

freeK⁺

Efficient potassium reduction.
A fast, efficient, sustainable
and ecological process.



Introduction

After years of research, a technique has been developed to reduce the amount of potassium in white, rosé and red wines and in partially fermented musts. This technique is simple and efficient.



Characteristics

The procedure used in the activation enables the removal of only the desired amount of potassium, to ensure perfect tartaric stability without altering the characteristics of the wine.

It is a fast and automatic process. Personnel handling the equipment do not require any specific training and no external substances are added.

One of its most important features is the equipment's high working potential. It is able to work at flows of more than 120 hl/h.

This equipment attains tartaric stability in a short time in addition to other positive effects such as:

- Slight increase in total acidity.
- Slight decrease in pH.
- A brighter colour of red wines

Other positively-charged metal ions such as calcium, iron and copper are also partially removed. This leads to an improvement of the wine and the reduction of the risks associated with the presence of these ions.

It is also very interesting to work with partially fermented musts in order to regulate the pH and thus increase the protection against bacterial attacks that can negatively affect their organoleptic quality.

Equipment description

- The exchange column is made of acid-resistant material. The inside is food-grade polystyrene and the outside is glass fibre. Stainless steel is not recommended since it is attacked by strong acid regeneration solutions.
- Stainless steel frame and fairing coated with an epoxy resin resistant to strong acids and bases.
- Centrifugal process pump with a variable frequency drive for a slow flow inside the column, made of AISI 304 stainless steel.
- Panasonic TFT 7 "touch panel with control software.
- 2 pneumatic process pumps for dosing the regenerating and neutralising solution made with a special corrosion-resistant material.
- 2 in-line electronic pH sensors, for automatically managing the treatment and regeneration processes.
- Monitoring of initial and final pH.
- 1 in-line temperature sensor for automatically managing the different stages.
- 1 electronic flowmeter.
- 1 pressure sensor (1.5 V) and a safety pressure switch.
- 2-way and 3-way flow treatment and regulation valves.
- Motorised equipment output 24 V.
- d40, d32 and d25 check valves.
- 2 filters, regulator and manometer with stainless steel EV for N and air control.
- PPH 100 pipes and accessories, heat sealed connectors (PPH = food-grade high density polypropylene).
- Food-grade fittings.
- Wine inlet and outlet, NW50.
- Water inlet and outlet, 1" hose holder.
- Regenerating electrolyte solution inlet, ½" hose holder.
- Neutralising electrolyte solution inlet, ½" hose holder.
- Nitrogen and air inlet, 8 mm quick-fit connection.
- Electric switchboard on AISI 304 stainless steel support according to EC regulations.
- Working voltage: 220 V/380 V depending on model.
- Maximum power 2.5 kW.
- Neutralisation system included in all models.
- Normal tap water can be used for the washing, regeneration and rinsing processes.


Optional material

- freeK+ TEST analysis kit: Conductivity management system. This specific equipment enables to precisely know the minimum amount to be run through the equipment to attain total stability. It is based on the decrease of conductivity.
- Lab accessories for the correct use of the freeK+ TEST analysis kit.
- Special plastic container for storing the electrolyte neutralising solution.
- Flexible PVC hose system for mixing electrolyte solutions and water.
- A 2500-litre capacity polyester water storage tank with automatic refill system.

Equipment performance

Our proposal includes several models designed according to the workflow. They all operate in the automatic and semi-automatic modes.

Ad-hoc configurations can be used, including two columns on a given model to make it fully automatic (includes two process pumps to work without downtime) or to treat different wines (white and red) without the need for special cleaning protocols.

MODEL 	Exchange workflow [l/h]	Volume treated per cycle * [hl]
K1	1.000	20
K3	2.000	45
K5	4.000	95
K7	9.000	200
K9	10.000	250
K11	12.000	300

**Once the equipment's workflow for the exchange stage is known, and taking into account that the regeneration stage lasts approximately 45 minutes, the equipment performance depends on the following factors:*

- 1.- Number of daily cycles: according to the winery's working hours.
- 2.- Percentage of product mixture.
- 3.- Amount of potassium in the product to be treated.

IMPORTANT NOTE: The use of stainless steel has been restricted due to the strong physical and mechanical deterioration it suffers when in contact with acids.