



**Puget Sound
ROPE**

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ROPE CARE AND USAGE

Puget Sound Rope is committed to making the highest quality rope in the world. All of our processes and products are guided by a Quality System that meets numerous federal and international quality standards, which we feel allows us to continually meet and exceed the needs and expectations of all of our customers.

In this commitment, we have created these guidelines to assist you in the care and usage of our rope. These basic guidelines will help to ensure you get the absolute best performance and longevity out of our product and use it in the safest manner possible.

These guidelines are not intended and do not create any warranties, express or implied. Puget Sound Rope expressly disclaims warranties or representations of any kind, express or implied, including the implied warranties of merchantability and fitness for a particular purpose. Puget Sound Rope shall not be liable for any consequential, incidental or contingent damages whatsoever stemming from the use of these guidelines.



USING THE RIGHT ROPE FOR THE RIGHT JOB

There are many decisions to be made in selecting the correct rope for your application. It is strongly recommended that a complete analysis of the application is performed by a competent professional to determine the best rope for the application. Each combination of rope material and construction has its advantages and disadvantages and the selection of a rope always involves compromises based on the type of service.

Type of material used in the manufacturing of the rope. There are a number of materials commonly used to manufacture ropes. Each material has its weak points and its strong points and there is no one material (regardless of price) that is best for all applications. Because of the differences in properties, composite or blended ropes should only be used in the specific applications for which they were designed.

Design of rope. Each product design has construction variances that directly relate to the performance of the rope. It is usually best to use a design that has proven performance in applications similar to the one being specified. As in the selection of materials, there is no single design that is best for all applications.

Size of rope. The size of the rope should adequately cover the load requirements of the application. Working loads, appropriate safety factors, and rope tensile strengths should be analyzed to determine the proper size of rope.



TENSILE STRENGTHS AND WORKING LOADS

Puget Sound Rope specifications are based on industry suggested Minimum Tensile Strength (MTS) qualifications. The MTS is based on test data from a significant number of break tests conducted on new and unused rope and is a value two standard deviations below the mean. The MTS is assumed to decrease once the rope is put into use.

Maximum Working Loads (MWL) are normally determined by dividing the MTS by the safety factor. The safety factor is a function of the physical properties of the rope, the age and history of the rope, the type of service in which it is to be used, and the risks involved if failure occurs. The safety factors vary from a minimum of a 3:1 ratio, where new rope being used in a static environment and failure would cause little or no risk to equipment or personnel, to as high as a 20:1 ratio, where severe conditions exist or where failure of the rope could cause severe risk to equipment and personnel.

Since there are numerous uses for our products, it is impossible to cover all application factors. For a rope manufacturer to give blanket working load recommendation would be like a car manufacturer giving the “safe driving speed” of their car. However, if any of the following adverse conditions exist, we suggest that you use the high end of the safety factor;

- Smaller sized ropes are used (damage occurs more quickly by cuts, abrasion, and sunlight)
- The maximum loading is not known
- Dynamic loading is likely to occur
- The rope is subject to rapid cyclic loading

- Operators are poorly trained in rope handling
- Rope is not inspected on a regular basis
- Rope may be exposed to harmful chemicals
- Rope is used or stored at elevated temperatures
- Rope has been exposed to long term sunlight
- Knots are used in the rope
- Rope will be bent around small radius corners or pulleys
- Death, injury, or loss of valuable property may result from failure



DANGER TO PERSONNEL

Failure of a tensioned rope and/or attached equipment is a serious hazard and can cause snapback, which may result in death or injury to personnel. Personnel handling rope should never stand in line with or within 45° on either side of a rope under tension. Should the rope part for any reason, the recoiling rope may swing in a random path away from the failure point violently striking anything in its path. If the risk for serious damage to equipment or injury to personnel exists, the working load should be lowered substantially and the rope inspected before each use.



ROPE INSPECTION

A regular inspection cycle should be established to determine the condition of the rope. The following conditions should be looked for;

- Kinks or twists
- Heavy chafing or seriously worn surface areas
- Cut, broken or frayed strands (outer and inner strands)
- Surface fusion or melted strands
- Evidence of Chemical exposure
- Compacted or hard areas of rope
- Splice movement

Although visual inspection of your rope can not accurately predict the residual strength, it does indicate problem areas that may need attention. If any of the above conditions exist or you doubt the strength of the rope, an analysis of the safety factor ratio should be conducted.



OVERHEATING

Heat has a direct effect on the rope's tensile strength. All synthetic ropes are affected by heat to some degree. Most ropes show a gradual decrease in strength as the temperature is increased. Our catalog gives a "critical temperature" for each type of rope at which it will lose approximately 20% of its tensile strength. This strength loss is temporary and the rope will recover its strength upon cooling.

In addition to the immediate strength loss synthetic ropes also experience long term degradation referred to as "heat aging". This strength loss is permanent and accumulative. In severe cases it may be accompanied by discoloration of the rope but usually there is no visual indication of heat exposure.



ULTRA VIOLET RADIATION (UV)

The most common source of ultra violet radiation is through exposure to direct sunlight. The effect of UV exposure varies with the fiber type, protective coatings, rope size and rope construction. The larger the rope the less effect UV has on the strength since the UV radiation is absorbed in the outer layer. For the same reason jacketed ropes or ropes with surface coatings will retain their strength better. UV degradation is usually more a problem of improper storage conditions than of use conditions.



KNOTS AND SPLICING

For the best possible performance of the rope, an appropriate splice should be used to connect or terminate. Always contact the manufacturer for the recommended splice for the rope being used. Knots in ropes can cause a 60% loss of tensile strength and if used, an analysis of the safety factor ratio should be conducted.



ROPE STORAGE

The following conditions should exist when storing the rope for any period of time;

- The Storage area should be clean, dry and cool
- There should be adequate ventilation in the storage area
- The rope should be stored off the ground
- The rope should be stored away from metal walls or steam valves
- The rope should be stored away from exposure to sunlight
- The rope should be stored away from any type of chemicals



CHEMICAL EXPOSURE

Ropes may be damaged from direct contact with or from fumes of numerous chemicals. To ensure that you receive only the best performance, operators should try to avoid any acids, alkalis, solvents, paints, etc., coming into contact with the rope. The following table is provided to show the chemical resistance of our ropes when short term chemical exposure occurs on the material used to manufacture the rope.

ROPE TYPE

	<i>Plasma®</i>	<i>Spectra®</i>	<i>Nylon</i>	<i>Polyester</i>	<i>Co-Polymer</i>
<i>Common Acids</i>	Excellent	Excellent	Good	Good	Very Good
<i>Alkali</i>	Excellent	Excellent	Excellent	Very Good	Excellent
<i>Common Solvents</i>	Excellent	Excellent	Good to Very Good	Good to Very Good	Good
<i>Clorox</i>	Very Good	Very Good	Excellent	Excellent	Fair
<i>Gasoline</i>	Excellent	Excellent	Very Good	Very Good	Good
<i>Kerosene</i>	Excellent	Excellent	Very Good	Very Good	Fair - Moderate affect
<i>Hydraulic Fluids</i>	Excellent	Excellent	Very Good	Very Good	Fair - Moderate affect

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In the case of chemical exposure, operators should immediately clean the rope with any type of mild detergent and then rinse completely.

Questions? Please call us at any time, we'll be happy to answer any technical or product-related questions you may have.

