

## ProDose XPRT™ – Scaling Prediction Software

ProDose XPRT™ provides immediate dosage capabilities for our specialty chemicals. The software can create cases to study multiple operating conditions, and directly enter concentrate analyses leading to the optimal selection of PWT product and dosage.

*ProDose XPRT™ is available upon request only. Please contact your PWT representative for more information.*

The screenshot displays the PWT ProDose software interface. At the top, there is a header with the PWT logo and a navigation bar with tabs for UNITS, TEMPERATURE, FERMEATE FLOW, RECOVERY, ANTISCALANT, DOSAGE, SOURCE, PROJECT NAME, and CASE. Below this, a sidebar on the left contains icons for PROJECT INFORMATION, WATER QUALITY, SYSTEM INFORMATION, CHEMICAL SELECTION, CALCULATIONS, and REPORT. The main content area is divided into several sections: OVERVIEW, MEASUREMENTS, COMMENTS (OPTIONAL), and TOTAL CASES (1 AVAILABLE). The OVERVIEW section includes fields for CLIENT NAME, PROJECT NAME, LOCATION, PREPARED BY, DATE, and WATER TYPE. The MEASUREMENTS section includes PRESET UNITS, TEMPERATURE, FLOW RATES, and MASS UNITS. The TOTAL CASES section shows a table with columns for Cases and Modified Date.

| Cases | Modified Date |
|-------|---------------|
| 1     | 5/27/2016     |

Selected Case Description

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**PWT**<sup>TM</sup>

Forward thinking chemistry

# Products & Services Offering



★★★ = excellent control  
 ★★ = average control  
 ★ = moderate control

## Antiscalants:

Each NF/RO system is unique, and requires a tailored chemical approach based on the incoming feed water quality. PWT's Dendriplex technology offers a phosphate free alternative reducing your negative impact on the environment. Dendriplex technology is also available as an 11x super concentrate reducing shipping and/ or storage requirements, ideal for small facilities or international shipment. Our full line of proprietary antiscalants offers a comprehensive solution to maximize the efficiency, economy, and longevity of your system.

## Antiscalant Selection Guide:

| Product           | Spectra Guard™ 100 | Spectra Guard™ 250* | Spectra Guard™ 350 | Spectra Guard™ 360 | Titan ASD™ 200 |
|-------------------|--------------------|---------------------|--------------------|--------------------|----------------|
| CaCO <sub>3</sub> | ★★★                | ★★★                 | ★★★                | ★★★                | ★★★            |
| CaSO <sub>4</sub> | ★★★                | ★★★                 | ★★★                | ★★★                | ★★             |
| BaSO <sub>4</sub> | ★★★                | ★★★                 | ★★★                | ★★★                | ★★             |
| Fe/Mn             | ★                  | ★★★                 | ★                  | ★★★                | ★              |
| CaPO <sub>4</sub> | ★                  | ★                   | ★★                 | ★★★                | ★              |
| SiO <sub>2</sub>  | ★★★                | ★                   | ★★★                | ★★★                | ★★             |
| Phosphate Free    | ✓                  |                     |                    |                    | ✓              |
| NSF 60            | ✓                  | ✓                   | ✓                  | ✓                  | ✓              |

\*Preferred product in the presence of cationic polymers.

**Membrane Autopsy services:** PWT's Membrane Forensics department offers non-biased expert evaluation and inspection of Microfiltration, Ultrafiltration, Nanofiltration and Reverse Osmosis membranes. Membrane autopsies include the physical dissection of a membrane module or element, in-depth analytical testing, result interpretation, and reporting. Careful examination of an element provides invaluable information on items such as foulant make-up, current mechanical integrity, potential membrane surface damage, and ease of foulant removal.

## Why Perform a Membrane Autopsy?

- ✓ To identify the exact foulants present on the membrane
- ✓ Determine the ideal cleaning regiment
- ✓ Improve overall system performance

**Membrane Cleaning services:** Professional Water Technologies™ Membrane Forensics department offers various options for optimizing cleaning procedures of membrane systems. Improved cleaning regiments can reduce system down time, chemical costs, labor demands, and discharge costs all while improving overall system performance. Each membrane system is unique, and requires a different approach so PWT developed a comprehensive offering to satisfy all situations.

## Field services:

- System performance audit
- System optimization and monitoring
- Pilot Studies
- System operation and maintenance assistance
- Operator training
- Troubleshooting

**Membrane Cleaners:** Fouling is often an unavoidable side effect of membrane filtration, but effective foulant removal during cleanings is crucial to maximize system performance and membrane life. Whether it is organics, biological activity, metal hydroxides, and/or scale, PWT's full line of proprietary membrane safe cleaners help tackle the various foulants that can build up during operation. PWT's Membrane Forensics department offers non-biased expert evaluation

**Cleaner Selection Guide :**

| Product  | Target pH   | Product Application              |        |                 |                  |
|--|-------------|----------------------------------|--------|-----------------|------------------|
|  |             | Colloids / Organics / Biological | Silica | Inorganic Salts | Metal Hydroxides |
| <b>LAVASOL – LIQUID CLEANERS</b> (Typically diluted as 2% by volume)   |             |                                  |        |                 |                  |
| Lavasol 1  | 3.3         |                                  |        | ✓               | ✓                |
| Lavasol 2  | 10.2        | ✓                                |        |                 |                  |
| Lavasol 5  | 3.0         |                                  | ✓ ✓    | ✓               |                  |
| Lavasol 6  | 2.0         |                                  |        | ✓ ✓             | ✓                |
| Lavasol 7  | 12.5        | ✓ ✓                              |        |                 |                  |
| Lavasol 8*   | 11.5 - 12.5 | ✓ ✓                              |        |                 |                  |
| Lavasol 9  | 11.9        | ✓ ✓                              |        |                 |                  |
| <b>OPTICLEAN – POWDER CLEANERS</b> (Typically diluted as 1% by weight) |             |                                  |        |                 |                  |
| OptiClean A  | 3.2         |                                  |        | ✓               | ✓                |
| OptiClean B  | 11.3        | ✓ ✓                              |        |                 |                  |
| OptiClean D  | 3.9         |                                  |        | ✓               | ✓ ✓              |
| OptiClean F  | 12 - 12.5   | ✓ ✓                              |        |                 |                  |
| OptiClean H  | 2.0         |                                  |        | ✓ ✓             | ✓                |
| OptiClean J  | 10.9        | ✓ ✓                              |        |                 |                  |
| OptiClean S  | 3.0         |                                  | ✓ ✓    | ✓               |                  |

\*Contains free chlorine and should only be used on chlorine tolerant membranes.

**Antifoulants:** PWT developed a proprietary line of antifoulant chemistries to minimize the adhesion of organics and biological foulants on the membrane surface, helping increase system run times and membrane life expectancies. Ask about our BioGuard™ and OrganoGuard™.

**Membrane Preservatives:** Preserving a membrane system properly is crucial to not only maintain membrane integrity, but also insure quick and easy system start-up. Protect your system during long-term shutdowns with PWT's specialty membrane preservatives Preservol™ and RO Store. Our membrane preservatives provide safe, trouble free preservation & insure a smooth transition back into system operation.

**Coagulants / Filter Aids:** Coagulation/flocculation operations have been common place for decades, but with advances in membrane technology, coagulants/flocculants have been used with increased frequency to improve the efficacy of MF/UF systems. PWT's FilteRx™ line of specialty coagulants and flocculants, and our unique understanding of their application can help improve your operations, while minimizing overdosing.

**Biocides:** PWT's range of membrane safe non-oxidizing, biocides and fungicides rapidly control the growth of fungi, yeast, bacteria, and algae. Providing broad spectrum control, BioGuard™ Shock and BioGuard™ ISO can be applied intermittently, as a clean in place (CIP), or continuously for enhanced biological control.