Wire Rope Core

Most wire ropes are supplied with either a ber or steel core. The core is the foundation of a wire rope. Its primary function is to support the wire strands of the rope, maintaining them in their correct relative positions during the operating life of the rope.

Fiber cores are ropes made from fibers formed into yarns, then into strands and finally into the finished core form. There are two general types of fiber: natural vegetable material, such as sisal, and synthetic laments, such as polypropylene.

Steel cores may be an independent wire rope (IWRC) or, in the case of small diameter ropes and some rotation-resistant ropes, a **wire strand core** (WSC). These steel cores provide more support than fiber cores to the outer strands during the rope's operating life. Steel cores resist crushing, are more resistant to heat, reduce the amount of stretch, and increase the strength of the rope.

Wire Rope Lubrication

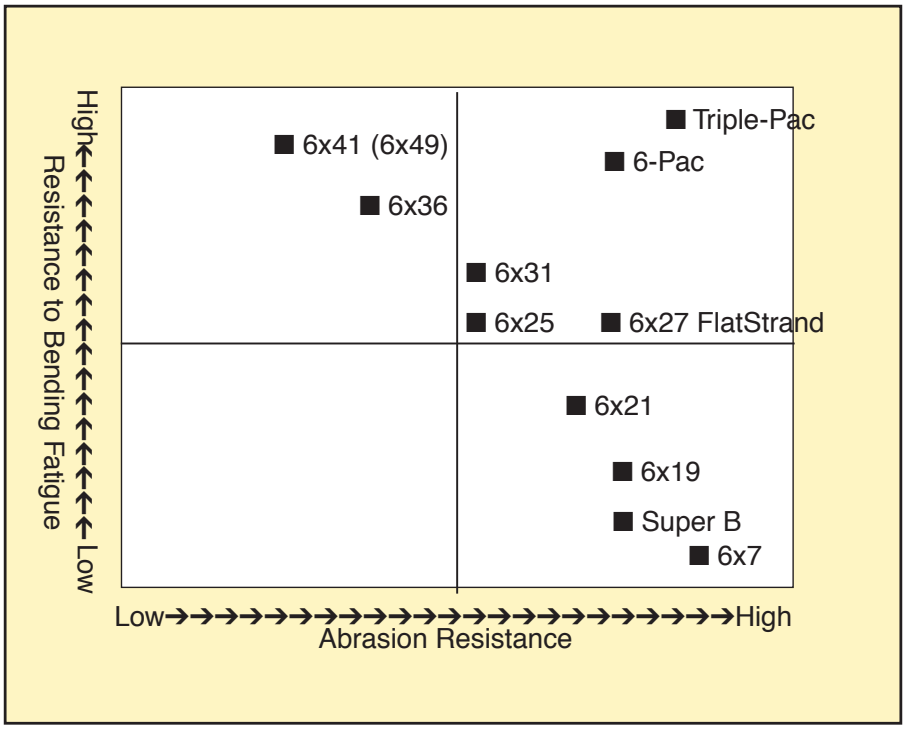
Typically, rope manufactuers, apply heated lubricant to individual wires during the stranding operation. Upon customer request, additional lubricant may be applied during the closing operation as well.

Manufacturers typically utilize two standard lubricants during the manufacture of general purpose ropes. A petrolatum-based lubricant used primarily in the manufacture of standard wire rope. This type of lubricant prevents rust and corrosion and lubricates against internal wear. **W-lube**, the standard lubricant. A asphaltic-based lubricant and rust preventative compound with a large percentage of water-displacing additives and corrosion inhibitors, is ideal for o shore and land cranes, and logging winch lines.

The Modified X-chart

Two factors governing most decisions in selecting wire rope are **abrasion resistance and resistance to bending fatigue**. A graphic presentation of the balance between these properties has traditionally been given by means of the X-chart. However, new designs of wire rope, such as 6-Pac and Triple-Pac, do not follow the X-chart model as they are designed to provide both abrasion resistance and resistance to bending fatigue. Williams Wire and Rope, developed the Modified X-chart.

To read the Modified X-chart, the position of each rope construction must be considered in relation to both the X and Y axes, or Abrasion Resistance and Resistance to Bending Fatigue, respectively. For example, the construction 6x41 (6x49) is in the upper left quadrant, ranking high on the bending fatigue scale. However, its position in abrasion resistance is very low. Therefore, it can be said that a 6x41 (6x49) construction offers excellent resistance to bending fatigue, but poor resistance to abrasion. At the other end of the spectrum is a 6x7 construction, located in the lower right hand corner of the chart. A 6x7 offers excellent abrasion resistance, but very poor resistance to bending fatigue.



Rope Substitution

Many equipment manufacturers have established standard or "specified" wire ropes for their products.

Rope substitution is acceptable provided the end user follow the basic design specifications established by the equipment manufacturer:

- Always use the specified rope diameter.
- Ensure that the breaking strength of the substitute rope meets or exceeds that of the rope specified.
- Always substitute a rope with the same basic characteristics, such as rotation resistance.

ASME B30.5-1995 Addenda 5-1.7.2(a) states: The ropes shall be of a construction recommended by the rope or crane manufacturer or person qualified for that service.