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CHAPTER 1

EQUIPMENT

STABYMATIC

AUTOMATIC CATIONIC EXCHANGE SYSTEM FOR pH LOWERING AND TARTARIC STABILISATION

Ion Exchange, Stabymatic: a fully integrated ion exchange system used to reduce the pH and to stabilize wine or juice for tartrates. The stabilization works with the concept that subtracting K+ from the media means lower formation of K-tartrate crystals. Furthermore, higher H+ means lower pH. To stabilize a full tank, most of the time only 20-30% of the wine needs to be treated, lowering the total pH by an average of 0.3, and eliminating tartaric instability. older-style ion exchange units were plagued by issues relating to high water pressure, high effluent production, wine quality issues (taints, color, off-characters, and oxidation), mobility and problems blocking resin columns, resulting in significant loss of efficiency, product volume, and quality. Also, in many cases, old-fashioned columns cannot handle must. AEB has addressed and eliminated all the above problems in the development of the Stabymatic. For musts, a maximum turbidity of 600 NTUs is acceptable, as long as the solid have a diameter of less than 0.4mm.

pH-Stab 2.0

pH-Stab 2.0 is a cation exchange resin that will decrease potassium and calcium salts in wines and increase tartaric acid stability. This decrease of positive ions will contribute to the decrease of the pH value of the treated wines. pH-Stab 2.0 is in the form of micro-spheres with a diameter of 600 3 50 Qm. They can be utilized loose, inside a hopper, or in 5kg bags to enable the reaction with the wine.

Dosage: From 0.5 g/L - 10 g/L. Where 1 Gram of pH-Stab 2.0 exchanges 1.4 meq of H+ ions.

Packaging: 20.5 kg bags

STABYMATIC:		
SIZES	PROCESSING SPEED PER HOUR	ELECTRICITY NEEDED
25	65GAL/H	AIR ONLY
200	520GAL/H	480V THREE PHASE
1000	2600GAL/H	480V THREE PHASE
2000	5200GAL/H	480V THREE PHASE

REACTIVATEUR

AUTOMATIC REACTIVATION AND ACCLIMATISATION SYSTEM FOR YEASTS

Reactivateur : The Reactivateur automatically executes all the procedures required to prepare yeast for inoculation and ensures extremely consistent alcohol fermentations. When rehydrating ADY (active dry yeast), a few simple things can make a huge difference in the quality of the biomass that ultimately is going to ferment the must. Temperatures, timing, aeration, and acclimation are all variables that can influence the success of yeast rehydration. The yeast Reactivateur engineered by AEB has the capability to optimize this delicate process, guaranteeing the best outcome from the inoculum used. After the operator sets the amount of yeast to rehydrate, the machine starts by intaking a proportional amount of water. Then the water is brought to the programmed temperature and maintained warm, waiting for the operator to add the yeast. Water and yeast are constantly homogenized and saturated with oxygen through continuous mixing. Acclimation is then achieved by introducing must incrementally, with intervals programmed in the settings. After the acclimation is finished, the machine can pump the active inoculum into the must tank.

KEY BENEFITS

- Reduction in yeast latency times
- Regular alcohol fermentation

- Guarantee of dominance in fermentation
- Enhanced fermentation kinetics, even in less-than-ideal conditions
- Guarantee of proper reactivation
- Reactivation of interrupted fermentation
- Production of yeast must for Charmat or traditional re-fermentation

MODELS AND VARIANCES

- 3-10Kg of yeast, 85 gallons, 480v 3 phase
- 10-30Kg of yeast, 237 gallons, 480v 3 phase
- 30-60Kg of yeast, 528 gallons, 480v 3 phase
- 60-100kg of yeast, 792 gallons, 480v 3 phase

E-FLOT

DYNAMIC MUST CLARIFICATION SYSTEM

Eflot: Must clarification system

Flotation is an alternative, intelligent method for achieving must clarity, by pushing solids against gravity and collecting them in a “cake” at the top of the tank. The clear juice is then racked and separated from the racking valve. AEB manufactures the E-flot, a state of the art batch flotation system, to get the job done quickly and economically. The clarification of must using the E float is achieved through the incorporation of an inert gas (nitrogen) into the solids that make up the turbidity of the liquid. Gelatin products like Gelsol, or vegetable derived proteins like VE-gel, may also be incorporated by the machine to optimize the process. The gas combines particles and suspension and makes them float towards the surface of the tank leaving a clear must at the bottom. It is important to first make sure that the must is thoroughly depectinized. AEB recommends the use of enzymes such as Endozym flotation, Ice, Micro, or Endozym ICS 10 Eclair to help achieve depectinization. In order to have optimal results and better must clarity it is advisable to use a specific gelatin, like gelsol, that ensures the formation of good sized flocculate that will encompass all particles to be eliminated.

BENEFITS

- Reduction of clarification time
- Energy saving in terms of refrigeration used for cooling the must
- Limited use of gas
- Adequate use of adjuvants
- Significant reduction of lees residues
- High versatility
- Time and tank saving: 50 tons of fruit at 9:00 AM can, in theory, be inoculated by 4:00 PM on the same day using flotation clarification. This compares to a minimum 24 hours settling time plus racking, warming, and RDV filtration time.

E-Flot Sizes Processing speed per hour Electricity Needed:

E-Flot 5: 1,320 gallons, 220V Three Phase

E-Flot 25: 6,600 gallons, 480V Three Phase

E-Flot 50: 13,200 gallons, 480V Three Phase

E-Flot 80: 21,133 gallons, 480V Three Phase

E-Flot 130: 34,300 gallons, 480V Three Phase

HOW TO PERFOM A PECTIN TEST

We know that if flotation is unsuccessful the cause most times has to be found in the must, not in the equipment. Check if the must is too cold (lees than 50 F or 10 C), if the must is fermenting, or if the enzyme did not work (didn't hydrolyze the pectins). In order to check if the enzyme has worked we can ask the lab to run a pectin test:

- Add 10 ml of ethanol to 5 ml of centrifuged must/wine.
- Let it sit for 60 seconds.
- If floccules appear after one minute, pectins are still present in the wine and they might cause problems with settling.

Most times the test performed this way will give results that are practical enough to understand if the must is depectinized. A more accurate procedure requires the ethanol used in the reaction to be acidified. To prepare the "acidified ethanol" solution, pour 250 ml of alcohol into a flask. Add 2.5 ml of hydrochloridric acid to the alcohol and mix gently.

DOASPROP

PROPORTIONAL LINE DOSING

Dosaprop ensures adjuvant liquid to be added proportionally to the flow in line and ensures perfect homogenisation. Its operation is based on a sensor that detects the amount of liquid flowing within the tube by sending the pulse to the dosing system for the addition.

BENEFITS

- Proportional addition of liquid adjuvants
- Precision and perfect dosing uniformity
- Ease-of-use thanks to handy touchscreen

The Dosaprop range comes in two models:

- Dosaprop, also available in a version with two pumps, which allows two different products to be dosed proportionally in line. This device is available for systems with hourly flow rates from 6 to 60 hL/hour (use in wine), 5.5 Hp.
- Dosaprop Hi-Flow, which achieves flow rates of 100 to 1200 hL/hr (use in wine/must/crushed grapes).
- The dosage of adjuvants can be dispensed from a maximum of 3 pumps and can be configured from 1 to 730 L/hour. AEB recommends the following products
- Refining tannins (Ellagitan Barrique)
- Gum Arabic (Arabinol)
- New-Cel

ISIOX

SYSTEM FOR THE MANAGEMENT OF GASES DISSOLVED IN WINE

ISIOX is designed to optimize the various low molecular weight gases dissolved in wine in a simple, non-invasive way, with automatic and semi-automatic modes of operation. It allows standardized results and bottle shelf life improvement. ISIOX application allows to alter oxygen and carbon dioxide levels as well as remove hydrogen sulfide and methyl mercaptan. The system is beneficial and optimal for regulating gas concentration during the final stages of wine stabilization such as racking, transportation, refrigeration, or filtration and especially during bottling, without stripping. Through olfactory cleansing and elimination of light sulfurous compounds, ISIOX makes it possible to improve the organoleptic quality of the wine, adapting it to the tastes of the target market. The range of ISIOX over the years evolved adapting its characteristics more and more to the specific processing needs of customers.

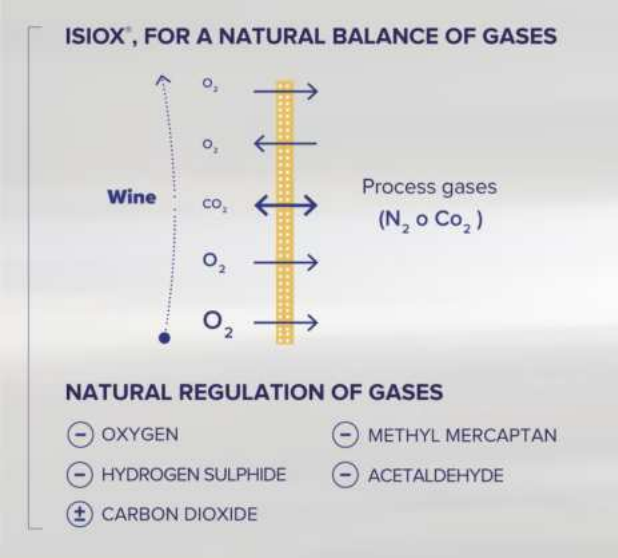
BENEFITS

- Processing of all types of wine
- Simple to use via user-friendly and intuitive interface
- Rapid integration into production lines
- Automatic and semi-automatic modes of operation
- Display of status parameters and alarms
- Reproducibility of the operating cycle and standardized results
- Automatic adjustments to flow rate fluctuations
- Casters for transportation

The range consists of several models

MODEL	FLOW RATE MAX (hL/h)
ISIOX 1 TECH	UP TO 60
ISIOX 2 TECH	UP TO 120
ISIOX 500 TECH	UP TO 500
ISIOX 1 LOGIC	UP TO 60
ISIOX 2 LOGIC	UP TO 120
ISIOX 3 LOGIC	UP TO 180
ISIOX 4 LOGIC	UP TO 240
ISIOX 5 LOGIC	UP TO 300
ISIOX 500 LOGIC	UP TO 500

* The LOGIC models provide for the measurement of dissolved oxygen and its automatic management. The automatic management of carbon dioxide, also for LOGIC models, is optional.



ISIOX technology enables the regulation of dissolved gases at the molecular level. The treated wine flows through a hydrophobic molecular sieve in counterflow to the technical process gas. The partial pressure difference results in the subtraction or addition of low molecular weight gases dissolved in the product. The system thereby provides the best alternative to stripping, preventing losses in aroma.

LIQUIFIER

Dissolving unit: equipment to solubilize chemicals and powders such as: Tartaric acid, gelatin, tannins, Bentonite, etc. The system is equipped with a mechanical powders dissolver, realized with the aid of the head of a vertical axis centrifugal pump and a conical powder containment hopper, also with vertical axis .The liquid suction point remains separate from the powder suction point, so as to exclude a reaction between the two, up to the point of contact exactly in the centre of the impeller. This is made possible by a double suction chamber, which together with the action of the liquid on the impeller, generates a Venturi effect on the powders. The high speed together with the friction of the liquid with the powders guarantees the best effect of prompt dissolution. The powders can be dosed with a shutoff valve located on the terminal of the conical hopper. The same valve is used to adjust the powder dissolving speed.

BENEFITS

- Time saving: the rate of slurry for Tartaric acid is about 25 kg every 30 seconds, plus some time in recirculation. With Benotnite the time is just a little more and requires slightly more recirculation.
- Safer work environment: reduces the exposure of the operators to the dusts deriving from the operations of pouring the bags of the commercial packages
- Quality: this system avoids contact with the air and in particular greatly reduces in-corporation of Oxygen into the solution, since it does not use the classic agitator with marine propeller.
- Precision: the fully accessorized model includes a PLC where the operator can decide a memorized recipe in order to standardize the concentration of certain slurries.
- Modular: Can be integrated with a dosing pump that can dose proportionally to the flow of a wine being transferred or sent to bottling.

CIP MIXER

AUTOMATED EQUIPMENT FOR WASHING AND RINSING OF TANKS, PIPES AND OTHER VESSELS

Cip Mixer range includes two main models:

- Cip Mixer Inox 1000 (available with 10 and 5.5 Hp washing pump), that allows prepared solutions in different concentrations and sets up automatically washing/rinsing cycles.
- Cip Mixer Eco, ideal to prepare the washing solutions (up to three products) in complete safety, simply setting the procedure through the touch screen.

Thanks to Cip Mixer, it's possible to completely clean tanks, pipes and any other vessel that needs to be sanitized. Just connect the various detergent products, compressed air, electricity and running water.

ADVANTAGES

- Completely independent operation
- Possibility to save up to 30 washing protocols
- pH check using pH meter
- Traceability of each process

MICROSAFE

ADVANCED EQUIPMENT FOR DOSING OXYGEN IN WINES AND MUSTS

THE IMPORTANCE OF MICRO-OXYGENATION AND MACRO-OXYGENATION OF WINE

Wine, from a redox prospective, is an unstable beverage susceptible to reduction, which hides the full richness of its varietal aromas and often releases unpleasant odors. In order to counter this phenomenon, wines must be micro-oxygenated, which means supplied with a precise and constant quantity of oxygen correlated to the proanthocyanidins content of the wine. This technique enables the stabilization of color and reduces the harshness of the tannins, thus softening them. Moreover, studies on the evolution of barrel-aged wine showed how ellagic tannins and micro oxygenation allows perfect development during the maturation process, preventing the oxygen from damaging the wine. In light of these observations, AEB has developed Microsafe O2.

ADVANTAGES

- Dosing of O2 in absolute value
- Automatic control through a microprocessor
- Different oxygen dosing methods: micro, macro and single dose
- Control of wine temperature
- Adjuvant dosing system managed directly by the micro-oxygenator
- No need for special calculations or error compensation tables
- Microsafe O2 is available in 3 different models:
- Microsafe O2 single unit, a single dosing unit to

control a single tank, featuring entirely digital settings: it allows easy, simple and safe selection of the oxygen dose to be added.

- Microsafe O2 5X5, allows the management of up to 5 tanks, starting from a central body. Compact and easy to mount, they allow rapid connection of the diffusers to the feed system.
- Microsafe O2 15X15, the micro-oxygenation system allows control of up to 15 tanks. It is made up of a central processor, which in addition to managing all the oxygen dosing satellites, also allows control of: the refrigeration systems and relative thermal power stations, the fermentation kinetics of the tanks, pumping over, punching down and sprinklers.

BLEND PUMP

Our blend pump is an accurate liquid transfer portable cart with a programmable schedule, network adaptability, precision speed control, safety sensors, manual modes, auto modes and many other custom options. Users input gallons required, speed of transfer and the pump will do the rest. The pump will then automatically stop at the designated input and shut down. Data is saved in power loss so you can start back where you left off. Mounted on a rolling cart w/ VFD, Mag meter, automated actuators, and override/pressure sensors.

Characteristics:

- IP66 rated, Class 1 div 2 controls cUL/UL approved
- Up to 500v 50/60 Hertz three phase
- Welded stainless steel construction
- Lightweight aluminum wheels with polyurethan tread and sealed bearings
- Dry pump and low flow safety override

- Electronic operated wafer valve with manual override
- Reverse flow floating ball valve
- Electronic mag meter
- High pressure safety sensor
- External E stop button
- Unit available in many sizes and options

FLOW METER CART

We offer 1.5”, 2”, and 3” MAG meters designed with a small footprints and ease of mobility throughout your facility. Our MAG meters carry a +/- 0.5% or +/- 0.2% accuracy depending on the model selected. This is accomplished in a flow lab with certified traceability to NIST(US) and other worldwide standards. This is possible because of special feature built into the electronics and a very precisely controlled magnetic flux. This unit is 110v and comes with a 50ft cord that is ready to run on delivery.

Characteristics:

- Welded stainless steel frame and tubing
- Wash down rated
- Totalizer reset button
- Volume flow + GPM on display
- Polyurethane wheels
- Light weight and small footprint

MUST PUMPS

Solid Capacity Centrifugal Pumps – Technicapompe

The screw-shaped impeller conveys the product into the pump casing. This enables the pump to be widely used in the wine industry for the wine recirculation process where the suspended products form, and integrity needs to be preserved. Special screw-shaped impeller, together with the progressively increasing volute-shaped casing prevent pump obstruction and damage to solid particles in suspension. Permits the wine must and part of the rising fermentation to remount together. It's micro cast screw-shape impeller produces a volute shape pump casing. It will not break down contents in the grape, so it enables maximum output, producing a high-quality wine with enhanced color. Can be mounted on a rolling cart w/ VFD or in a fixed position.

OPTIONS

- Mounted on a portable cart or stand alone with desired connections
- VFD with disconnect and 50ft cord
- Polyurethane/soft foam wheels

MULTIFOAM

MULTI-PURPOSE FOAMING NEBULISER FOR WASHING AND SANITISING SURFACES

Multifoam Inox is a multi-purpose foaming nebulizer for exclusive use on 18/8 AISI 304 stainless steel at low pressure. It is suitable for washing operations in all industrial settings. It allows to optimize each washing procedures in complying with high hygienic standards in production areas.

OUR EQUIPMENT GUARANTEES MAXIMUM CLEANING PERFORMANCE

Multifoam is designed by AEB ENGINEERING, the division specialized in the production of systems and equipment which, thanks to its know-how and 100% in-house and on-site production experience, guarantees the highest quality and reliability of AEB technology. AEB ENGINEERING is unique in that it provides constant support by our technicians, both during installation and in the after-sales stage. For an unparalleled service that is flexible and tailored to the customer needs.

BENEFITS

- Reduction of the time required for industrial sanitation
- Efficient dispensing of foaming detergents
- High versatility for the application of different products
- Easy handling thanks to the trolley with self-lubricating caster wheels

RANGE

Multifoam Inox is available with a 24 or 50 liter tank usable up to a pressure of 8 bar (can be loaded with normal compressors). It comprises:

- 70 cm wand consisting of: PVC hose (5 meters in the L24 model and 10 meters in the L50 model), 2 foam nozzles and 1 nebulizer nozzle
- Self-lubricating caster wheels
- Safety valve with direct discharge
- 0-12 bar pressure gauge
- Level indicator

The stainless steel structure avoids problems resulting from the corrosion of the iron tanks and is resistant to particularly aggressive chemical products.

CHAPTER 2

FILTRATION

AEB Group company

DANMIL

Based in Copenhagen, Denmark, since 1986 DANMIL has been successful in supplying filtration products to the pharmaceutical, chemical and beverage industries, complying fully with the latest cGMP standards and governmental regulations. A department of our production facility has been laid out to offer maximum flexibility for the production of custom-made products tailored to specific customer application needs. All Danmil products are composed of the highest quality materials and conform to:

- 21 CFR-177 FDA food & drug contact regulations
- Latest USP class VI-121 °C systemic Injection Test – Intraperitoneal Administration
- Cytotoxicity Growth Inhibition Test
- Physicochemical test (USP 27) chapter < 661>
- FDA LAL – Guideline (3) and USP
- Reverse Mutation Assay using Bacteria

Our achievements are measured and checked according to current FDA, USPX, ASTM and Governmental legislations by a registered independent cGMP laboratory.

RANGE OF PRODUCTS

ABSOLUTE PES	Absolute PES Plus
Porosity 0,22µ-0,8µ-1,2µ	Porosity 0,45µ-0,65µ
Standard inner core	Stronger inner core (higher temperatures)
4 layers	3 layers
112 foldings	145 foldings
Folding height 10,6 mm	Folding height 10,9 mm
0,68 m² for 10" module	0,8 m² for 10" module
New sealer used for welding	New sealer used for welding

Absolute PES final membranes:

Hydrophilic polyethersulfone membrane with asymmetric pore structure, with no electric charge.

- Absolute porosities available: 0,2Qm - 0,45Qm - 0,65Qm - 0,8Qm - 1,2Qm
- Membrane integrity testable multiple times.
- Wide compatibility with regenerating and sanitizing products.
- Food grade.
- Configuration suitable for frequent chemical regenerations using AEB Membrane UF.
- The membranes used in ABSOLUTE PES cartridges are tested and validated.
- All ABSOLUTE PES cartridges are subjected to a double integrity test:
  - every single module before assembly
  - the entire filter element assembled before delivery
- This exclusive DANMIL validation system ensures the absolute integrity of the filter element.

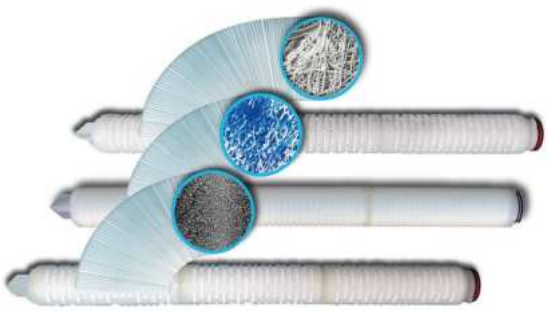
Absolute AEB PES cartridges integrity test:

- Wash the line for 3-5 minutes opening and closing the exit valve. This step needs to ensure the cartridge membrane is well wet.
- Reach 1/1.5 pressure.
- Close water inlet in the housing and purge out most of the excess water, opening the Nitrogen valve next to the manometer.
- Close the outlet valve in the housing and generate a pressure (1.5 bars for 0.45 and 1 bar for 0.65) using the nitrogen valve next to the manometer.

- Open the outlet valve and check for pressure fall.
- If the pressure holds for 5 minutes the cartridge is ok. If the pressure falls it means that there are pores bigger than 0.45 or 0.65 (depending on what membrane was tested) and the filtration is no longer absolute.

Settings for automatic integrity testers:

- Test program: pick the number you'd like to assign to our cartridges
- Pore size: 0.45
- Maximum diffusion per filter cartridge built into the housing: 25 liters/minute if using air, 23 liters/minute if using Nitrogen
- Test pressure: 1,400 millibar (for the .45 cartridge)
- Number of cartridges: this is how many cartridges you have in the housing
- Net volume: to calculate this you'll have to find out the volume of the housing (written in the housing itself or in the literature provided by the housing manufacturer) and subtract the volume occupied by the cartridges (which is equal to 2,559 x number of cartridges in the housing).
- Stabilization time: 60 seconds
- Test time max: 300 seconds
- Standard pressure: 1,000 mbar



Absolute PP pre-filter cartridges:

- Thermo-welded polypropylene filter plate, with no electric charge
- Porosity 0,6 - 1 - 3 - 5 - 10 - 20 Qm, with absolute particle degree ß 5000
- Wide compatibility with regenerating and sanitizing products
- In accordance with regulations for contact with food
- Configuration suitable for frequent chemical regeneration
- Absolute PP filter elements can be repeatedly regenerated also in back-flow, sanitized with hot water max 80°C, sterilized with steam up to 121°C. They can also be used in hot caustic cycle, even with peroxide.

REGENERATION OF FILTRATION CARTRIDGES:

Always make sure to give a first rinse with cold water to remove dirt and avoid "cooking" proteins with hot water. Start washing with cold water in the same direction used for filtering the wine. Every filtering unit (housing) needs to be washed separately so that dirty water isn't pushed into another unit. The flow should be equal to 1.5 the flow used during bottling. During the wash it is recommended to partially close the butterfly valves on the outlet of the housings in order to create a good turbulence. When done perform the same process but using hot water (50-60°C) and with a caustic cleaner like Membran UF.

Highlight:

- Pre-filters resist to back-flow regeneration better than membranes.

Membran UF: medium alkalinity and high

sequestering liquid detergent, to be used for the cleaning of membranes in all sectors of food industries, beverage bottling and pharmaceutical.

Membran UF is able to easily remove organic and inorganic residues from membranes, restoring the normal flow levels. It's suitable also for hard waters.

Technical characteristics: physical appearance: light yellow clear liquid pH (1% solution at 20°C): 12,0 3 0,5 Relative density at 20°C: 1,25 3 0,05 Conductivity 1% sol. at 25°C: 6,9 mS/cm.

(The above indicated chemical-physical data represent the typical product's characteristics drawn from the analysis carried out on the product. These values are not a specification).

Directions for use:

Use Membran UF at variable concentrations from 0,5 to 1%. We suggest temperatures between 40 and 60°C with recycling times of at least 40' in the case of UF and MF Membranes.

Handling and storage: store in the original containers and avoid extreme temperatures. Consult the Material Safety Data Sheet.

Filtration sheets and pressure filters:

AEB-Danmil supplies a full line of filtering sheets and pressure filters of the highest quality.

DANMIL 100 / 110 / 130 / 140	
STERILIZING FILTRATION WITH REDUCTION OF MICROORGANISMS	
CHARACTERISTICS	APPLICATIONS
HIGH RATE OF MICROBIOLOGICAL RETENTION, POSSIBLE THANKS TO THE NARROW-PORED STRUCTURE OF THE FILTER MEDIA, COMBINED WITH AN ELECTROKINETIC POTENTIAL WITH ADSORPTION ACTION (CHARGED).	IN STERILE COLD BOTTLING, IN ORDER TO IMPROVE THE SHELF LIFE OF WINES, BEER AND JUICES. AS PRE-FILTERS UPSTREAM OF MEMBRANE FILTRATION, THANKS TO THE HIGH RETENTION CAPACITY OF COLLOIDAL COMPONENTS.
DANMIL 40 / 40 HF / 50 / 70 / 85 HF	
FILTRATION WITH REDUCTION OF MICROORGANISMS AND MICROFILTRATION	
CHARACTERISTICS	APPLICATIONS
THEY ALLOW TO REACH HIGH LEVELS OF CLARIFICATION FOR THEIR EFFECTIVE RETENTION CAPACITY OF THE FINEST PARTICLES AND MICRORGANISMS.	STORAGE AND BOTTLING OF MICROBIOLOGICALLY STABLE WINES.
DANMIL 06 / 09 / 12 HF / 15 / 20 HF / 30	
ROUGH, POLISHING FILTRATION	
CHARACTERISTICS	APPLICATIONS
THEY HAVE A HIGH VOLUME HOLLOW STRUCTURE AND A HIGH TURBIDITY ABSORPTION CAPACITY.	POLISHING OF THE PRODUCT, BE IT WINE, BEER, OIL OR JUICES.

DANMIL RANGE OF FILTERING SHEETS:

Composition of AEB filtering sheets and Modules:

- Cellulose: gives electric charge, resistance and flexibility to the layer, allowing it to move and have a certain breaking capacity (if it was not there it would be like using a rigid cardboard that would break on first use).
- Diatomaceous earths: to close the pores and to make a sterilizing layer. Sheets with higher permeability have a lot of cellulose and little flour, while the tight ones are almost exclusively with DE with little cellulose. This is because the pore must tighten and get to a sterilizing micrometry to retain yeasts and bacteria.
- Perlite: to make the sheets more rigid and sturdy.
- Synthetic resins: sprayed on the filtering layer when it's almost complete. It's an additive that has the role of "binding" the mixture and also to give more positive electric charge to allow the sheet to stop colloids yeast and bacteria that normally have a negative charge. The rougher side of the filter sheet is the one with the widest pores. Make sure to load the sheet with the rougher part facing the inlet of the wine. The rough face is the pre-filter to the smooth face.

Total volume of wine that can be filtered through a set of sheets:

Recommended flow (absolute number) times 8.

i.e.: 30 of the 40x40 rough filtering sheets:

140 x 30 x 8 = 336 Hl or about 9,000 gallons.

Recommended flow for filtering sheets (any brand):

Rough filtering sheets: 1,000 l / m / hr:

20x20 = 30 l / layer / hr

40x40 = 140 l / layer / hr

60x60 = 330 l / layer / hr

Sterilizing sheet: 500 l / m / hr:

20x20 = 15 l / layer / hr

40x40 = 70 l / layer / hr

60x60 = 160 l / layer / hr

PRE-COAT AND STRAIGHT PERLITE FOR FILTRATION

AEB offers a superior alternative to DE based filtration aids. For over 30 years we have pioneered a process that combines both scientifically and environmentally sound technology to develop Fibroxcel an Silite, a perlite based filtration aids. Currently, most of the filtration earths available in the market are based on Diatomaceous earth (which consists of fossilized remains of diatoms, a type of hard shelled algae). On the contrary, Fibroxcel and Silite are based on perlite and integrated with charged fibers of cellulose and cotton. Perlite is a generic name for naturally occurring siliceous volcanic rock. A unique property of perlite is that it expands up to 20 times its original volume when it is heated to its softening range. This expansion process is caused by the presence of water in the crude rock. When perlite is rapidly heated to above 850°C (16,000°F), this water vaporizes and causes the softened rock to expand. Tiny glass-like bubbles are produced which account for the lightweight and exceptional physical properties of expanded perlite. These lightweight glass-like bubbles are then milled and classified under stringent quality control conditions to produce perlite filter aids. This material exhibits a unique, jagged, interlocking structure with myriads of microscopic channels that guarantee optimum flow rates and clarities for a wide variety of applications. Perlite filter aids do not impart taste, color or odor to liquids being filtered and they are virtually insoluble in mineral and organic acids at all temperatures.

Advantages of perlite over DE and other filter aids: perlite based filter aids provide the user with a density advantage of 20% compared to DE, which is an important consideration when comparing costs and mass of material to dispose. Perlite in Fibroxcel and Silite have a density of 5 to 7 lb/ft3, whereas the density of DE ranges from 11 to15 lb/ft3. Experience in a variety of applications in many industries has shown that users of filter aids can substantially reduce filtration costs without sacrificing performance by converting to perlite filter aids. Finally, perlite is safer for the operator and much easier to dispose.

Product	Permeability Average (Darcy)
FIBROXCEL 30	0,30
FIBROXCEL 10	1,65
FIBROXCEL VAC	4
SILITE MINI SPEED	0,29
SILITE HIGH SPEED	2,11

Fibroxcel 10: pre-coat with 10% fibers for gross filtration.

Permeability = 120 l (30 gallons)/m2/minute.

Dosage: 0.5-1 kg (1-2.2lb)/m2 of filtering area for the formation of the pre-coat or in variable doses between 50 to 500 g/hl (4-40 lb/1,000 gallons) for the body feed filtration.

Fibroxcel 30: pre-coat with 30% fibers for polishing filtration.

Permeability = 50 l (13 gallons)/m2/minute.

Should be used in a variable dose between 0.8 and 1kg (1.7-2.2l b)/m2 of filtering surface for building up the pre-coat, 20 and 80 g/hl (1.5-6 lb/1,000 gallons) for the body feed filtration.

Fibroxcel VAC: vacuum filters tend to have an extremely compact layer of earths that eventually breaks or plugs, Fibroxcel VAC mixed at 10% with the DE used for the filtration guarantees a smooth cut of the top layer and, thanks to its softening action, delays plugging of the cake and prevents cracks. The drum cut is linear and micrometric, with a noticeable increase in the total filtration capacity, with the result of a more satisfactory yield. The addition of Fibroxcel Vac makes it possible to treat very quickly suspensions loaded with hazy matter, which would require a great work to discharge coats, with the assurance of an excellent result. Fibroxcel Vac can also be used in conjunction with the body feed in pressure filters for particularly hazy musts and concentrates.

Silite mini speed: this is a very fine perlite, with low flow-speed, used for tight filtrations, especially the polishing ones.

Permeability l/m2/minute: 68-77, specific weight when wet: 0,21-0,23.

Applications: final filtrations of wines, vinegars, dry spirits, beer, oils, juices, distillates.

Silite high speed: the high permeability of this perlite, makes it ideal for filtering very

hazy liquids with a high content of suspended solids. It is classified as a perlite for coarse filtrations.

Permeability l/m2/minute: 200-240, specific weight when wet: 0,16-0,18.

Applications: coarse filtrations of musts, worts, cloudy wines, thick spirits or syrups.

CHAPTER 3

DETERGENTS

WATER AND TIME SAVING DETERGENTS FOR THE WINERY

Use these products to conserve water and man hours to clean wine tanks, filters and anything that can stand a caustic wash. In a side-by-side comparison of the Removil + Remoxan cleaning system to the traditional caustic cleaning, followed by a water rinse, then citric acid neutralization step followed by a sterilizing step, the Removil detergent and Remoxan additive combination use significantly less water and man hours. Bioluminescence testing showed the tank to be clean and sterile. Wastewater discharge has been reduced by at least 50%. Man-hours to clean a tank have also been reduced by 50% or more (this translates into longer life for the tank washer as well).

Removil: a powder alkaline detergent with a superior blend of builders, water conditioning

and wetting agents that can remove the toughest organic matter including tartrates.

This detergent is specifically designed for cleaning tanks, CIP systems, equipment and more.

Pack Size – 50lb pail / 480 lb drum

Removil K: a complex detergent that is potassium based. It's blend of builders, water conditioning and wetting agents can remove the toughest organic matter including tartrates. This detergent is specifically designed for cleaning tanks, CIP systems, equipment and more.

Pack Size – 50lb pail / 480lb drum

Remoxan: a highly concentrated hydrogen peroxide based formulation for use in the food & beverage industries. It's used in combination with Removil or Removil K provides superior cleaning of all tanks, lines and equipment in processing facilities. Remoxan is readily biodegradable and chlorine free.

Pack Size – 50lb pail / 480lb drum

Usage:

1. Dilution varies according to soil conditions. Start by mixing 4lbs of Removil K to 100 gallons of water and increase as needed to achieve ph 12. Water temp should be minimum 150°F or higher
2. Add Remoxan at 6 oz. per 100 gallon of water.
3. Allow solution to penetrate organic matter for 20-30 minutes depending on thickness of deposit.
4. Rinse tank for 30-35 minutes or until the water discharge reaches winery water pH of 7.2.

The rinse cycle depends on the size of the tank that has been washed. Removil K can be used for several washes before it loses efficiency

SPECIALTY

Membran UF is a medium alkalinity and high sequestering liquid detergent, to be used for the cleaning of U F&M F membranes present in all sectors of food industries, beverage bottling and pharmaceutical sector. Membran UF easily removes organic and inorganic residues from membranes, restoring the normal flow levels. Suitable also for hard waters.

Pack Size - 5 Gal Pail / 55 Gal Drum

Usage: use membrane UF at variable concentrations from 0.5 to one period we suggest

temperatures between 120°F and 140°F with

recycling times of at least 40 minutes in the case of UF and MF membranes. Before the application of the product, it is necessary to verify the indications of tolerance to pH value and temperature of the membranes, indicated by the producer on the SDS. Carry out a careful final rinsing with drinking water in order to remove any possible trace of product.

Liquid Caustic Soda Cip Detergent is a liquid caustic detergent specifically formulated to be used in clean-in-place circulation systems. Used at high dilution rates for greater economy. Can be used in meat, beverage, fruit and vegetable processing CIP applications.

Pack Size - 5 Gal Pail / 55 Gal Drum

X-Wash A is a highly concentrated foaming detergent used in combination with X-Wash B to clean exterior tank surfaces. It's proprietary blend of builders, surfactants and other ingredients provide superior cleaning and economy. Removes common soil that builds up on tanks. No harsh chlorine.

Pack Size - 55 Gal Drum

X-Wash B is a highly concentrated additive used in combination with X-Wash A to clean exterior tank surfaces. Its unique formulation blended with X-Wash A has a greater cleaning power, efficiency and soil removal. Removes common soil that can build up on tanks. No harsh chlorine.

Pack Size 30 Gal Drum

Usage Directions:

- Dilution rates vary according to soil condition:
- Light Duty Cleaning - 10:1
- Medium Duty Cleaning - 8:1
- Heavy Duty Cleaning - 5:1

1. Start by mixing X-Wash A (5-10):1 depending on soil level and surface being cleaned. Water temp should be minimum 140°F or higher.
2. Add X-Wash B to solution at 3oz. per gallon.
3. Apply X-Wash A & B to surface being cleaned. Let solution penetrate organic matter for at least 5 minutes or more depending on thickness of deposit.
4. Rinse tank or equipment being cleaned thoroughly and let air dry.

Sulfuric Acid 20% is used to recharge resin in a AEB ionic exchange machine.

Pack Size 55 Gal Drum

SANITIZERS

AEB's line of sanitizers for the winery are EPA registered and can be used to disinfect a variety of surfaces in the winery including tanks, hoses and more.

Perasan "A" is a food grade sanitizer used in the dairy, food and beverage processing industry for CIP pipeline cleaning, sanitizing, bottle and filler sanitizing, and disinfection. It is also used in the treatment of cooling water, process and wastewater.

Pack Size 5 Gal Pail / 53.5 Gal Drum

Usage: Consult your AEB representative for proper usage instruction

Quat Sanitizer II is designed for use in hotels, schools, food processing plants, food service establishments, restaurants and bars where disinfection, sanitization and deodorization are of prime importance.

Pack Size 5 Gal Pail / 55 Gal Drum

Usage: Concentrations and use directions vary

depending on application. See container label for specific instructions. Mix with room temperature, water, and check quat concentration with the included test strip. 200 to 400 ppm(0.25-0.5 ounce per gallon of water) are required for most applications.

TANK WASHING TIPS

- Remove all large and loose debris from the tank with a quick water rinse before using cleaning solutions on debris that can be removed in this manner.
- Always empty the tank completely between cycles as some debris particles will float and tend to remain in the tank from cycle to cycle when not completely emptied.
- Use products in the recommended proportions.
- Dissolve all chemicals in a mix tub before adding to the body of water in the tank to eliminate clumping of dry chemicals at the bottom of the tank.
- When reusing the solution, test the pH of the discharge solution before moving it to another tank. The desired pH is 13. Strengthen the solution if necessary to bring it back to the desired pH before starting on the subsequent tank.
- Test pH of rinse water to make sure you have returned to the pH of the winery water and that you are not using an unnecessary amount of rinse water.
- Strengthen the Remoxan every third tank.
- Do not use unusually dark colored solution or solution full of debris particles from a previous tank washing.

CHAPTER 4

HOSES AND FITTINGS

AEB has the ability to meet any of your winery/ brewery needs. We offer a broad selection of hoses and fittings. We have a fabrication shop in Lodi and a fabrication / machine shop in Fresno.

We are always expanding our versatility in making custom fittings and hoses. Please contact your local rep With any inquiries and we will be happy to help.

Beverage Hose at a Glance

	Description	Tube	Cover
RUBBER HOSE			
 **Aquapal®**	Braided potable water hose manufactured to European standards.	Special	NBR
 **Clearwater**	Clearwater is a WRAS-approved suction hose suitable for handling drinking water for domestic purposes. Liner is NSF-61 listed material.	Special	EPDM
 **Collector®**	The ideal brand-name hose for the reliable and safe use on milk collection vehicles.	NBR	NR
 **Deep Blue**	The ideal hose whenever it comes to conveying potable water in the food and beverage industry. Liner is NSF-61 listed material.	Special	SBR
 **Distillery 150**	Suction hose to convey high proof alcohol and other liquids (e.g., whiskey, vodka) up to 100% per volume. Full vacuum.	UHMWPE	EPDM
 **Drinkline**	A quality discharge hose designed specifically for the highly demanding service of transferring non-oily liquid products in wineries and breweries.	Chlorobutyl	EPDM
 **ExtremeFlex™ Beverage Gray**	Advanced formulation and construction that creates an incredibly durable and flexible hose at a great value. Primarily for beverage and non-oily material transfer.	Chlorobutyl	Chemivic
 **ExtremeFlex™ Beverage Red**	ExtremeFlex™ construction developed further: corrugated EZ Clean cover for added abrasion resistance and easy cleaning.	Chlorobutyl	UHMWPE
 **ExtremeFlex™ Food Grade**	A high-tech, flexible corrugated hose with pretzel-like agility and proven performance. Good for both liquid and dry food transfer.	NBR	Chemivic
 **EZ Glide Wine™**	Economic hose to handle non-oily beverages. Suction capability up to vacuum 20' hg. Light, easy to handle.	Chlorobutyl	Chemivic
 **Gray Flextra® LT**	Extra flexible suction and delivery hose for a wide range of products.	NBR	Chemivic
 **Purple Snake®**	World's number 1 hose for the brewing and beverage industry, following German traditions; handles up to 98% alcohol.	EPDM	EPDM
 **Trix® Multifood**	The versatile sprial-reinforced hose for the food industry.	NBR	NBR
 **Vintner™ Reserve**	Tradition developed further. Lighter and easier to handle with all the same features as of its predecessor. Vintner™ Reserve is for the future.	Chlorobutyl	Gray EPDM
 **White Flexwing®**	Extra-flexible suction and delivery hose for a wide range of products. Suitable for fatty and non-fatty food products. Great choice for the dairy industry.	NBR	Chemivic
PVC HOSE			
 **Pliovic® FG (FDA-3A)**	Versatile, lightweight, with reinforced tubing for the food and beverage industry. Liner is NSF-61 listed material.	PVC	Pliovic®
 **Velocity™ Beverage Transfer Hose**	Lightweight, flexible PVC hose for milk processing, wineries and breweries.	PVC	Pliovic®
WASHDOWN HOSE			
 **Blue Fortress® 300 with Microban® PP**	A high-quality construction for hot water up to 200°F (93°C) in cleanup service at food processing plants, dairies, packing houses, bottling plants and breweries.	NBR	Carbryn™ with Microban®
 **Fortress® 3000 with Microban® PP**	Hose to be used on pressure washer machines with working pressures up to 3000 psi. Widely used in the food and beverage industry.	NBR	Carbryn™ with Microban®
 **Poseidon**	Superior washdown hose that handles most of cleaning chemicals.	NBR	Chemivic
 **Super Sani-Wash™ 300**	Economic washdown hose with EPDM liner.	EPDM	EPDM

Working pressure ratings for all hoses are based on 70°F. As temperature increases, working pressure will be decreased.

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Suction Discharge	WP/BP	Temperature	Size	Standards	Safety Factor	Applications
RUBBER HOSE						
Yes	290 psi (20 Bar)/ 870 psi (60 Bar)	-22°F to 194°F (-30°C to 90°C) [steamed up to 266°F (130°C) max. 30 minutes]	⅛"-4"	DVGW W270, DVGW VP 549, WRAS, FDA, EG 1935/2004, EG2023/2006 & EU 10/2011	3:1	
Yes	200 psi (14 bar)/ 800 psi (56 bar)	-40°F to 212°F (-40°C to 100°C)	½"-4"	FDA, USDA & WRAS	4:1	
No	87 psi (6 bar)/ 261 psi (18 bar)	-40°F to 158°F (-40°C to 70°C) [steamed to 194°F (90°C) max. 20 minutes]	1½"-4"	FDA, XXI Cat. 2 of BfR, EG 1935/2004, EG 2023/2006	3:1	
No	150 psi (10 bar)/ 600 psi (40 bar)	-40°F to 150°F (-40°C to 66°C)	¾"-4"	FDA & USDA	4:1	
Yes	150 psi (10 bar)/ 600 psi (40 bar)	-40°F to 212°F (-40°C to 100°C)	1"-4"	FDA & USDA	4:1	
No	250 psi (17 bar)/ 1000 psi (68 bar)	-40°F to 220°F (-40°C to 104°C)	¾"-4"	FDA, USDA & 3-A 18-03	4:1	
Yes	See Details	-30°F to 220°F (-34°C to 104°C)	1½"-4"	FDA, USDA & 3-A 18-03	4:1	
Yes	See Details	-30°F to 220°F (-34°C to 104°C)	1½"-4"	FDA, USDA & 3-A 18-03	4:1	
Yes	150 psi (10 bar)/ 600 psi (40 bar)	-25°F to 212°F (-32°C to 100°C)	1½"-4"	FDA, USDA & 3-A 18-03	4:1	
Yes	150 psi (10 bar)/ 600 psi (40 bar)	-20°F to 180°F (-29°C to 82°C) [max. 200°F (93°C) for cleaning purposes only]	1½"-3"	FDA, USDA & 3-A 18-03	4:1	
Yes	150 psi (10 bar)/ 600 psi (40 bar)	-25°F to 212°F (-32°C to 100°C)	1½"-5"	FDA, USDA & 3-A 18-03	4:1	
Yes	230 psi (16 bar)/ 700 psi (48 bar)	-22°F to 194°F (30°C to 95°C) [steamed up to 266°F (130°C) max. 30 minutes]	1½"-4"	XXI Cat. 2 of BfR, EG 1935/ 2004 & EG 2023/2006	3:1	
No	290 psi (20 bar)/ 870 psi (60 bar)	-4°F to 194°F (-20°C to 90°C)	½"-1"	FDA, EG 1935/2004 & EG 2023/2006	3:1	
Yes	250 psi (17 bar)/ 1000 psi (68 bar)	-30°F to 220°F (-34°C to 104°C)	1"-4"	FDA, USDA & 3-A 18-03	4:1	
Yes	150 psi (10 bar)/ 600 psi (40 bar)	-25°F to 230°F (-32°C to 110°C)	¾"-5"	FDA, USDA & 3-A 18-03	4:1	
PVC HOSE						
No	See Details	-10°F to 158°F (-23°C to 70°C)	¼"-1½"	FDA, USDA, NSF-61 & 3-A	4:1	
Yes	See Details	-13°F to 140°F (-25°C to 60°C)	½"-4"	FDA, USDA, NSF-61 & 3-A	4:1	
WASHDOWN HOSE						
N/A	300 psi (21 bar)/ 1200 psi (44 bar)	-20°F to 210°F (-29°C to 99°C)	½"-1"	FDA, ARPM Class A (High Oil Resistance)	4:1	
N/A	3000 psi (207 bar)/ 12000 psi (820 bar)	-20°F to 250°F (-29°C to 121°C)	¼"-½"	ARPM Class A (High Oil Resistance)	4:1	
N/A	300 psi (21 bar)/ 1200 psi (44 bar)	-20°F to 210°F (-29°C to 99°C)	½"-1"	ARPM Class A (High Oil Resistance)	4:1	
N/A	300 psi (21 bar)/ 1200 psi (44 bar)	-40°F to 210°F (-40°C to 99°C)	½"-1"	N/A	4:1	

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VPS FITTINGS

VALLEY PIPE & SUPPLY

Valley Pipe and Supply has recently been obtained by AEB. This brings new fittings and equipment to AEB's growing lineup. We are going to continue making the well-known PCT fittings as well as the tried and true Valley pumps. Along with many other custom fittings that AEB currently can make, this will allow us to fulfill all of your winery/brewery needs.

PART NO.	DESCRIPTION	SIZES	BRONZE	STAINLESS STEEL
No. 197-N	Hose Nut	1" • 1-1/2" • 2" • 3"	•	•
No. 197-Fe	Hose Shanks	1" •1-1/2" • 2" • 3"		•
No. 197-Ma	Hose Shanks	1" • 1-1/2" • 2" • 3"		•
No. 137	PCT-Hose Caps	1" • 1-1/2" • 2" • 3"	•	•
No. 198	Dbl-female Connector S.S. Sleeve	1" • 1-1/2" • 2" • 3"	•	•
No. 140	PCT x IPS male Hose Nipple	1" • 1-1/2" • 2" • 3"	•	•
No. 141	Pin-Lug PCT Dbl-Male Hose Connector	1" • 1-1/2" • 2" • 3"	•	•
No. 142	PCT Hose Reducers	1"x 3/4" thru 4" x 3"	•	•
No. 138	PCT Hose Bushings	1"x 3/4" thru 4" x 3"	•	•
No. 149N	Wash-Down Nozzles	1"	•	
No. 311	PCT x Tube Adapter	1" • 1-1/2" • 2" • 3"		•
No. 197-F	Female Ferrules	1" • 1-1/2" • 2" • 4"		•
No. 175	Manganese-Bronze Spanner Wrench	3" x 2"	•	

AEB FITTINGS

AEB STAINLESS STEEL FITTINGS

ITEM	DESCRIPTION	SIZES	WELDABLE	TRI CLOVER	THREADED
	Butterfly Valve	1-1/2" • 2" • 3"	•	•	
	Pull Handle Butterfly Valve	2" • 3" • 4"		•	
	Butterfly Valve EPDM Replacement Gasket	1-1/2" • 2" • 3"			
	Sample Valve	1-1/2"	•	•	
	Ball Valve	Please Request Sizes		•	•
	Sight Glass Replacement Gasket	1-1/2" • 2" • 3"			
	Sight Glass Replacement Glass	1-1/2" • 2" • 3"			
	Sight Glass with Protective Cover	1-1/2" • 2" • 3"		•	
	TC Clamp	1-1/2" • 2" • 3"			
	High Pressure TC Clamp	1-1/2" • 2" • 3"			
	Buna Gasket	1-1/2" • 2" • 3" • 4"			
	Cross	1-1/2" • 2" • 3"	•	•	
	Tee Equal	1-1/2" • 2" • 3"	•	•	
	90° bend	1-1/2" • 2" • 3"	•	•	
	45° bend	1-1/2" • 2" • 3"	•	•	
	TC Fitting STD/LONG	1-1/2" • 2" • 3"	•		•
	Concentric Reducer	Please Request Sizes	•	•	
	TC Cap	1-1/2" • 2" • 3" • 4"		•	
	Cam Lock Type A MCAM	Please Request Sizes			•
	Cam Lock Type D FCAM	Please Request Sizes			•
	Din Union Assembly	32mm • 40mm 50mm • 80mm	•		
	Din Gasket	32mm • 40mm 50mm • 80mm			

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