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ESTD: 2015 Siromonipur, Bishnupur, Bankura, 722122 (W.B.)



● What is Welding?

→ The welding is a process of joining two similar or dissimilar metals by fusion, with or without the application of pressure & with or without the use of filler metal.

● Types Of Welding :-

(I) Forge or Pressure Welding.

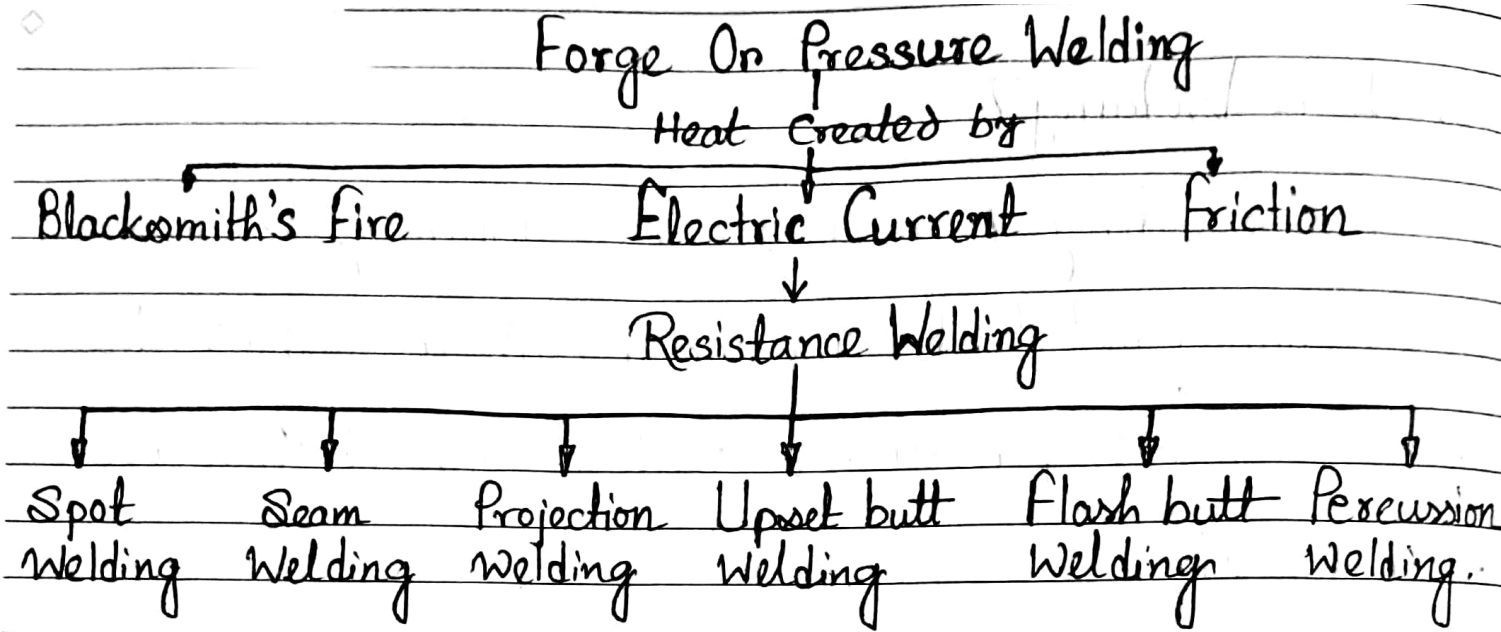
(II) Fusion or Non-Pressure Welding.

(I) Forge Or Pressure Welding :- In forge or pressure welding

(also known as plastic welding), the workpieces are heated to

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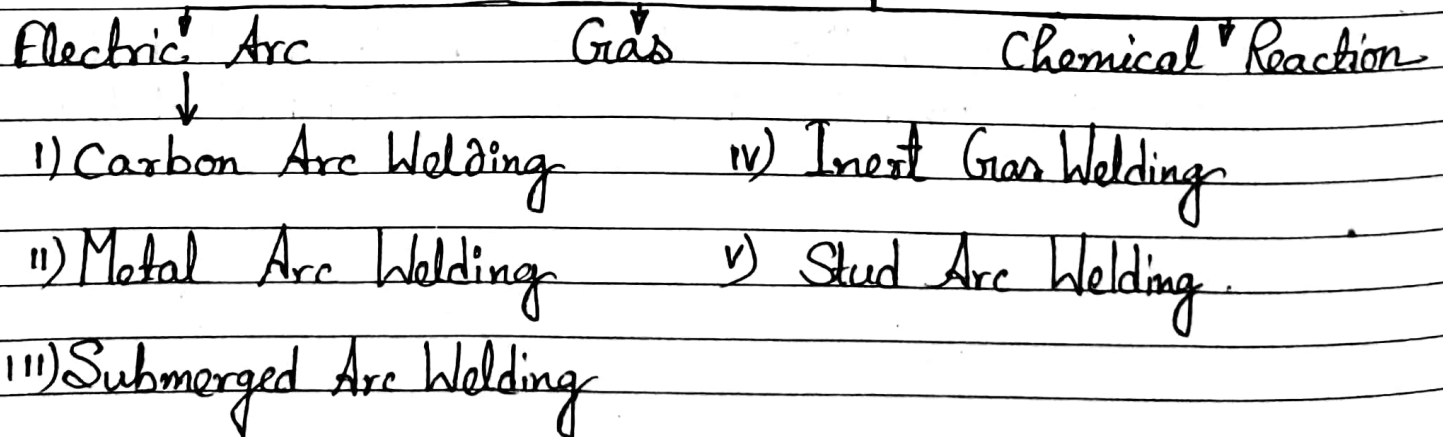
plastic state and then the workpieces are joined together by applying pr. on them. In this case no filler material is used.



(II) Fusion Or Non-Pressure Welding:- In fusion or non-pressure welding, the edge of workpieces to be joined and the filler material are heated to a temp. above the melting point of the metal & then allowed to solidify.



Fusion Or Non-Pressure Welding



● Arc Welding Electrode Specification:-

→ All mild steel & low alloy electrodes are classified with four or five digits no. prefixed by 'E'.

E 6010

- Prefix 'E' = Electrode.
- First two or (three) digits = Tensile strength (PSI)
(stress relieve or as welded)
- Third or (fourth) digits = Position of welding.



1 = All Position (Flat, Horizontal, vertical, overhead).

2 = Horizontal & Flat Position Only.

- Last digits = Types of coolant is used & the Current.

■ When the fourth digits is zero the type of coolant & current to use are determined are the third digits.

e.g. E6010 indicates a Cellulose Sodium Coating & operates on DC reverse, while E6020 has an Iron Oxide Coating, and Operate on AC & DC.

E 6 0 1 0 → Type of coolant & Current (AC/DC).

T T T → Position of welding.

Electrode. Tensile strength.

● Function Of Coatings:-

- (1) Improves arc stability by providing certain chemicals which have disability by ionized the path of arc.
- (2) Provide a protective gaseous atmosphere to prevent O_2 , H_2 & N_2 by the molten metal.

- 8.10.11
- (iii) Provide a protective slag over hot metal.
 - (iv) Provide flux which help to removes oxides & other impurities from the molten weld metal.
 - (v) Reduces pater of weld metal when cottiings burns on slower than core.
 - (vi) Act as de-oxidizer.
 - (vii) Add alloying elements.
 - (viii) Increase deposition efficiency.
 - (ix) ~~slow~~ slow down the cooling rate of weld to prevent harding.
 - (x) Coting are normally insulator of electricity & so permit the use of electrodes in merrow groves.



A welding GENERATOR (D.C.) or TRANSFORMER (A.C.)

Two cables- one for work and one for electrode

Electrode holder

Electrode

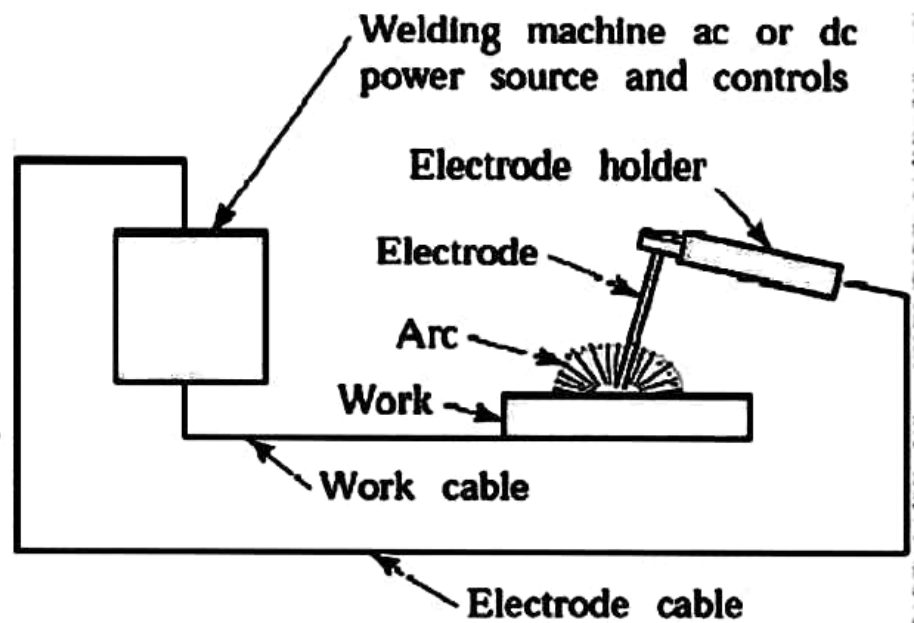
Protective shield

Gloves

Wire brush

Chipping hammer

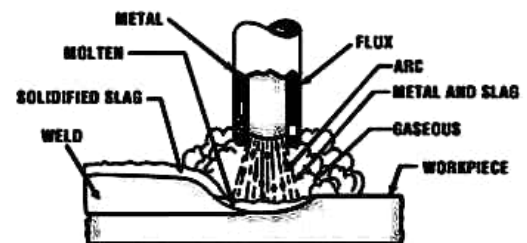
Goggles



SHIELDED METAL ARC WELDING OR ARC WELDING OR STICK WELDING

Process:-

- Intense heat at the arc melts the tip of the electrode
- Tiny drops of metal enter the arc stream and are deposited on the parent metal
- As molten metal is deposited, a slag forms over the bead which serves as an insulation against air contaminants during cooling
- After a weld 'pass' is allowed to cool, the oxide layer is removed by a chipping hammer and then cleaned with a wire brush before the next pass.



STICK WELDING PROCESS

