

1. A quick and accurate method of determining a nozzle size is to

- (1) look at the width of cut
- (2) look at the nozzle
- (3) measure the orifice
- (4) glance at the pressure gauges

Ans:4

2. Liquid penetrant test is used to detect faults in:

- (1) surface
- (2) mean surface
- (3) sub surface
- (4) deep in the metal

Ans:1

3. Small diameter pipe end cutting may be done by

- (1) pipe cutter
- (2) oxy-fuel gas cutting
- (3) arc cutting
- (4) plasma cutting

Ans:1

4. The selection of nozzle for pipe welding will depend upon

- (1) welding technique
- (2) wall thickness
- (3) dia of pipe
- (4) welding position

Ans:2

5. The operation which consist of lightly and rapidly hammering on the weld soon after the welding to relieve stresses is called

- (1) Peening
- (2) heat treatment
- (3) straightening
- (4) annealing

Ans:1

6. Residual stresses will cause

- (1) brittleness of weldment
- (2) lack of penetration
- (3) cracks in the joint as soon as the same is put into use
- (4) porosity

Ans:1

7. The type of flame to be used for bronze welding is

- (1) slightly carburizing flame
- (2) oxidizing flame
- (3) neutral flame
- (4) none of these

Ans:2

8. The melting point of filler rod in comparison to base metal in bronze weld is

- (1) lower (2) higher (3) same as base metal (4) has no relation

Ans:1

9. Divergence allowance is necessary in copper butt joint due to

- (1) higher thermal conductivity of copper
(2) higher electrical conductivity
(3) control distortion
(4) control penetration

Ans:3

10. The reason for pre-heating of the base metal is

- (1) to offset the higher thermal conductivity of copper
(2) to control shrinkage forces
(3) it makes for easy welding
(4) to prevent oxidation

Ans:3

11. The quality of cut is high but there is some surface roughness caused by vertical drag line. This is due to

- (1) Less preheating flame (2) impure cutting oxygen gas
(3) Cutting speed is low (4) smaller size cutting nozzle

Ans:4

12. The polished surface of the stainless steel sheet should be placed down during

welding so as to

- (1) to prevent damage to the metal surface
(2) improve mechanical property
(3) for easy weld
(4) prevent corrosion adjacent to weld bead

Ans:1

13. Columbium added electrode are used for welding stainless steel to prevent

1. Distortion (2) excess penetration (3) spatter (4) weld decay

Ans:4

14. Porosity in stainless steel weld is due to

- (1) oversize electrode (2) smaller dia electrode
(3) damp electrode (4) unstabilised stainless steel electrode

Ans:3

15. Fluxes based on resin are used in soldering of

- (1) steel (2) Zinc (3) Tin (4) electrical works

Ans:4

TYPES OF FLUXING AGENTS

Fluxing agents are normally divided into three classes: **rosin flux**, **acid flux (organic)**, and **acid flux (inorganic)**.

Rosin flux- Out of these three, rosin fluxing agents are definitely the oldest. Yet it is still counted among the most common fluxing agents used for soldering electrical components. It has the property that it is only active when heated and does not react with electrical circuits in the unheated state. Unwanted rosin flux can be cleaned after a soldering operation using a solution of isopropyl alcohol.

Organic acid flux is another common type of fluxing agent used in soldering electrical circuits. It is more efficient in cleaning oxides from electrical leads and does it more quickly. It leaves a residue after soldering which is conductive. That means larger residues can cause electrical short circuits. Hence, traces of fluxing agents residue must be cleaned thoroughly after soldering. Luckily, it is water-soluble and therefore, can be cleaned with water easily.

Inorganic fluxes- Are meant for higher temperature soldering/brazing and are normally used only on stronger metals such as stainless steel, iron, zinc. However, halogen-based fluxing agents like ammonium chloride may be used on copper for electric soft-soldering work.

<https://sinovoltaics.com/learning-center/materials/fluxing-agents-types-and-applications/>

16. Identify the alloy that is used for hard soldering

- (1) Tin-lead (2) Tin-lead-antimony
 (3) Tin-lead-calcium (4) copper alloy

Ans:4

Hard soldering means soldering with solders of a **liquidus temperature that lies above 450 ° C**. In practice, the operating temperature is higher than 600 ° C. Hard soldering differs from welding in that: The melting temperature of the solder is lower than that of the base material

Hard soldering differs from welding in that:

- The melting temperature of the solder is lower than that of the base material.
- At soldering temperature the liquid solder wets the base material and fills the solder gap by "capillary force".

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Soft Soldering is a method of joining metals with a **Eutectic Tin/Lead Alloy**.

The heat source is often an **Electric Soldering Iron** but copper 'irons' heated with a gas torch may be needed for larger work.

Hard Soldering is taken to include those metal joining techniques in which a filler rod is used as the joining medium, heat is provided by a gas torch and there is no melting of the parent metal. In this context, it includes **Silver Soldering** and **Brazing** but not **Welding**.

http://wiki.dtonline.org/index.php/Hard_Soldering

17. If brazing is to be done at a lower temperature, the flux to be used is

- (1) Fused borax (2) Fluorides of alkali materials
 (3) aluminium oxide (4) chromium oxide

Ans:1

18. In the process of brazing, the following problem is faced- 'Filler metal does not melt and flow into the joint'. The remedy for this problem is

1. Longer preheating (2) Use of more flux
 (3) additional cleaning of filler metal (4) None of these

Ans:1

19. The percentage of Hydrogen content in acetylene gas is

- (1) 10-15 (2) 5-10 (3) below 5% (4) above 15%

Ans:2

20. In acetylene gas purifier the bottom compartment contains ---- which absorbs moisture from acetylene

- (1) purifying chemicals (2) filter wool (3) pumice stone (4) water

Ans:3

21. In air liquefaction process of oxygen production, the gas that evaporates first is

- (1) Argon (2) Nitrogen (3) Oxygen (4) none of these

Ans:3

22. The type of electrodes which are mainly used for the welding of pressure vessels are

- (1) iron oxide coated (2) baric coated (3) cellulose coated (4) none of these

Ans:3

23. For welding Butt joints on heavy sections without edge preparation, type of electrode used is

- (1) iron powder electrode (2) deep penetration electrode
 (3) cutting and gouging electrode (4) low hydrogen electrode

Ans:2

24. As per Indian system of coding of Electrodes according to I.S.814-1991, the symbol R indicates that the type of covering is

- (1) rutile (2) rutile, heavy coated
 (3) any other type,, not mentioned (4) cellulosic.

Ans:1

25. During welding the defet noticed was “Excessive concavity in butt weld profile”.The remedy for this is

- (1) maintain filler rod and blow pipe at the appropriate angle.
 (2) us of correct size nozzle and filler rod with correct speed of travel
 (3) maintain blow pipe at the correct angle
 (4) none of the three are correct

Ans:2

26. If during the process of welding phosphorous content increases in the welded metal, the result is

- (1) brittleness increases (2) it results in porosity
 (3) leads to cold cracking (4) melting point is reduced.

Ans:3

27. Undercut is an external defect in welding. This can happen due to

- (1) high current
 (2) low current
 (3) slow arc travel speed
 (4) presence of high sulphur in electrode material.

Ans:1

28. For the oxygen manifold system used in Gas welding, pipes to be used should be made from

- (1) steel (2) aluminium (3) copper (4) galvanized iron

Ans:1

29. For welding mild steel to brass, filler rod to be used should be

- (1) silicon manganese (2) stainless steel
(3) silicon bronze (4) nickel bronze

Ans:3

30. Of the four tests given below, used to assess the quality of welding, identify the one which comes under destructive test:

- (1) magnetic particle test (2) Liquid penetrant test
(3) Free bend test (4) ultrasonic test.

Ans:3

31. Identify the test which is use for testing rotating parts subjected to varying alternating loads, by testing specimen of a weld metal

- (1) Fatigue test (2) Impact test (3) guided bend test (4) none of these

Ans:1

32. Identify the metal which cannot be subjected to projection welding as the projections will collapse under pressure

- (1) brass (2) galvanized iron (3) tin plates (4) cast iron

Ans:1

33. The process of rapid cooling of a metal by immersing it in oil or water is known as

- (1) tempering (2) quenching (3) annealing (4) normalising

Ans:2

34. Pearlite is a steel whose carbon content is

- (1) 0.8% (2) below 0.8% (3) above 0.8% (4) none of these

Ans:1

35. The type of steel that is used in the manufacture of coil springs is

- (1) medium carbon steel (2) high carbon steel
(3) mild steel (4) dead mild steel

Ans:1

36. The method of pipe welding that is not commonly used is

- (1) metallic arc welding (2) gas metal arc welding
(3) submerged arc welding (4) carbon arc welding.

Ans:3

37. During the process of bronze welding of copper the following problem is faced: The problem is the filler melts but does not flow. The remedy for this is:

- (1) add more flux
(2) Increase the pre-heating period
(3) reposition the joint
(4) Ensure additional cleaning of the filler metal

Ans:2

38. Nickel and titanium can be welded only through

- (1) oxy-acetylene welding (2) Gas Tungsten arc welding
(3) bronze welding (4) gas metal arc welding

Ans:2

39. A welder must use a respirator while welding

- (1) Arc welding of brass (2) Arc welding of copper
(3) fusion welding of copper (4) bronze welding of cast iron

Ans:1

40. The type of stainless steel that is most suitable for welding is

- (1) ferritic (2) martensite (3) Austenitic (4) None
of these

Ans:3

41. Of the four metals given below, select the one which has got the highest melting point

- (1) Tin (2) Silver (3) Copper (4)

Tungsten

Ans:4

42. For welding of brass using oxy-acetylene flame, the type of flame that is set is

- (1) Neutral flame (2) Oxidizing flame (3) Carburizing flame (4)

None

Ans:2

There are three basic types of gas welding flame:

1. Neutral: balanced
2. Carburizing: excess acetylene
3. Oxidizing: excess oxygen

Oxidizing welding flames are commonly used to weld these metals:

- zinc
- copper
- manganese steel
- cast iron
- Brass
- Gold
- Bronze

A carburizing flame produces a carburizing effect, making it suitable for the following metals:

- Carbon steel
- Lead
- Aluminum alloys
- Oxygen-free copper

Carburizing flames are suited for materials that oxidize easily, such as oxygen-free copper and aluminum alloys. It's also the preferred for working with lead and high carbon steels that require surface hardening.

Neutral flames are used for most gas welding of

- Copper
- Cast iron
- Stainless steel
- Mild steel
- Aluminum

<https://weldingtroop.com/types-of-gas-welding-flame-and-their-applications/>

NEUTRAL FLAME

As the name implies, this flame has equal amount of oxygen and gases fuel by the volume. This flame burns fuel completely and does not produce any chemical effect on metal to be welded.

It is mostly used for welding mild steel, stainless steel, cast iron, copper, aluminium, etc.

It produces little smoke. This flame has two zones. The inner zone has white in color and has temperature about 3100° C and outer zone has blue color and have temperature about

1275 °C.

CARBURIZING FLAME

This flame has excess of fuel gas. This flame chemically reacts with metal and form metal carbide. Due to this reason, this flame does not used with metal which absorb carbon. It is smoky and quiet flame. This flame has three regions. The inner zone has white color, the intermediate zone which is red in color and outer cone has blue color. The inner cone temperature is about 2900 ° C. This flame is used to weld medium carbon steel, nickel, etc.

OXIDIZING FLAME

When the amount of acetylene reduces from natural flame or amount of oxygen increases, the inner cone tend to disappear and the flame obtain is known as oxidizing flame. It is hotter than natural flame and has clearly defined two zones. The inner zone has very bright white color and has temperature of about 3300° C. The outer flame has blue in color. This flame is used to weld oxygen free copper alloy like brass, bronze etc.

<https://tristatefabricators.com/types-of-welding-flames/>

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Oxidizing welding flames are commonly used to weld these metals:

- zinc
- copper
- maganese steel
- cast iron

https://prezi.com/j4_ifvlobce7/uses-and-differences-of-the-3-types-of-

welding-flames/?frame=58693edde544a68e8a480e7aa91fe6e3b3546daf

43. A.C. Welding supply obtained through A.C. Welding transformer has got

- (1) High ampere low voltage (2) High voltage low ampere
 (3) High voltage high ampere (4) Low voltage low ampere

Ans:1

44. The current regulator of welding transformer is

- (1) attached to the secondary output supply
 (2) attached to the primary input supply
 (3) Kept between primary and secondary windings.
 (4) none of these

Ans:1

45. The heat required for brazing and silver soldering is obtained from:

- (1) Oxy-acetylene flame (2) Oxy-coal gas flame
 (3) Oxy-liquid petroleum gas flame (4) Oxy-hydrogen flame

Ans:1

HOW BRAZING AND SOLDERING WORK

Brazing and soldering join materials, usually metals, together by flowing a filler metal into the joint. In both cases the filler metal has a lower melting point than the base metals being joined. And for both metal joining processes, capillary, or the ability of a liquid to be drawn through a narrow gap, is the driving force. Gaps can vary, but in general they tend to be in the range of .002-.005" for best results.

What is the difference between brazing and soldering? The American Welding Society (AWS) defines brazing as a group of joining processes that produce coalescence of materials by heating them to the brazing temperature and by using a filler metal (solder) having a liquidus above 840°F (450°C) and below the solidus of the base metals.

Soldering has the same AWS definition as brazing, except that the filler metal used has a liquidus below 840°F (450°C) and below the solidus of the base metals.

<https://lucasmilhaupt.com/EN/Resource-Library/Metal-Joining-Brazing-vs-Soldering.htm>

46. In D.C. welding using straight polarity

(1) Electrode is connected to the positive and work to the work to the negative

terminal of power source

2. Electrode is connected to negative and work to the positive terminal of power source

3. Both 1 and 2 are correct

4. Both 1 and 2 are wrong

Ans:2

47. Depth of Fusion from the surface of the weld metal is known as

(1) Fusion zone (2) heat affected zone (3) penetration (4) lag length

Ans:3

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