

# ROTATION RESISTANT WIRE ROPE

These wire ropes are specially designed for use when rotation must be kept to a minimum. Strict adherence to breaking-in procedures and proper handling during use are extremely important with these ropes.

## 19 x 7 ROTATION RESISTANT

Sizes 1/2" and up meet the performance requirements of API-9A (18x7-WSC). All sizes listed meet the requirements of A.S.T.M. A 1023/ A1023M, where applicable. WSC, EIPS.

Diameter in Inches	Approx. Weight per Foot in Pounds	Breaking Strength in Tons * / **
1/4 †	.113	2.77
5/16 †	.177	4.30
3/8 †	.25	6.15
7/16	.35	8.33
1/2 † / ††	.45	10.8
9/16	.58	13.6
5/8 ††	.71	16.8
3/4 ††	1.02	24.0
7/8	1.39	32.5
1	1.82	42.2
1.1/8	2.30	53.1
1.1/4	2.85	65.1

† Available in Type 304 Stainless Steel \*\*

†† Available in Galvanized



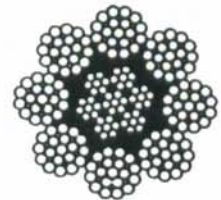
19 X 7 ROTATION RESISTANT WITH WIRE STRAND CORE

\*\* Breaking Strengths shown are for Bright rope - Stainless Steel 19X7 Rotation Resistant ropes are not covered by the above specifications. Breaking Strengths will vary.

## 8 x 25 SPIN RESISTANT

According to Federal Specification RR-W-410E. Meets the performance requirements of API-9A and A.S.T.M. 1023/ A1023M, Wire Rope for General Purposes, as applicable. IWRC, bright, preformed, EIPS.

Diameter in Inches	Approx. Weight per Foot in Pounds	Breaking Strength in Tons*
3/8	.26	6.63
7/16	.36	8.97
1/2	.47	11.6
9/16	.6	14.7
5/8	.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



8 x 25 SPIN RESISTANT WITH IWRC

# **ROTATION RESISTANT WIRE ROPE**

## **Rotation Resistant Ropes**

Rotation resistant ropes frequently can provide the best and most economical service in specific applications, when selected, handled and used **properly**.

Rotation resistant (contra-helically laid) ropes are different from “standard” construction ropes, because they are required to meet a different set of service requirements. Modes of failure and wear for rotation resistant ropes can vary far more than for standard constructions. The very nature of the construction which allows these ropes to meet their special operational requirements makes necessary certain limitations and special handling which are not encountered with standard constructions.

Tests on rotation resistant ropes show that the length of service life between that point in time where the visible broken wire criteria for removal from service are met, and where actual rope failure occurs, is substantially shorter for rotation resistant ropes than for standard construction ropes. These tests emphasize the need for separate guidelines and criteria for the application, use, inspection and retirement of rotation resistant ropes. Investigation and development work in this area continues.

The use of a swivel at the load hook or in the termination for a rotation resistant rope can result in unpredictable service life. This practice, or any other which allows the rope to rotate while in service, can lead to unbalanced loading between inner and outer layers of strands, which may result in core failure. If any significant change in diameter is found in a short length of an operating rope, or there is unevenness of outer strands, the rope should be replaced.

Since rotation resistant ropes are special, applicable industry regulations and standards list separate design, maintenance, inspection and removal criteria for them. Certain inspection techniques for these ropes are different from those required on standard ropes. Assistance in dealing with these special inspection techniques can be obtained by contacting the Company’s Technical Service Engineers.

The Company recommends that rotation resistant ropes be used with a MINIMUM DESIGN FACTOR OF FIVE (5).

## **19 X 7 ROTATION RESISTANT**

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, a 19 X 7 rope can be used. The rotation resistant characteristic of 19 X 7 rope is achieved by having six strands around a core strand in one direction, and then laying 12 strands around the first operation in the opposite direction. Thus, when the rope is in tension, opposing rotational forces are created between the inner and outer layers.

Ropes of 19 X 7 construction require special handling, selection and usage considerations, due to their construction. They are susceptible to kinking, crushing and unbalancing in the form of “core pops” and “birdcages.” Extreme care must be taken to avoid operational practices which can lead to these conditions.

In addition, frequent, regular inspection for broken wires is critical when using 19 X 7. By design, the 19 X 7 construction has a relatively low reserve strength. This can result in short service life between time point in time when the broken wire removal criteria are met and when actual rope failure occurs.

## **8 X 25 SPIN RESISTANT**

In a multi-part wire rope system where the blocks have a tendency to twist, or for a single part hoist line which does not require the degree of rotation resistant properties found in a 19 X 7 rope, the 8 X 25 Resistwist rope has found successful application. The rotation resistant characteristic is achieved by laying the eight outer strands around an independent wire rope core so these strands are in the opposite direction to the lay of the core. Thus, when the rope is in tension, opposing rotational forces are created between core and outer strands.

In addition to 8 X 25 Resistwist ropes being more stable than 19 X 7 ropes, several other advantages exist. The 8 X 25 Resistwist has increased resistance to bending fatigue and crushing on drums and sheaves. This is achieved through the use of 8-strand construction with an independent wire rope core.

As with any application where the type of rope on an installation is changed, an 8 X 25 Resistwist rope should be substituted only after carefully comparing specifications and strength requirements.