Duramax® Ultra-X®
High Performance Compression Packing

- Engineered Specifically for Heavy-Duty Marine Service
  - Stern Tube Stuffing Boxes
  - Bulkhead Stuffing Boxes
  - Rudder Stuffing Boxes
- 300% Lower Friction than Flax Packing
- Superior Thermal Conductivity
- Outlasts Flax more than 5 to 1
Duramax® Ultra-X® is a unique high-performance, non-asbestos, braided packing specifically engineered to meet the demands of marine propulsion. Its excellent lubricity and high thermal conductivity keeps shafts running cool at all speeds. Unlike flax packing and other packing materials, once Ultra-X® is installed you never need to worry about it again, virtually eliminating maintenance. It requires no grease, stays flexible and pliable, will not harden, swell or become brittle – virtually eliminating costly damage caused by extensive shaft scoring and wear.

The Ultimate Marine Stuffing Box Packing.

Key Features of Duramax Ultra-X® Packing Material

- **Dissipates frictional heat:** Over five times more thermally conductive than flax and PTFE
- **Grease-free installation:** Self-lubricating and conformable, easy to install and remove after use.
- **Virtually eliminates shaft scoring:** Stays pliable, never hardens or becomes abrasive, even at high shaft speeds
- ** Leakage practically eliminated:** Doesn’t shrink, keeps bilge drier and free of oily contaminants
- **Lasts over 5 times longer than other packing:** Doesn’t get consumed in use, holds its shape and dimension
Engineered Specifically for the Marine Industry.

You can use Duramax® Ultra-X® with confidence knowing it is a product of Duramax Marine®, manufacturer of Johnson® Heavy-Duty Stuffing Boxes, the most recognized, highest quality stuffing boxes in the marine industry. Duramax Marine® is also the world leader in water-lubricated bearing technology. We keep your propulsion systems moving full steam ahead.

**Designed for optimum performance in all marine stuffing boxes.**

Duramax® Ultra-X® packing is engineered for optimal performance in all marine applications. It complements the operation of Johnson® Cutless® bearings and helps meet the demands of marine propulsion.

**Lasts more than 5X longer than flax and PTFE packing.**

Ultra-X® is designed to eliminate the high cost of packing failure. It will reduce your downtime and maintenance costs – not to mention eliminating expensive equipment replacement costs.
What is Duramax® Ultra-X® High-Performance Packing?

Duramax® Ultra-X® is a braided hydrophobic fiber packing. Because of its composition and design it lasts more than 5X longer and outperforms all flax and PTFE packings in marine stern tube, rudder and bulkhead applications.

- **Expanded PTFE:**
  Outperforms standard flax and PTFE

- **High tensile strength:**
  Will not get consumed in use

- **Graphite imbibed/silicone impregnated:**
  Lowest friction of any marine packing

- **Self-lubricating:**
  Virtually needs no water for lubrication

- **Stays pliable:**
  Never gets brittle, hard or abrasive

- **High thermal conductivity:**
  Over 5 times more thermally conductive than flax and PTFE

- **Grease-free installation:**
  Easy to cut and handle. Conforms easily

- **Lowlife-cycle cost:**
  Virtually eliminates maintenance, shaft scoring & replacement

### Imbibed Graphite vs. Loose Blending of Graphite.

Duramax Marine® uses unique patented manufacturing technology to encapsulate graphite particles and impregnate specialized lubricants into expanded PTFE strands. It greatly outperforms competitors’ packing that loosely blends graphite particles between the strands during the braiding process.

#### Imbibed graphite in Duramax Ultra-X® Fiber

#### Loose graphite in standard PTFE braiding

### Eliminates Equipment Damage Caused by Other Packings.

Duramax® Ultra-X® is engineered so you will never experience packing failure that causes excessive shaft scoring. It always runs cool and always stays pliable. It never gets hard and abrasive, so expensive shaft repair or replacement is a thing of the past. Unlike flax, Duramax® Ultra-X® is not consumed in use, which means you don’t need to constantly adjust the gland or add more rings of packing to maintain your seal. Ultra-X® eliminates the headaches associated with other type packing materials by lowering maintenance and operating costs thus reducing downtime.

There are competitors with lower priced “Look-alike” black PTFE fiber packing. Many of these look-alike packings use pure PTFE which is known for its thermal expansion. Besides having low tensile strength the thermal expansion of this material creates high heat and friction which results in significant shaft scoring and loss of seal. Duramax Ultra-X® will simply work as well or better than any other braided packing designed for marine applications.
Always Runs Cool, Even at High Shaft Speeds.

Transfers frictional heat to stuffing box.

Duramax® Ultra-X® dissipates frictional heat from the shaft transferring it to the stuffing box, which functions as a heat sink, lowering the temperature of the shaft and packing at all shaft speeds. In contrast, flax packing acts as an insulator, trapping frictional heat that can cause shaft damage and loss of seal.

Minimizes shaft wear and equipment damage.

Ultra-low friction Duramax® Ultra-X® always remains pliable. Flax and PTFE packing will harden, get brittle and consumed in use, resulting in shaft scoring and costly replacement. Abrasives will not embed into Ultra-X® packing unlike flax with its sticky lubricants which actually act as a holder for abrasives causing shaft damage.

Practically eliminates a dripping stuffing box.

Ultra-X® experiences no shrinkage, keeps its shape and dimension, and requires virtually no water for lubrication. Keeps bilge dry and clean of oily contaminants.

Experiences no packing failure.

Duramax® Ultra-X® experiences no thermal expansion. It is not consumed during operation, so it never needs additional rings before the next scheduled haul out. This eliminates the need for constant gland adjustments.

Heat Dispersion Rates (BTU/h ft °F)

<table>
<thead>
<tr>
<th>Material</th>
<th>Heat Dispersion Rate (BTU/h ft °F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duramax® Ultra-X®</td>
<td>11.9</td>
</tr>
<tr>
<td>Flax Packing</td>
<td>2.4</td>
</tr>
<tr>
<td>PTFE Packing</td>
<td>1.7</td>
</tr>
</tbody>
</table>

Thermal Conductivity Comparisons

Temperature (°F)

<table>
<thead>
<tr>
<th>Material</th>
<th>Maximum Temperature (°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duramax® Ultra-X®</td>
<td>550°</td>
</tr>
<tr>
<td>Flax Packing</td>
<td>150°</td>
</tr>
<tr>
<td>PTFE Packing</td>
<td>2.4</td>
</tr>
</tbody>
</table>

DURAMAX® ULTRA-X® FLAX PACKING PTFE PACKING

DuraMax® Ultra-X® Packing transfers heat to stuffing box. Flax packing acts as insulator trapping heat to shaft.
Duramax® Ultra-X® VS. FLAX

<table>
<thead>
<tr>
<th></th>
<th>DURAMAX® Ultra-X®</th>
<th>FLAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ease of Installation</td>
<td>Pliable, conforms easily for clean, tight seal</td>
<td>Messy to handle, cut and install</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Self-lubricating, virtually no water needed</td>
<td>Requires water</td>
</tr>
<tr>
<td>Replacement</td>
<td>Stays flexible and pliable, easy to remove</td>
<td>Dries out, gets brittle, difficult to remove</td>
</tr>
<tr>
<td>Operating Condition</td>
<td>Stays pliable, non-abrasive</td>
<td>Hardens, becomes brittle and abrasive</td>
</tr>
<tr>
<td>Resistance to Overheating</td>
<td>Maximum temperature 550°F</td>
<td>Maximum temperature 150°F</td>
</tr>
<tr>
<td>Thermal Expansion</td>
<td>Virtually none</td>
<td>Will experience swelling</td>
</tr>
<tr>
<td>Leakage</td>
<td>Practically eliminated</td>
<td>Will experience leakage</td>
</tr>
<tr>
<td>Heat Dispersion</td>
<td>11.9 BTU in/h ft² °F</td>
<td>2.4 BTU in/h ft² °F</td>
</tr>
<tr>
<td>Environment</td>
<td>No oily contaminated water in bilge, no EPA issues</td>
<td>Needs holding tanks or remediation</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Once installed, needs no maintenance</td>
<td>Need to add rings when consumed</td>
</tr>
<tr>
<td>Equipment Damage</td>
<td>Virtually eliminates shaft scoring and wear</td>
<td>Gets hard and abrasive causing costly damage</td>
</tr>
<tr>
<td>Longevity</td>
<td>Normally lasts until scheduled haul out</td>
<td>Consumed or destroyed at high temperature</td>
</tr>
</tbody>
</table>

**Easy Installation.**

**Easy to handle and cut.**

Duramax® Ultra-X® is a welcome replacement for messy flax packing. It cuts cleanly and easily. Just cut the rings to the proper lengths and install with no grease needed. Ultra-X® does not require grease in stern tube applications where water is present. In bulk-head stuffing boxes it is recommended that grease is added to aid in lubricating the packing. Grease will not harm Ultra-X® packing.

To cut Ultra-X® packing to the proper length, wrap the packing on a mandrel that matches the shaft or use part of the shaft that is outside the stuffing box. Rings can be cut with butt (square) or skive (diagonal) joints. Joints of successive rings should be staggered – at least 90 degrees apart.

**Conforms quickly for a leak-proof seal.**

Duramax® Ultra-X® packing is soft and pliable. It conforms easily to the stuffing box gland and packing areas.

**One adjustment, then never worry about it again.**

Once Ultra-X® is in place, tighten the gland follower. After a short run-in period, make one adjustment - then never worry about it again. Ultra-X® will normally last until the next haul out, without much more than an occasional glance at its drip rate.

**Easy to remove for repacking.**

Unlike flax and PTFE that hardens and becomes brittle, Duramax® Ultra-X® isn’t destroyed in use. It always stays pliable and easy to remove.
Trouble Free Operation.

Meets Environmental Requirements.
When using Duramax® Ultra-X® your bilge will be free of contaminants. It needs virtually no water for lubrication, and it doesn’t shrink - practically eliminating a stuffing box drip. It makes it easy to comply with environmental requirements that regulate overboard pumping of polluted bilge water.

Ultra-X® is the Most Versatile and Cost Effective.
Compared to other packing options, the life cycle cost of Duramax® Ultra-X® is much lower. With the high cost of shaft repair or replacement due to other packing failures, why settle for less. Durability, long service life, and consistent high performance makes Duramax® Ultra-X® your most cost-effective packing solution on the market.

Backed By Duramax Marine®.
Duramax® Ultra-X® will assure you the highest performance of any braided packing on the market today – whether it’s in a Johnson® Heavy-Duty Stuffing Box or any other marine stuffing box you are currently using. Like all Duramax Marine® products, it is designed to reduce your maintenance costs, operating costs and reduce downtime – and is backed up by a team of Duramax Marine® product experts to answer any questions or solve your maintenance problems.

Available in 18 Standard Sizes.

<table>
<thead>
<tr>
<th>Size*</th>
<th>1/8”</th>
<th>3/16”</th>
<th>1/4”</th>
<th>5/16”</th>
<th>3/8”</th>
<th>7/16”</th>
<th>1/2”</th>
<th>9/16”</th>
<th>5/8”</th>
<th>3/4”</th>
<th>7/8”</th>
<th>1”</th>
<th>1-1/8”</th>
<th>1-1/4”</th>
<th>1-3/8”</th>
<th>1-1/2”</th>
<th>1-5/8”</th>
<th>1-3/4”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approx. FT/LB</td>
<td>67</td>
<td>35</td>
<td>20</td>
<td>13</td>
<td>95</td>
<td>7.0</td>
<td>5.0</td>
<td>4.0</td>
<td>32</td>
<td>2.3</td>
<td>1.8</td>
<td>1.4</td>
<td>1.2</td>
<td>1.0</td>
<td>0.9</td>
<td>0.7</td>
<td>0.6</td>
<td>0.5</td>
</tr>
</tbody>
</table>

- Duramax Ultra-X® comes packed standard on spools of: 1, 3, 5 and 10 pounds.
- Bulk spools of 25 and 35 pounds are also available.

*Custom size packing is available upon request.

Duramax Marine*: Engineering Solutions you can trust.
Duramax Marine® is committed to providing excellence in every product we manufacture. Our Johnson Cutless® marine and industrial bearings, heat exchangers, impact protection systems and sealing systems are known worldwide for their engineered quality and dependable performance. Please contact the factory for information on any of the following Duramax Marine® products:

**JOHNSON CUTLESS® WATER-LUBRICATED BEARING SYSTEMS**

Johnson Cutless® Sleeve and Flanged Bearings  
DX 490 Rudder Bushings

**DURAMAX® ADVANCED WATER-LUBRICATED BEARING SYSTEMS**

Johnson® Demountable Stave Bearings  
ROMOR®I Stave Bearings and Segmental Housings  
ROMOR® C- Partial Arc Bearings  
DMX® Polymer Alloy Bearings  
DuraBlue® Rudder & Pintle Bushings, Thrust Washers, and Wear Pads  
Industrial Pump Bearing Systems

**DURAMAX® HEAT EXCHANGE SYSTEMS**

DuraCooler® Keel Coolers  
Duramax® Demountable Keel Coolers  
Duramax® BoxCoolers  
Duramax® Plate Heat Exchangers

**DURAMAX® IMPACT PROTECTION SYSTEMS**

Johnson® Commercial Dock Bumpers, Fenders & Tow Knees  
Weatherstrip Door Gaskets, Window Channel and Hatch Cover Gaskets  
LINERITE® Composite Batterboard Systems

**DURAMAX® SHAFT SEALING SYSTEMS**

DryMax® Shaft Seal  
Duramax® Mechanical Shaft Seal  
Johnson® Heavy-Duty Air Seal Stuffing Boxes  
Duramax® Ultra-X® High Performance Compression Packing  
Johnson® Strong Boy Stern Castings and Stuffing Boxes