1.6.2 Insulation class according to CEI 15-26

Insulation class	Temperature °F/°C
Y	194 / 90
A	221 / 105
E	248 / 120
B	266 / 130
F	311 / 155
H	356 / 180
200	392 / 200
220	428 / 220
250	482 / 250

The indicated temperature is the effective temperature of the insulation and not the overtemperature.

1.6.3 Service

The coils are normally expected to be used in continuous service (ED100%).
Definition of "Continuous service": when the electrical connection time exceed the thermal constant of the coil by approx. .
As a general rule, the continuous service corresponds to an electrical connection time that is equal or higher than 15 minutes.
It's possible, for non-continuous service (e.g. ED50%), either to have coils at powers that are higher than the standard ones, or to use the coils with an ambient temperature higher than the ones indicated.

$$\textbf{ED=} \frac{\text{connection time}}{(\text{connection time} + \text{disconnection time})}$$

$$\text{EXAMPLE=} \frac{5' \text{ (connection time)}}{5'(\text{connection time}) + 5'(\text{disconnection time})} \text{x100= ED50\%}$$

1.6.4 Coils power

The power (P) indicated is referred to a temperature of 68°F.
For DC current it is as follows:

$$P(Watt) = V(Volt) \times I(Ampere) \;\; ; \;\; P = \frac{V^2\,(Volt)}{R\,(Ohm)}$$

In the case of AC current, the value is referred to the apparent power during inrush (connection moment) and during holding.

$$P(VA) = V(Volt) \times I(Ampere)$$

In the case of AC current, voltage and current are not in phase with each other. Phase angle between current and voltage is shown by the angle φ of the resistance triangle (the three sides represent: resistance, reactance and impedance of the circuit).
In the case of AC current the power showed in Watt become:

$$P(watt) = V(Volt) \times I(Ampere) \times \text{power factor } \varphi$$

power factor φ = power factor is always less than 1

The power, or electric input, in a AC current solenoid valve, is higher during inrush while it decreases when the plunger's stroke is complete.
In the DC current solenoid valve, as the power depends from the coil's Ohmic resistance, the power is the same during inrush and also when the plunger's stroke is complete too.