

PROPORTIONING SEQUESTERING AGENT UPSTREAM REVERSE OSMOSIS	EXP 51
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Sequestering agents are widely used products in membranous pre-treatment techniques, especially as far as reverse osmosis is concerned.

Very active and performant, sequestering agents help limit and prevent clogging problems with reverse osmosis membranes.

They act as inhibitors in the maturation process with crystallisation germs in compounds that have reached their solubility limit.

<p style="text-align: center;"><u>SAFETY</u></p> <p>As all chemicals, elementary safety rules have to be observed when using, transferring or manipulating sequestering agents.</p> <p>When intervening on the proportioning system, the latter shall have to be stopped imperatively to prevent any untimely triggering.</p>
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Proportioning

Proportioning is determined on:

- starting the analysis of water to be treated,
- setting up the operational characteristics of the reverse osmosis unit.

Modifications in nature of the water to be treated, or in the operational parameters of the dialyzer, can generate changes in the sequestering agent proportioning.

Exploitation

For proper operation of the dialyzer precautions below need to be complied with:

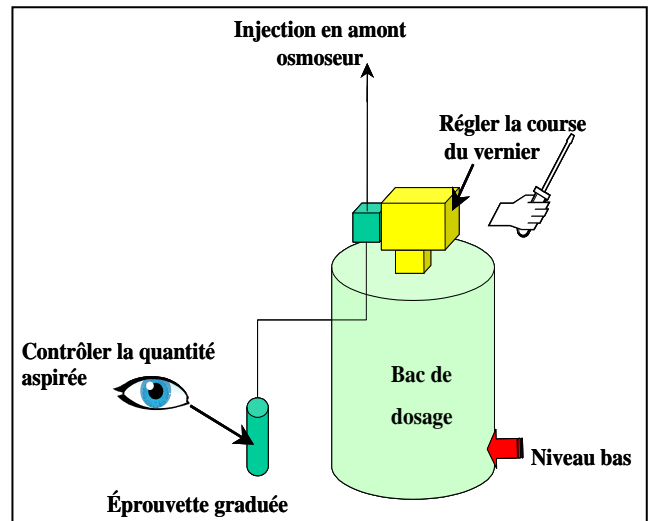
- proportioning of the sequestering agent must be carefully monitored,
- proportioning tank must be refilled regularly,
- possible dilution initiation must be particularly watched for,
- proportioning unit (tank and proportioning pump) must be perfectly clean.

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As any proportioning system, whose numerous operational parameters can evolve over time (back-pressure, ageing of proportioning devices), accuracy and proportioning pump adjustment must be checked regularly (at least once every fortnight).

Such checking process must help validate effective proportioning; it can not be limited to a mere theoretical checking of the injected amount of sequestering agent.

For so doing, measurement shall be carried out with reverse osmosis unit operating under real conditions: the actual amount of sequestering agent sucked in by the proportioning pump will be measured using a graduated cylinder (see diagram).



Lack of checking could lead to under- or over-proportioning of the sequestering agent, at the prejudice of reverse osmosis membranes.

- Under-proportioning can cause mineral salts to precipitate in membranes, ΔP (load loss) to increase between the input and output pressure, ultrafiltrate flow to decrease, conductivity of water produced to increase.
- Over-proportioning can cause the sequestering agent to precipitate as gel in the membranes, ΔP (load loss) between the input and output pressure to increase, ultrafiltrate flow to decrease.

Accordingly, some chemical cleaning of membranes can be envisioned when the amount of precipitate is low, see sheet EXP 47 A - "Chemical cleaning of composite membranes".

As an overall rule:

- Precipitation of mineral salts: cleaning using some acid,
- Precipitation of the sequestering agent: cleaning using some acid and alkaline cleaning.

IMPORTANT

Perfect follow-up of the sequestering agent does not at all exclude the necessity of regularly analysing the operational characteristics of the reverse osmosis unit (flowrates, pressures, etc.) and the rapidly implement the corrective actions required to provide membranes lasting quality.

Conservation

Sequestering agents being generally products at organic base, it is advisable to comply with certain rules of conservation according to the table below.

However, average times indicated are strongly dependent on many parameters, among others: temperature of the storage facilities, hygiene of the room, hygiene during handling, cleanliness of the group of proportioning, etc...

Times are only indicative.

Any variation of the aspect of the product in the proportioning tank (disorder, colouring, deposit, etc...) must bring to replace it.

	Permoses	Permoses D	Permoses II	Fumados SG 33
Packing of origin closed	1 year (- 5°C , + 45°C)	1 year	1 year (T < 38°C)	1 year
Pure product in the proportioning tank	2 – 3 months	2 – 3 months	3 months	4 week
Diluted product	6 x 1 week 10 x 3 days 4 x 1 months Maximum dilution X 10	1 month Maximum dilution X 4	1 – 2 months Maximum dilution X 15	