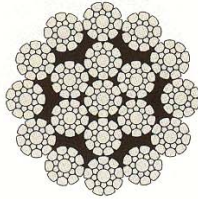


NORTHERN STRANDS

Flex-X® 19.

Flex-X 19, a Category 2 rotation-resistant rope, is made from 19 strands. Six strands are laid around a core strand in one direction, and then 12 strands are laid around this first operation in the opposite direction. Because of its tightly compacted smooth design, Flex-X 19 offers more crushing resistance than standard 19x7 rope, higher strength-to-diameter, resistance to bending fatigue, exceptional stability, reduced wear to sheaves and drums, and improved handling, operating and spooling characteristics.

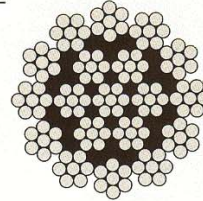


Flex-X 19

Flex-X 19 has also demonstrated greater fatigue resistance to substantially cut rope expense and extend service life. It's ideal for multi-part hoist lines wherever you encounter spooling problems, drum crushing, block twisting or have fast line speeds.

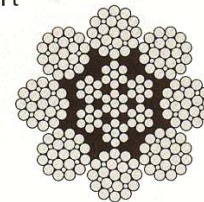
19 x 7 and 8 x 25 Resistwist® rope.

In an application where a single-part hoist rope is used to lift a free load – or where rotation-resistant properties are essential for rope performance – the 19x7 can be used. Its Category 2 rotation-resistant characteristic is achieved by laying six strands around a core strand in one direction, then laying 12 strands around the first operation in the opposite direction. When the rope is in tension, opposing rotational forces are created between the inner and outer layers.



19 x 7

In a multi-part wire rope system where the blocks have a tendency to twist – but doesn't require the degree of rotation-resistant properties found in a 19x7 rope – the 8x25 Resistwist rope has found successful application. It is a Category 3 rotation-resistant rope and will be either 19 Seale or 25 Filler Wire.



8 x 25FW

Minimum breaking force and weights for rotation-resistant crane ropes.

| Diameter (in.) | Flex-X® 19 | | 19 x 7 XIP® | | 8 x 25 XIP® | |
|----------------|------------------------|--|------------------------|--|------------------------|--|
| | Approx. wt./ft. (lbs.) | Minimum breaking force (tons of 2,000 lbs.)* | Approx. wt./ft. (lbs.) | Minimum breaking force (tons of 2,000 lbs.)* | Approx. wt./ft. (lbs.) | Minimum breaking force (tons of 2,000 lbs.)* |
| 3/16 | | | 0.064 | 1.57 | | |
| 1/4 | | | 0.113 | 2.77 | | |
| 5/16 | | | 0.177 | 4.30 | 0.18 | 4.63 |
| 3/8 | 0.31 | 8.3 | 0.25 | 6.15 | 0.26 | 6.63 |
| 7/16 | 0.40 | 11.2 | 0.35 | 8.33 | 0.36 | 8.97 |
| 1/2 | 0.54 | 14.6 | 0.45 | 10.8 | 0.47 | 11.6 |
| 9/16 | 0.69 | 18.5 | 0.58 | 13.6 | 0.60 | 14.7 |
| 5/8 | 0.85 | 22.7 | 0.71 | 16.8 | 0.73 | 18.1 |
| 3/4 | 1.25 | 32.4 | 1.02 | 24.0 | 1.06 | 25.9 |
| 7/8 | 1.68 | 43.8 | 1.39 | 32.5 | 1.44 | 35.0 |
| 1 | 2.17 | 56.9 | 1.82 | 42.2 | 1.88 | 45.5 |
| 1 1/8 | 2.75 | 71.5 | 2.30 | 53.1 | 2.39 | 57.3 |
| 1 1/4 | 3.45 | 87.9 | 2.83 | 65.1 | 2.94 | 70.5 |
| 1 3/8 | 4.33 | 106 | 3.43 | 78.4 | 3.56 | 84.9 |
| 1 1/2 | 5.11 | 125 | 4.08 | 92.8 | 4.24 | 100 |

*The minimum breaking force applies only when a test is conducted with both ends fixed. When in use, the minimum breaking force of these ropes may be significantly reduced if one end is free to rotate.