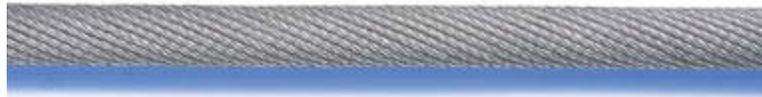


ROTATION-RESISTANT WIRE ROPE

Wire rope in this special category is designed to resist the tendency to spin or rotate under load. These ropes are typically used in single part line applications, or when operating conditions require resistance to cabling in multipart systems. Depending on the application, these ropes are manufactured in traditional and high performance style.

Category 1	Category 2	Category 3
<ul style="list-style-type: none"><li data-bbox="240 428 440 453">• Starlift XTRA	<ul style="list-style-type: none"><li data-bbox="662 428 764 453">• 19x7<li data-bbox="662 457 824 483">• Flex-X 19	<ul style="list-style-type: none"><li data-bbox="1084 428 1263 453">• 8x19 Class<li data-bbox="1084 457 1328 483">• 8x25 Resisttwist

Starlift Xtra



- Category 1, rotation resistant rope
- Maximum strength per diameter
- Can be used with a swivel
- Crush resistant

The latest high performance rotation-resistant rope designed and manufactured by CASAR, a member of WireCo WorldGroup.

Starlift Xtra™, the new high performance rotation resistant rope, replaces Union's Flex-X 35 product line, and meets the highest Minimum Breaking Forces requested in the crane rope market. Starlift Xtra provides the user unique characteristics as a hoist rope.

The following information outlines the crucial operating characteristics and discusses why Starlift Xtra is the rope of choice in many applications.

Strength

Starlift Xtra is the strongest of all ropes in the high performance rotation-resistant product line. The following chart shows the superior values of Starlift Xtra.

Rotation Resistance (Non-Rotating)

The balanced design of Starlift Xtra results in minimal torque under load, providing superior rotation resistance. Under a normal working load range, Starlift Xtra has virtually no tendency to rotate, making it ideal for both single-part and multi-part hoist systems but also for those involving long falls where rotation resistance is required.

Starlift Xtra meets both the Category 1 requirements according to ASTM A1023 and the general guidance on the use of a swivel given in Annex A ISO 21669. Due to its superior rotation resistant properties, Starlift Xtra may be used with a swivel.

Resistance to Wear

The multi-strand design of Starlift Xtra combined with compacted strands and lang lay construction helps to maximize resistance to wear by greatly increasing wire and strand surface areas that contact sheaves and drums. Internally, the enhanced surfaces of the compacted strands help minimize strand-to-strand nicking between strand layers. This feature results in greater resistance to fatigue.

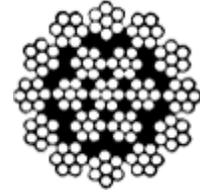
Resistance to Crushing and Abrasion on Drums

The characteristics of Starlift Xtra enhance its performance in multiple-layer spooling as well. The design of Starlift Xtra provides excellent resistance to both abrasion and scrubbing that occurs at kickover areas and crushing that occurs at the crossover points in multiple-layer drum spooling. The rope construction combined with the compacted strand design of Starlift Xtra results in a rope cross-section of very high density. These features provide increased resistance to drum-related wear.

CASAR Starlift Xtra Strength and Weights Chart

Diameter (mm)	Weight (lb/ft)	Minimum Breaking Force (tons of 2000 lbs.)
16	0.85	30.6
19	1.22	42.9
22	1.65	57.2
25.4	2.19	75.9
26	2.3	79.2
28	2.67	91.6
30	3.08	105
32	3.5	119
Should not be used with a swivel.		

19x7



- Category 2, rotation resistant 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 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.

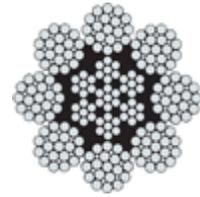
Frequent and regular inspection for broken wires is critical when using rotation resistant rope.

19x7 Strength and Weights Chart

Diameter (in)	Weight (lb/ft)	Minimum Breaking Force (tons of 2000 lbs.)
3/16	0.064	1.57
1/4	0.113	2.77
5/16	0.177	4.3
3/8	0.25	6.15
7/16	0.35	8.33
1/2	0.45	10.8
9/16	0.58	13.6
5/8	0.71	16.8
3/4	1.02	24
7/8	1.39	32.5
1	1.82	42.2
1 1/8	2.3	53.1
1 1/4	2.83	65.1
1 3/8	3.43	78.4
1 1/2	4.08	92.8

Should not be used with a swivel.

8x19 Class



- Crush-resistant
- Increased bendability
- Category 3 rotation-resistant rope

When you purchase Union's 8x19 Class of wire ropes, you get more than what meets the eye. Built in an ISO 9001 certified factory and backed by the industry's largest staff of professional engineers, we do more than produce to spec.

Our quality begins with our raw material qualification process which suppliers must meet standards that are more stringent than industry. We then document rod coils through completion rope manufacturing for full traceability. We don't stop there; the traceability continues into the field as each schedule is tracked to the customer. Throughout the manufacturing process we break test wires and tie that information to the coil and/or reel of rope. Thus ensuring we know the characteristics of the rope from its infancy and know it meets or exceeds our published strengths.

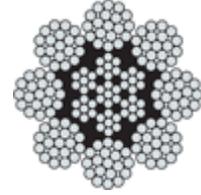
Standard constructions are regular lay and either 19 Seale or 25 Filler Wire. The size relationship between strands and cores gives these ropes increased bendability over six strand ropes of the same diameter. The 8x19 has more crushing resistance and a higher minimum breaking force than 19x7, but less rotation resistance. An 8x19 class rope can be used in multi-part reeving where limited rotation resistance is required.

You can trust Union wire rope to be produced to a higher standard, consistently. For the rope characteristics, please refer to the chart below.

8x19 Class Strength and Weights Chart

Diameter (in)	Weight (lb/ft)	Minimum Breaking Force (tons of 2000 lbs.)
5/16	0.18	4.63
3/8	0.26	6.63
7/16	0.36	8.97
1/2	0.47	11.6
9/16	0.6	14.7
5/8	0.73	18.1
3/4	1.06	25.9
7/8	1.44	35
1	1.88	45.5
1 1/8	2.39	57.3
1 1/4	2.94	70.5
1 3/8	3.56	84.9
1 1/2	4.24	100
Should not be used with a swivel.		

8x25 Resistwist



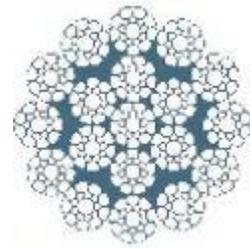
- Fatigue-resistant
- Rotation-resistant

The size relationship between strands and cores gives these ropes increased bendability over six strand ropes of the same diameter. 8x25 has more fatigue resistance than an 8x19 rope.

8x25 Resistwist Strength and Weights Chart

Diameter (in)	Weight (lb/ft)	Minimum Breaking Force (tons of 2000 lbs.)
5/16	0.18	4.63
3/8	0.26	6.63
7/16	0.36	8.97
1/2	0.47	11.6
9/16	0.6	14.7
5/8	0.73	18.1
3/4	1.06	25.9
7/8	1.44	35
1	1.88	45.5
1 1/8	2.39	57.3
1 1/4	2.94	70.5
1 3/8	3.56	84.9
1 1/2	4.24	100

Flex-X 19



- Category 2 rotation resistant rope
- More crushing resistance than standard 19 x 7 rope
- Higher strength-to-diameter resistance to bending fatigue
- Exceptional stability

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 19 x 7 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 has also demonstrated greater fatigue resistance to substantially cut rope expense and extend service life. It's ideal for multipart hoist lines wherever you encounter spooling problems, drum crushing, block twisting or have fast line speeds.

Flex-X 19 Strength and Weights Chart

Diameter (in)	Weight (lb/ft)	Minimum Breaking Force (tons of 2000 lbs.)
7/16	0.43	11.2
1/2	0.49	14.6
9/16	0.65	18.5
5/8	0.78	22.7
3/4	1.16	32.4
7/8	1.58	43.8
1	2.05	56.9
1 1/8	2.57	71.5

* 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.