

When testing for electrical safety, the transformers **CORE** temperature shall not rise above 85 K after running for 4hrs operation at 1.1 x rated input (253V), the amplifier set to produce 0.125 of its rated power into its rated load.

Under all fault conditions, the **CORE** temperature shall not exceed 145 K.

NOTE. The core temperature cannot be measured, and so it is calculated by the change of resistance method as shown in the following worked out example;

The temperature rise of a transformer core (copper wire) is given by;

$$\Delta t = \frac{R_2 - R_1}{R_1} (234.5 + t_1) - (t_2 - t_1)$$

Where;

Δt = The temperature rise (K)

R1 = Transformer primary winding, start of test = 145.5 Ω

R2 = Transformer primary winding , end of test = 165.5 Ω

T1 = Ambient temperature at start of test 15.9°C

T2 = Ambient temperature at end of test 21.7°C

$$\Delta t = \frac{165.5 - 145.5}{145.5} (234.5 + 15.9) - (21.7 - 15.9) K$$

$$\Delta t = 0.137457044 \times (250.4 - 5.8) K$$

Which calculates, in this case, to 33.62K