

## The Principles involved in Welding with High Frequency Radio Waves

The H.F. Welding process is often referred to as heating by intermolecular friction process. Material which will heat in the H.F. Field appear those, which contain polar type Molecules, such as P.V.C.

When such a Molecule is subjected to a high Magnetic Force Field, it tends to align itself to the opposite polarity as that of applied field.

The general idea is that the part of the Molecule containing the positive pole will tend to be drawn toward the negative end of the Magnetic Force Field and vice-versa. Each time this field is applied, there is thus a stress set up on the Molecules, and when the Field is reversed the stresses are likewise reversed. The nett effect is that if this field is reversed a million times a second, by employing a high frequency electro-magnetic Generator, heat will be generated due to what amount to frictional effects between the individual Molecules.

From the foregoing it is therefore deduced that the heat to weld these P.V.C. items, is not in a form of externally applied heat, but is generated within the material itself. The Machines using this principle of operation are called High Frequency Welding Machines and consist of a press and a H.F. Generator. The press is used to press the welding Electrode onto the Material to be welder. The welding Electrode is in fact a custom shaped capacitor, to which the H.F. Energy is applied, the Base Plate forms the opposite Capacitor Plate and the Material in between forms the deleteriously. As soon as the H.F. Energy is applied this deleteriously (P.V.C.) Sheet heats up the Pressure applied through the Electrode is then fusing the Material together, and forms a fully homogeneous Welded Bond.