

# Carlvin Filtration

Total filtration for the vintner industry





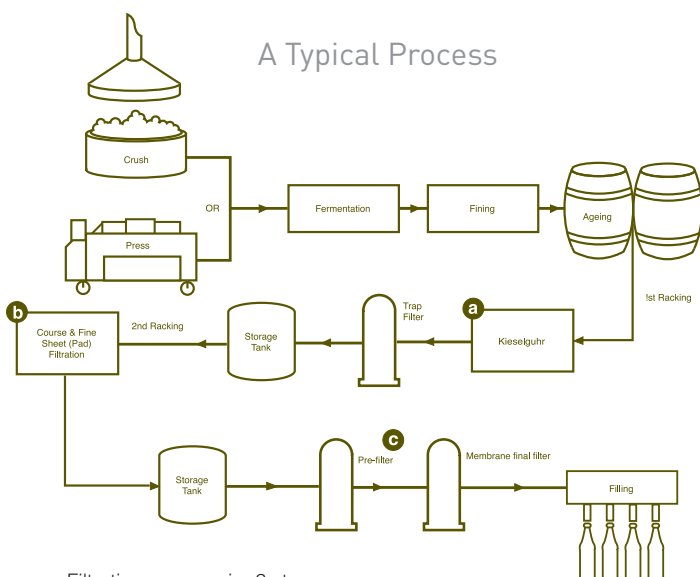
## Introduction

Wines have been produced for thousands of years with increasing levels of sophistication. Whilst Carlson cannot claim to have been around since day one, it does bring 90 years of filter media development, production and supply experience

**P**hysical stability involves the prevention of the formation of hazes and of post-bottling deposits which affect the wine's appearance whilst microbiological stability requires the elimination of yeast and bacteria which can destroy the wine's taste.

The chemical stability of wine is the removal of heavy metals, proteins (white wines only), polymerised phenolics and oxidation products, is normally achieved by use of suitable fining agents followed by filtration whilst tartrates are typically removed by chilling followed by filtration.

### A Typical Process



Filtration can require 3 stages:

- a Primary filtration requiring the use of filter aid (kieselguhr) powder
- b Intermediate or fine filtration
- c Final / sterile filtration

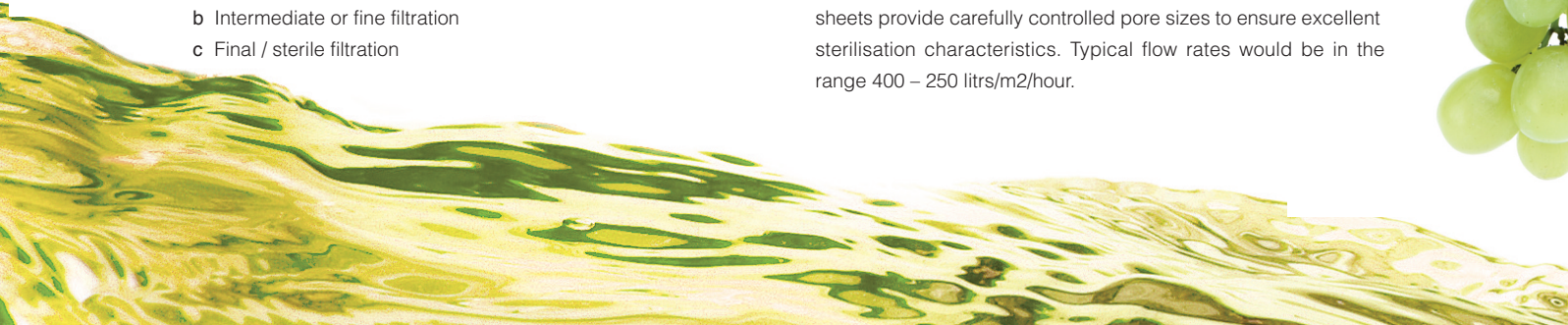
**Primary Filtration** using kieselguhr (KG) powder can be carried out in "traditional" plate and frame filters using Carlson's W2N specifically designed support sheet on which the KG filter cake is built or using candle or horizontal leaf filters.

This filtration stage is normally carried out after first racking or aging has been completed and removes the bulk of coarse particulate including fermentation yeasts. Typical KG addition rates are between 40 and 120 grammes per hectolitre dependant upon the condition of the wine. The W2N sheets, which are manufactured from natural fibres incorporating food grade wet strength resins to provide the wet strength required during the process, are normally pre-coated with one or two layers of clean powder giving a typical total pre-coat of 800 to 1200 grammes per square metre of available filtration area.

**Intermediate / Fine Filtration** is required to remove any fine particulate and haze in addition to any fining materials which have been carried over. At this stage a sheet filter or lenticular module can be used. Carlson grades XE90H, XE150H, XE200H or XE280H giving a staged particulate removal range of 9.0 → 0.5 microns (nominal) can be used subject to wine quality and operating conditions; flow rates – again subject to wine quality – are in the range of 800 – 400 litres/m<sup>2</sup>/hour.

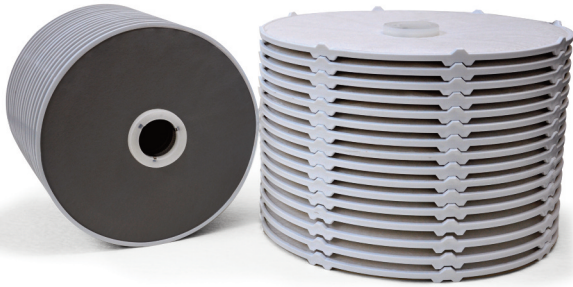
**Final / Sterile Filtration** is performed immediately prior to bottling on wines which require a higher level of bacteria removal including some reds, white and sweet non-fortified wines.

In these cases media in the range of XE400H – XE1200H providing particulate removal capabilities of 0.6 → 0.2 microns (nominal) are appropriate, again in either sheet or lenticular format. These sheets provide carefully controlled pore sizes to ensure excellent sterilisation characteristics. Typical flow rates would be in the range 400 – 250 litres/m<sup>2</sup>/hour.



*Carlson filters are used in some of the worlds best wines*

*Carlson filter housing and press used within the wine industry*



*Lenticular filters and Carbon filters*



to assist the wine maker in achieving the key goals of clarity, physical, microbiological and chemical stability for their wines. Carlson can justifiably be regarded as amongst the leaders in this field.

Carlson media in either sheet or lenticular format is compliant with all Food Contact Regulations and is designed to provide superior surface strength coupled with minimal drip loss and colour stripping. Specialist treatment sheets capable of removing TCA, TBA and TeCA without damaging the original taste or aroma are also available.

Whilst turbidity (NTU) is a common measure of assessing the particulate level (visual clarity) in wine and therefore its suitability for bottling, the Filterability (or Fouling) Index is an equally critical measure since this will determine how the wine will block the filter over time. Wines which have low (<1) NTU do not necessarily have an acceptable Filterability Index and the converse can also be true. Sequential passage through Carlson filter sheets can reduce both NTU and FI to acceptable levels thus protecting and extending the life of the final pre-bottling membrane filter.

Absolute rated filter cartridges can, of course, also be used for this purpose and Carlson can provide a wide range of these in pleated format or with PES membrane (for which integrity certification can be provided) and with a combination of lengths, end fittings, gaskets and o-rings. Please make reference to the CarlCart brochure for full information regarding the supply of filter cartridges and appropriate housings.

## Specialist Applications relative to wine production may include:

- **Brandy** – this is normally filtered in one stage, particularly to remove metal hazes, using XE90H sheets
- **Champagne** – also uses single stage filtration under high pressure using XE200H sheets



- **Liqueurs** – are normally prepared by macerating various herbs in the base spirit and these are removed by straining. Filtration usually follows this step to remove fine colloidal turbidities using sheets from the BK series followed by XE150H or XE200H at the final bottling stage.

- **Sherry** – this is usually filtered in one stage using medium clarifying sheets such as XE90H

- **Fortified wines** and wine based aperitifs are usually filtered using sheets from the BK series

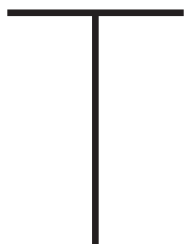
- **Both malt and wine vinegars** are filtered at the bottling stage. Pre-filtering is carried out, typically using XE90H clarifying sheets at 200-550 litres per hour per square metre, depending upon the quality of the raw vinegar. Final filtration is primarily carried out to sterilise and polish the vinegar using XE400H sheets at 300-350 litres per hour per square metre.



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### Lenticular modules



he lenticular module offers a compact, self contained, liquid filtration solution utilising proven filter media technology.

The lenticular module can incorporate the full range of Carlson Filtration filter media.

Carlson Carlent lenticular filters are essentially composed of Carlson depth filter media, supported on a polypropylene skeleton and supplied in modular format normally comprising of 16 cells of either 12" (300mm) or 16" (400mm) diameter. They offer all the advantages of traditional filter sheet filtration but in a totally enclosed, sterile environment, thus eliminating product losses and external contamination. They are designed to fit industry standard housings incorporating 1,2,3 or 4 modules.

For further information on this product and the associated housings please see our **Carlent** brochure.

### Complementary Filtration

#### Cartridges, Bags and Housings.

Carlson can also offer a comprehensive range of cartridges from wound, thermal bonded and pleated through to PES membranes as well as bags in felts of Viscose, Rayon, Polypropylene, Polyester, Nylon or Nylon monofilament. They are available for either new application or to retrofit to current installations. A full range of housings are also available to compliment this range.

For further information please see our **Carlcart** brochure.

### Filtration Equipment and Spares

#### New filter equipment

Carlson offers a comprehensive range of new filtration equipment, incorporating a full range of filter presses and plate and frame filters. The range includes plate and frame and sheet filters from 20x20cm to 120x120cm of varying lengths. Manual models and fully automatic closing systems are available. Test equipment i.e. 6cm housings and 2 sheet 20cm press is also available.

#### Filter spares

Another important element of Carlson's support service is to supply spare parts for their filter range. These are categorised into:

- Consumable spares which include eyelet seals in a host of materials including Nitrile, Silicon, Natural Rubber, EPDM, Butyl and Viton.
- Servicing spares including pump spares, sight glasses, valve diaphragms and pressure gauges etc. Service kits for hydraulic filter press closing systems are also available.

#### Reconditioned filter equipment

Carlson also offers reconditioned sheet and plate and frame filter presses. We have developed a wide ranging network of contacts in the filter press community as well as amongst dealers in used factory equipment. On arrival at Carlson's factory all filters are rebuilt to exacting standards to meet customers filtration requirements and to achieve an "as good as new" quality.

Dealer stamp



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