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Brennereitechnologie

## CADUREX water-softener

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### Technical informations and use instructions

#### General information:

The dilution of high-per cent alcoholic distillates with hard water results in white turbidities and the formation of precipitations and sediments. The cause for this is the substantially smaller solubility of salts of calcium and magnesium in mixtures of alcohol and water than in pure water.

The use of softened blending water is necessary to avoid such turbidities in potable spirits.

#### Operating principle of the CADUREX water-softener:

The **CADUREX** water-softener is filled with a synthetic resin, an ion exchanger granulate (LEWATIT®). This granulate extracts calcium and magnesium ions from the water running through and delivers in the exchange sodium ions into the water. Sodium salts are simply soluble and don't form any precipitations in spirits.

The softening capacity of the LEWATIT® filling depends on the hardness of the water. The following quantities of water can be softened with the **CADUREX** between two steps of regeneration:

800 Liter bei 15° dH	600 Liter bei 20° dH
400 Liter bei 30° dH	300 Liter bei 40° dH

**10° dH correspond to 67mg Ca<sup>++</sup>/litre**

As soon as the granulate will be exhausted, it should be regenerated by a concentrated aqueous solution of pure sodium chloride (regeneration salt, No. 6508). In order to recognize the exhaustion of the granulate in time, we recommend to check the water hardness with the rapid test set DUROVAL (No. 6500) from time to time. If the softened water running off reaches a degree of hardness of 4° dH or more, the **CADUREX** has to be regenerated.

#### Technical manual:

The **CADUREX** water softener consists of a food grade plastic tube (height: 650 mm, Ø: 110 mm). The filling consists of 3 litres LEWATIT®. The tap water inlet is fixed approx. 20 mm above the base plate. The outlet drain is fixed approx. 20 mm below the removable top plate.

#### Scope of supply:

- hose (2m long) with pinchcock for the connection to the water tap and/or to the regeneration bucket
- 2 litres-measuring beaker from plastic for the adjustment of the water flow rate
- 2 kg of regeneration salt

#### Only on request:

- regeneration bucket with integrated outlet fitting (No. 6513)

#### Important:

1. The **CADUREX** water-softener has to be stored always at temperatures between 5 and 25°C in order to avoid the damage of the synthetic resin granulate and/or the equipment.
2. The **CADUREX** is not pressure resistant (in contrast to our water-softener **AQUA compact**). The softened water has to run off always freely, so that the equipment can never be under pressure.
3. The granulate is to be kept always damp. Therefore the **CADUREX** has always to be filled with water. In order to prevent the decay of the water in the not used equipment, you should run some litres of perfect drinking water through the **CADUREX** every month.
4. For the regeneration the use of pure regeneration salt (sodium chloride) is recommended. Commercial cooking salt contains beside sodium chloride other salts as trickling aids, which would reduce the regeneration capacity of the LEWATIT® granulate, but also its life span.

**Preparations for first operation:**

- Connect the free end of the hose with the outlet fitting of the regeneration bucket;
- close the pinchcock;
- fill the bucket with 8 litres of tap water and add and dissolve 2 kg of regeneration salt;
- put the bucket approx. 1 m above the **CADUREX**;
- open the pinchcock and run the salt solution into the **CADUREX**, until liquid flows off the soft water outlet tube;
- close the pinchcock and keep a regeneration rest of ten minutes;
- open the pinchcock;
- run the remaining salt solution with a flow rate of approx. 1,5 to 2 litres per minute through the **CADUREX**. Dispose the initially flowing out dark-brown colored liquid, approx. 3 litres. Collect the remaining quantity (approx. 5-7 litres) for the renewed run through the **CADUREX**;
- close the pinchcock;
- disconnect the regeneration bucket and connect the hose to the water tap;
- open the pinchcock;
- open the tap so that the remaining salt solution resp. softened water runs out the **CADUREX** with a flow rate of 1,5 to 2 litres per minute (control by the measuring beaker).
- Dispose the softened water as long as it tastes salty;
- the **CADUREX** is now ready for use.

**Water softening:**

- Open tap and run the water with a flow rate of 1,5 to 2 litres per minute;
- check water hardness with the rapid test set DUROVAL from time to time. As soon as the hardness exceeds 4° dH the **CADUREX** has to be regenerated;
- prepare blending water always freshly, avoid storage in plastic containers for longer time.

**LEWATIT®- Regeneration:**

- disconnect the hose from the water tap;
- open the pinchcock and discharge the water yet present in the **CADUREX**;
- continue as described under „Preparations for first operation“.

**Further recommendations:**

The pinchcock is provided with a grid to vary and control the water flow exactly. Higher flow rates reduce the softening performance.

Before disconnecting the hose from the tap or regeneration bucket please close always the pinchcock to avoid the unwanted emptying (exception: Emptying during regeneration).

Impurities of the tap water or the regeneration salt, manganese and iron ions reduce the softening capacity of the synthetic resin granulate. In those cases the dirty LEWATIT® filling can be cleaned in a plastic bucket with a 0,5% solution of hydrochloric acid. The impact time amounts to 5 minutes. Afterwards the granulate has to be rinsed thoroughly with water and to be regenerated as described.

Extremely dirty synthetic resin granulates has to be renewed.

For the removal of the LEWATIT® filling from the **CADUREX** open the screws in the top plate and remove the plate. Tip out the granulate and rinse the **CADUREX** with water.

Fill the new granulate into the cleaned **CADUREX**. Close the instrument by well tightening the screws. LEWATIT® has to be stored protected against frost, too!

