INTRODUCTION

The concept of green chemistry [2] was created to "support the design of products and processes that reduce or eliminate the use and formation of hazardous substances." These rules edesign sometimes seem restrictive, but they can become profitable, especially for chemists and manufacturers. The principles of green chemistry tend to more environmentally friendly methods of synthesis of the environment and the use of renewable raw materials [3].

Because of their chemical inertness when subjected to electric fields, oils are often used as insulation for some electrical applications, including transformers, circuit breakers, cables and capacitors, they are also important alternatives as fossil fuels replacement [4][5].

There are prototypes of biodegradable insulating oil for electrical transformers based on derivatives of vegetable oils (fatty acids) and with unmatched performance at low temperatures. Biodegradability and non-toxicity of these insulating oils are substitutes choice for those customarily used are all based petrochemical derivatives and therefore more prone to price fluctuations of petroleum products [6].

MATERIALS AND METHODS

Vegetable oils are generally very low toxicity and have excellent biodegradability. These features are due in particular to a low resistance to oxidation and hydrolysis. These two characteristics that are favorable to eco-toxicological aspects, plant oils are already used in distribution transformers and attempts are underway to extend their use in power transformers. [7].

Vegetable oils commercially available were purchased on the market.

*Diagram of the cell used to measure the viscosity:
The viscosity is measured by a viscometer Osswald:
Viscometer Osswald:
Methods for measuring the kinematic viscosity of vegetable oils:
Measurement of the flow time of a volume V of fluid through a capillary tube. The
kinematic viscosity is proportional to the flow time:
The constant K of the apparatus is given by the manufacturer of the viscometer.

Results:
We studied the variation of kinematic viscosity with temperature vegetable oils: Argan, Olive, Avocado, rapeseed, sunflower results obtained are shown in Figure 1.

Fig. 1: Kinematic Viscosity of Vegetable Oils.

Viscosity means the resistance of one part of the fluid to move relative to another one. Viscosity is one of the most important physical properties of a liquid system; the change of viscosity is linked to physicochemical oil properties [8] [9]. Furthermore, it is also a factor that determines the global quality and stability of a vegetable oil. From the physicochemical point of view, several studies [10] have been carried out on the viscosity of oils, this parameter can changes with temperature, pressure, and concentration of fluids; all these changes can be modelled by some theoretical equations [11].

It is observed that the viscosity decreases with increasing temperature, can explain this decrease:
• For the various chemical changes undergone by the oil upon heating.
• For the orientation of the molecules, as the temperature increases (decrease in viscosity with increasing temperature) which promotes the flow of current in the oil.
• The dependence of the viscosity of the fluid temperature is an expression of its behavior and thermal energy of cohesion, with a temperature rise, the polar attraction between molecules decreased while their thermal energies and increased viscosity oil decreased.

Our measurements are consistent with measures Dilip Kumar [12] because the estimated coefficient by the author is very small so we can neglect it. The viscosity measurement is a method for the quality control of oil and as an indicator of changes in the new oil or in service resulting from contamination or damage.

Conclusion:
We can conclude that the temperature facilitates when it increases, the viscosity of the oils we studied. This study allowed us to compare our results on the behavior of the viscosity as a function of temperature with those of other researchers working on the same research topic [13-14].
The study of the viscosity of these oils may be useful for application in technology (insulation, transformer...)

Perspective, we consider our work complete with a study of the thermal resistivity as a function of temperature.

RÉFÉRENCE.