Belgard® EV
Antiscalant for seawater distillation plants

General Product Information
Belgard EV is a high performance liquid product for the control of alkaline scaling (calcium carbonate and magnesium hydroxide) in all types of seawater distillation plants. Belgard EV is an aqueous solution of a synthetic polymer based on hydrolysed maleic anhydride. Used alone or in conjunction with a sponge ball cleaning system its effectiveness has been demonstrated in distillation plants operating with top brine temperatures up to 120 ºC.

Belgard EV is certified to ANSI / NSF Standard 60 for use in distillation plants producing potable water.

Product Properties
The following are typical properties for Belgard EV and should not be regarded as specification limits for the product. A product specification is available on request.

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Clear amber liquid</td>
</tr>
<tr>
<td>Odour</td>
<td>Slight</td>
</tr>
<tr>
<td>pH</td>
<td>2 maximum</td>
</tr>
<tr>
<td>Solids content</td>
<td>47 to 53% w/w</td>
</tr>
<tr>
<td>Specific gravity at 20/20ºC</td>
<td>1.16 to 1.19</td>
</tr>
<tr>
<td>Boiling point range</td>
<td>100 to 102 ºC</td>
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<tr>
<td>Freezing point range</td>
<td>0 to -12 ºC</td>
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Thermal Stability
Thermogravimetric analysis and differential scanning calorimetry have shown that Belgard EV is stable up to a temperature of 300 ºC.

Chemical Reactivity
Belgard EV is not affected by chlorine or other oxidising biocides under normal conditions of use. It is readily broken down by strong oxidising agents and typically has a COD value in the region of 670 mg O₂/g.

Application and Dose Level
Belgard EV can be used in all types of distillation plant but is particularly suitable for use in multi-stage flash plants.

Belgard EV is an aqueous solution of an organic acid and as such is corrosive in its concentrated form. Corrosion resistant dosing equipment must be used. Examples of suitable materials are 316L stainless steel and PVC or other plastic materials. In use Belgard EV is immediately neutralised by the residual alkalinity in the seawater and will not contribute to the corrosion of plant materials of construction.

Recommended injection points are either into the seawater make-up line after any external de-aeration and decarbonation equipment, or into the recycle brine stream at a suitable point after the blowdown and typically into the discharge of the recycle brine pump.

Belgard EV is miscible with water in all proportions. It may be applied as the neat product, or as a solution in distillate and should be dosed continuously, and proportionately to the seawater make-up flow, to maintain the recommended dose level.

The dose level required will depend on a number of factors, including the quality of the seawater feed, TBT, recycle brine concentration factor, the type of distillation plant and frequency of application of the sponge ball cleaning system. Typical dose levels, when used in conjunction with a sponge ball cleaning system, are 0.8 to 1.2 mg/l at TBT 90 ºC and 2.0 to 3.0 mg/l at TBT 110 ºC. Detailed recommendations for any plant will be made on request.

Health and Safety
Belgard EV is an aqueous solution of polycarboxylic acid. From results of acute studies it is classed as non-toxic. Further details on safety and handling are available in the Material Safety Data Sheet for this product which is available on request.

Regulatory
Belgard EV is certified to ANSI / NSF Standard 60 and by the UK Drinking Water Inspectorate and the Netherlands KIWA-ATA for use in seawater distillation plants producing potable water.

Logistics
- Classification: corrosive for conveyance
- Irritant for supply (EC directive 67/548)
- Packaging: HDPE 220L XL-ring Mauser drum 932x580 mm height x diameter
- Net weight: 240 kg
- Gross weight: 248.5 kg

Belgard EV is also available in bulk, semi-bulk and 25 kg net containers. Details are available on request.

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