



---

## **Preparation of activated carbon from grape stalk**

---

**N. Makaremani<sup>1</sup> and M. Niyakosari<sup>2\*</sup>**

1. B.S. student of Shiraz University

2. Assistant Prof. of Shiraz University

Iran with annual production of 3 million tons is the seventh largest producer of grape in the world. Fars province is providing 13 % of country's total grape production. Apart from being one the most favorite fruits amongst the consumers, grape is used in large proportion to produce sultanas and fruit juice concentrate. Grape stalk is a common agricultural waste from these industries which is available in large quantities and at low prices and currently is only used as animal feed. It represents about 4% of grape weight and as any carbonaceous material; it can be used to obtain activated carbon. However, it shows a high ash content, around 100%, because of K, Na, and other elements that are present, which makes difficult physical activation. The present paper survey the results obtained in studies carried out to use this industrial waste to obtain activated carbons by physical and chemical activation. For physical activation, carbonized grape stalk would be submitted to a leaching treatment with hydrochloric acid and water under different conditions. The activation would be performed at temperature, time and water vapor flow rate higher than 973 K, 105 minutes, and 0/50 ml/min, respectively. In the chemical activation phosphoric acid would be used as activating agent. The processed material would then be thermally treated at temperatures higher than 773 K for at least 60 minutes. Activated carbons with porous structure comparable to commercial products were obtained, by both routes. Chemically activated carbons showed surface areas larger than the ones obtained with physical activation.

**Keywords:** Grape stalk ,Activated carbon, Agricultural waste, Surface proper

---

\* Corresponding author

Email: niakosar@shirazu.ac.ir