-15-816.

С уважением, Голодюк Марина Викторовна.

1. Запишите новую лексику в словарь, выучите новую лексику.
2. Прочитайте и устно переведите текст «Welding non-ferrous metals».
3. Выполните письменно задания к тексту.

WELDING NON-FERROUS METALS

Vocabulary:

contraction – усадка

liability – склонность, способность

to puddle – перемешивать (металл в сварочной ванне)

cone – конус, ядро пламени

flattened – сплюснутый

jar – сосуд, емкость

nitric acid – азотная кислота

sawdust – опилки

swab – помазок

sheet asbestos – листовой асбест

alumina – глинозем, окись алюминия

to dissolve – растворять

brass – латунь

bronze – бронза

undue radiation – ненужная теплоотдача

manganese – марганцевый

Aluminum is the most difficult of the commonly found metals to weld. This is caused by its high rate of expansion and contraction and its liability to melt and fall away from under the flame. The aluminum seems to melt on its inside first, and without previous warning, a portion of the work will simply vanish from in front of the operator's eyes. The metal tends to run from the flame and separate at the same time. To keep the metal in shape and free from oxide, it is worked or puddled while in a plastic condition by an iron rod that has been flattened at one end. Several of these rods should be at hand and may be kept in a jar of salt water while not being used. These rods must not become coated with aluminum and they must not get red hot while in the weld. The surfaces to be joined, together with the adjacent parts, should be cleaned thoroughly and then washed with a 25 % solution of nitric acid in hot water, used on a swab. The parts should then be rinsed in clean water and dried with sawdust. Aluminum must invariably be preheated to above 600 degrees, and the whole piece being handled should be well covered with sheet asbestos to prevent excessive heat radiation.

The flame is formed with an excess of acetylene so that the second cone extends about an inch, or slightly more, beyond the small blue-white point. The torch should be held so that the end of this second cone is in contact with the work; the small cone ordinarily used being kept an inch or an inch and a half from the surface of the work. Welding rods of special aluminum are used and must be handled with their end submerged in the molten metal of the weld at all times. When aluminum is melted, it forms alumina, an oxide of the metal. This alumina surrounds small masses of the metal, and as it does not melt at temperatures below 5000 degrees (while aluminum melts at about 1200 degrees), it prevents a weld from being made. The formation of this oxide is retarded and the oxide itself is dissolved by a suitable flux, which usually contains phosphorus to break down the alumina.

Copper. The whole piece should be preheated and kept well covered while welding. The flame must be much larger than for the same thickness of steel and neutral in character. A slight excess of acetylene would be preferable to an excess of oxygen, and in all cases, the molten metal should be kept enveloped with the flame. The welding rod is of copper, which contains phosphorus; and a flux, also containing

phosphorus, should be spread for about an inch each side of the joint. These assist in preventing oxidation, which is sure to occur with heated copper. Copper breaks very easily at a heat slightly under the welding temperature. It is necessary to preheat *brass and bronze*, although not to a very high temperature. They must be kept well covered at all times to prevent undue radiation. The flame should be produced with a nozzle one size larger than that for the same thickness of steel and the small blue-white cone should be held from 1/4 to 1/2 inch of above the surface of the work. The flame should be neutral in character. A rod or wire of soft brass containing a large percentage of zinc is suitable for adding to brass, while copper requires the use of copper or manganese bronze rods. Special flux or borax may be used to assist the flow. The emission of white smoke indicates that the zinc contained in these alloys is being burned away and the heat should immediately be turned away or reduced. The fumes from brass and bronze are very poisonous and should not be breathed.

I. Найдите в тексте и запишите английские эквиваленты следующих слов и словосочетаний:

1) высокий коэффициент расширения; 2) металл склонен уходить от пламени; 3) пока он сохраняет пластичность; 4) запасные прутки; 5) обязательно прогреть; 6) небольшие порции металла; 7) сама окись растворяется в соответствующем флюсе; 8) охвачен пламенем; 9) ненужное излучение тепла; 10) нормальное пламя.

II. Переведите на английский язык и запишите следующие предложения.

1. Цветные металлы и их сплавы при нагреве вступают во взаимодействие с окружающим воздухом гораздо сильнее, чем черные металлы.

2. Большинство цветных металлов имеют большую теплопроводность, чем сталь.

3. Чистая медь пластична и легко поддается деформации даже в холодном состоянии.

4. Алюминий легко вступает в реакцию с атмосферными газами.

5. Сплавы меди (бронза, латунь) резко меняют физикомеханические свойства.