Common Problems
- Pump deterioration resulting in lost efficiency.
- Pump does not match required duty.
- Increased efficiency required on new pumps.

Set-up
All work should be carried out in strict accordance with the relevant Belzona® Instructions For Use.

Belzona® product selection and application technique should be based on the need for repair or modification, the extent of damage to the pump substrate and operating conditions of the equipment.

On completion of coating, the pump performance will be restored and the efficiency increased (fig. 1). Increase in efficiency will vary according to the extent of deterioration, pump type and hydraulic performance.

Preparation
Machine or grind rebate grooves at all points where the coating is to be finished (refer to Belzona® Know-How Systems Leaflet CEP-3 "Applying internal coatings"). Grooves should be approximately 1/8 in. (3 mm) wide and deep enough to accommodate the final specified coating thickness. All sharp edges are to be ground to give a radius of not less than 1/8 in (3 mm).

Application
a) Rebuilding Internal Profiles
All damaged and uneven surfaces should be rebuilt using an appropriate Belzona® product in order to restore the original internal contours of the pump. Refer to Belzona® Know-How Systems leaflet CEP-1 "Rebuilding Pump Cutwaters, Flow Straighteners, Diffuser/Impeller/ Rotor Vanes" or CEP-5 "Repair of General Erosion/Corrosion Damage".

b) Coating
i) Metallic Components
Masking tape should be placed at the outer edge of the rebate grooves in order to highlight the area to be coated and also to give a neat and clean finish. Mix Belzona® 1341 and apply an even coat at the specified thickness, using stiff short bristled brushes. On large flat areas, the applicators provided with the product should be used, making sure the coating is finished into the rebate grooves.

Use wet film thickness gauges to ensure the recommended film thickness is achieved. Immediately remove the masking tape.

Allow to cure before applying a second coat of the selected Belzona® product to the surface, again ensuring the Belzona® product is correctly finished within the rebate grooves.

ii) Concrete Volutes
Apply Belzona® 4911 to the entire volute initially using stiff bristled brushes in order to completely penetrate and "wet out" the roughened or pitted surfaces.

Finally, level all surfaces by applying further Belzona® 9111 using suitable flexible applicators.

This application should be followed, within the recommended over coating times, with at least one full coat of Belzona® 1341.

When cured, inspect the coating either visually or with suitable holiday detection equipment, for continuity.

Where pinholes or holidays are detected, the surrounding area must be roughened using coarse emery cloth, washed with Belzona® 9111 and a further coat of Belzona® applied within the prepared area.
Belzona® Technical Comparison:

<table>
<thead>
<tr>
<th>Product</th>
<th>Consistency</th>
<th>Working Life at 60°F (15°C)</th>
<th>Full Chemical Cure at 60°F (15°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belzona® 1111</td>
<td>Paste</td>
<td>25 minutes</td>
<td>3 days</td>
</tr>
<tr>
<td>Belzona® 1151</td>
<td>Paste</td>
<td>40 minutes</td>
<td>3 days</td>
</tr>
<tr>
<td>Belzona® 1341</td>
<td>Fluid</td>
<td>60 minutes</td>
<td>10 days</td>
</tr>
<tr>
<td>Belzona® 4911</td>
<td>Thixotropic Fluid</td>
<td>55 minutes</td>
<td>10 days</td>
</tr>
</tbody>
</table>

Belzona® System Selector:

<table>
<thead>
<tr>
<th>Main System Requirement</th>
<th>Belzona® 1111</th>
<th>Belzona® 1151</th>
<th>Belzona® 1341</th>
<th>Belzona® 4911</th>
</tr>
</thead>
<tbody>
<tr>
<td>General rebuilding</td>
<td>*</td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Coating for efficiency enhancement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leveling surface pitting on concrete volute pumps</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rebuilding/Smoothing of shallow pitting</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

Recommended Equipment:

- Grit Blasting Equipment
- Machining/Grinding Equipment
- Surface Profile Gauge
- Belzona® 9111
- Vacuum Equipment
- Suitable Protective Clothing/Equipment
- Stiff Bristled Brushes
- Masking Tape
- Wet Film Thickness Gauges
- Holiday Detection Equipment
- Space Heating Equipment for Cold Weather Applications

For more complete technical information, please refer to the appropriate Belzona Product Specification Sheet. For detailed instructions on surface preparation, mixing and curing, please refer to the appropriate Belzona Instructions For Use. Comprehensive Health and Safety information is provided with the product. For more information, please contact your local Belzona representative.

The technical data contained herein is based on the results of long term tests carried out in our laboratories and to the best of our knowledge is true and accurate on the date of publication. It is however subject to change without prior notice and the user should contact Belzona to verify the technical data is correct before specifying or ordering. No guarantee of accuracy is given or implied. We assume no responsibility for rates of coverage, performance or injury resulting from use. Liability, if any, is limited to the replacement of products. No other warranty or guarantee of any kind is made by Belzona, express or implied, whether statutory, by operation of law or otherwise, including merchantability or fitness for a particular purpose.

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