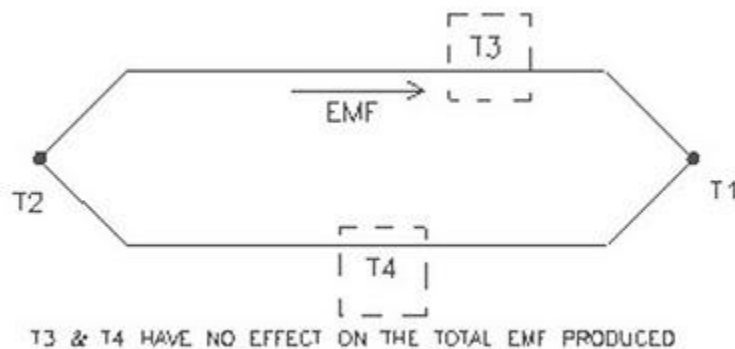


Laws of thermoelectricity

Actual applications of the thermocouple to measure require the consideration of following laws of thermo electricity.

First law of homogeneous circuit

An electric current cannot be sustained in a circuit of single homogenous by application of heat done. This law is generally accepted to an experimental. In thermocouple, an emf is formed by joining two dissimilar wires/metals.



Second law of intermediate metals

It states that intersection of third metal into a thermocouple circuit will have no effects, as long as a junction by the third metal with thermocouple at the same temperature.

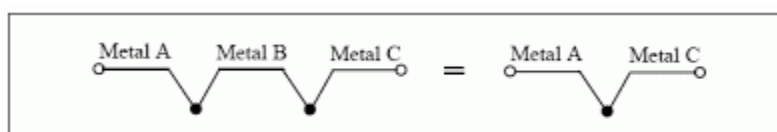


Figure 7-11. Law of intermediate metals

Applications

This law makes it possible to use extension wires at metals different from the thermocouple because platinum extension wires are at the same temperature high cost, copper can be used without any change in performance.

The law enables an instrument to be introduced into the circuit to be means the emf produced.

This law allows the use of joining material such or hard solder(silver) in fabricating the thermocouple and junction.

Law of intermediate thermocouple

The emf generated in a thermocouple with junction at temperature T_1 and T_3 is equal to sum of emf generated by similar thermocouple one acting between $T_2 + T_3$ and where T_2 between T_1+T_3

This law is used when making or reference junction temperature is different from temperature at which it is calibrated. Thus a thermocouple is calibrated with reference junction at 0°C is used and with the junction at 20°C .

Source:

<http://instrumentationandcontrollers.blogspot.in/2010/10/laws-of-thermoelectricity.html>