

Groundbreaking partner in mining





Surface mining ropes for reduced downtime.

**We've proven it,
so you can
expect it.**

06 Introduction

made in the USA
capabilities
certifications
quality
research & development

10 Bridon® shovel ropes

Bristar Tiger Blue
Tiger Blue 8
Zebra

14 WRI® shovel ropes

Cushion Pac Extreme
Cushion Pac Ultra

17 WRI® dragline ropes

Cushion Ultra 8 Strand
Ultra 8 Strand
Cushion Ultra 6 Strand
Ultra 6 Strand
6S Basic

23 Pendants

Galvanized Structural Strand
Tiger Blue Synthetic Pendants
Open Spelter Sockets

28 Inspection



a brief introduction

As a global market and technology leader in material science of steel wire transformation and coating technologies, Bekaert also applies its expertise beyond steel to create new solutions with innovative materials and services for markets including new mobility, low-carbon construction, and green energy.

When the cost of downtime is measured in five figures per hour, there's nothing more expensive than inferior rope. That's why Bekaert engineers premium wire rope products with unsurpassed longevity, allowing you to work longer and more efficiently.

Bridon® and WRI® ropes offer consistent quality from raw material to the finished product. We strive to make sure you have the perfect rope for every job, so we customize our recommendations based on your machine, your environment, and your application.

To help us meet this goal, we sell our rope only through distributors of mining equipment. These distributors offer the local support and expertise necessary to complement our ability to provide you with the right rope for every job.

Made in the USA

Our new state of the art ropery, specializing in high performance mining ropes, manufactures ropes in Exeter, Pennsylvania, USA. Our investment in this facility allows us to provide mission critical mining ropes when you need them.

Bekaert operates the largest 8-bobbin closer in the Americas, with a capacity of 120 metric tons, as well as a range of sophisticated stranders, including one of the fastest machines in the world.

We also employ industry-leading extrusion lines, with a proprietary process developed over two decades of making large plasticized ropes.



Capabilities

A combination of versatile machinery and more than 125 years of experience gives us the ability to manufacture an unmatched range of high-end products:

- 6 or 8-strand ropes up to 8" (203mm)
- Large plasticized ropes up to 6" (152mm)
- Structural strand up to 6" (152mm)
- Triangular flattened strand ropes
- Full-lock and half-lock coil ropes
- Cable laid ropes up to 12" (305mm)
- Long continuous lengths up to 29,000' (8.8km) of 2" (51mm)

These capabilities allow us to supply ropes for some of the largest equipment in use today, including dragline excavators and long cable belt conveyor systems. We regularly supply major supported roof structures, suspension bridges and communication tower projects around the globe. In addition to our current lineup, we can custom design and manufacture unique ropes to the specific requirements of your application.



Certifications



ISO 9001
QMI-SAI Global

ISO 9001 Certified

Bekaert is committed to quality assurance. All employees are working under a ISO 9001:2008 registered quality management system, from the shop floor to the executive office.

At Bekaert, we strive to:

- Fulfill the customer's quality requirements
- Conform to applicable regulatory requirements
- Enhance customer satisfaction
- Achieve continuous improvement

Lloyds Register

Lloyds Register provides independent assurance to companies operating high-risk, capital-intensive assets in the energy and transportation sectors, to enhance the safety of life, property and the environment. This helps us to create safe, responsible and sustainable supply chains.

The Lloyd's Register Group is one of the world leaders in assessing business processes and products to internationally recognized standards. For more information on this, please visit <http://www.lr.org>



quality.

Our multiple certifications by recognized regulatory bodies testify to our drive to bring the best quality and value product to our clients. We uphold our high standards of quality by employing the following processes.



Material supplier qualification

We run one of the most stringent supplier qualification programs in the industry. Our business is built on the consistency and quality of raw materials.

Employee training and education

We constantly improve competencies of our employees through supporting ongoing education and training programs and ensure that they have the correct tools to excel in their jobs.

Equipment calibration and maintenance

Calibrated and well-maintained equipment leads to greater product consistency and on-time delivery.

Coordinated and planned inspections

Planned inspections assure product consistency and conformity to specification.

Consistency through procedures

Documented and maintained procedures ensure all employees use the same work methods.

Audit and corrective actions

Internal audits and corrective actions ensure systems are effective and that continuous improvement is realized

Document verification

Formalized and monitored documentation allows for the complete tracking of product, processes, and materials.

Quality monitoring through inspection and testing

We monitor the quality of incoming materials, semi-manufactured products during manufacturing, and final products to ensure the quality standards are met before shipment.

Breaking load verification

Computerized destructive testing confirms the actual breaking load of individual rope and strand.

Field simulation through cycle testing

Fatigue cycle testing, simulating field conditions, verifies actual rope fatigue life.

Statistical Process Control (SPC)

We perform process capability studies to maintain and improve the quality of our manufacturing operations. Continuous measuring devices and procedures allow us to monitor if the process consistently meets specifications. They are also used to define control limits, which are used to flag inconsistencies and trigger immediate corrective actions. Ongoing SPC training for supervisory and operator personnel ensures adherence to procedures and that equipment is operated to peak efficiency.

research & development.

Drawing from years of engineering expertise, Bekaert has developed one of the most sophisticated design and testing systems in the marketplace today. Our technologies and precision testing allows us to examine and resolve complex problems quickly and efficiently, ensuring optimum performance for each design.

Our Test Lab and Field Facilities provide us with the following capabilities:

- Our in-line EM testing equipment for underground mining ropes is capable of detecting broken wires, rope distortion, and establishing the baseline for loss of metallic area verification during rope life.
- Tensile testing of ropes up to 180 metric tons and all types of wire
- Evaluation rotation and modulus of wire ropes
- Actual bending fatigue cycle testing under load, to simulate field conditions and optimize designs using two proprietary fatigue testing machines
- Metallurgical analysis, including full chemical and structural analysis of all steel components, allows for optimum wire selection for each design.
- Specialized material testing on key components such as lubricants, plastics and synthetics allows for the selection of the most appropriate materials for our designs
- Field sample analysis allows us to verify design parameters and development new ideas for improvement by comparing laboratory test results with actual customer samples.

Your feedback is important

A majority of our technical innovations come from customer feedback. Aftersales relationships are as important to Wire Rope industries as they are to our customers. We rely on field data to improve our products and bring more value to your operations.

Joint Product Development

We developed some of our most successful products through relationships with our long-term clients. We strive to understand the challenges that our clients face in their operations in order to be able to develop performance solutions for them. This process is especially fruitful when both sides understand the benefits and are open to employ their engineering resources towards the same goal. Contact us and learn how we can work together to develop custom solutions tailored to your needs.

Bekaert Ropes Technology Center

- Post-retirement rope analysis
- Rope condition assessment
- Forensic investigation
- Rope product benchmarking
- Rope mechanical testing
- Condition assesment
- Supply chain integrity management
- Rope torque-turn testing
- Destruction testing and wire tensile testing

Ropes 360

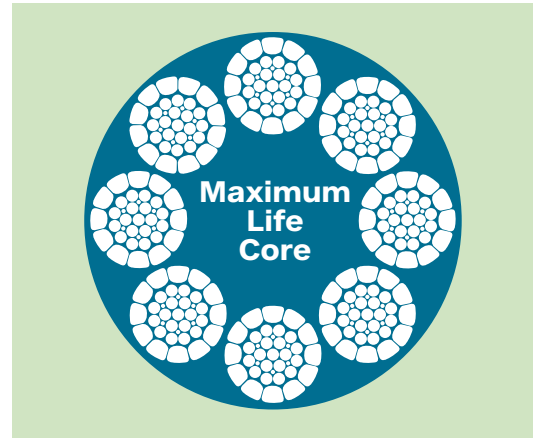
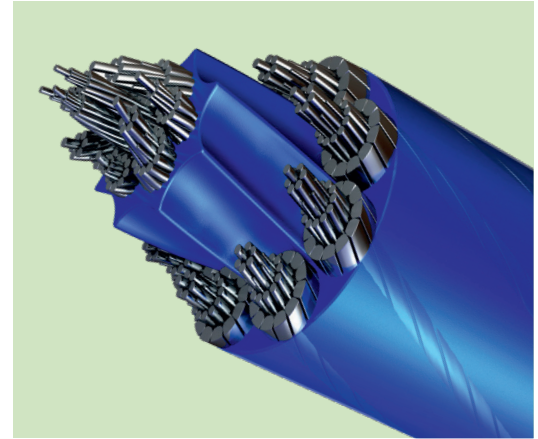
Bridon[®]
shovel
ropes

Dyform

Bristar Tiger Blue

Product benefits

- Revolutionary core design
- Increased performance over competing ropes
- Unbeatable annual savings
- Cutting-edge continuous improvement
- Robust, crush-resistant Dyform construction



100%

Machine Running Average

163%

Copper Mine

140%

Gold Mine

172%

Coal Mine

131%

Oil Sands

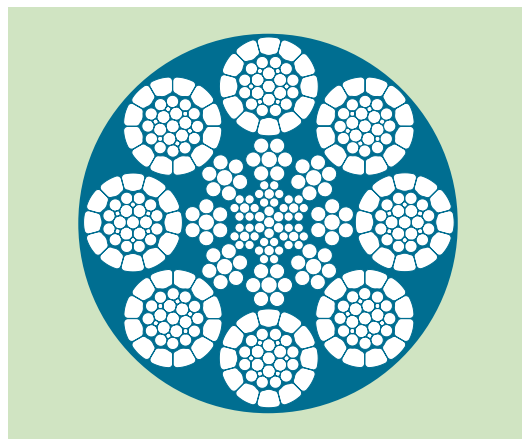
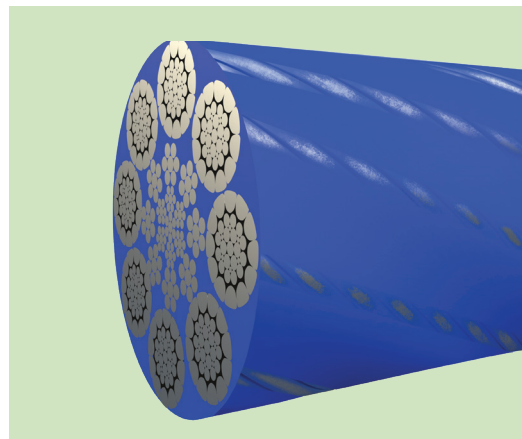
Rope Diameter		Weight Approx		Minimum Breaking force	
Inch	mm	lb/ft	kg/m	tons (2000 lbs)	metric tons
2 3/8	60	10.8	16.1	290	263
2 1/2	64	12.0	17.9	321	291
2 5/8	66	13.3	19.7	353	320
2 3/4	70	14.5	21.5	385	349
2 7/8	73	15.8	23.5	418	379

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Tiger Blue 8

Product benefits

- Reduces wire-contact stress
- Stays lubricated longer
- Innovative construction for less stress and longer life
- Reduces internal corrosion
- Robust, crush-resistant Dyform construction



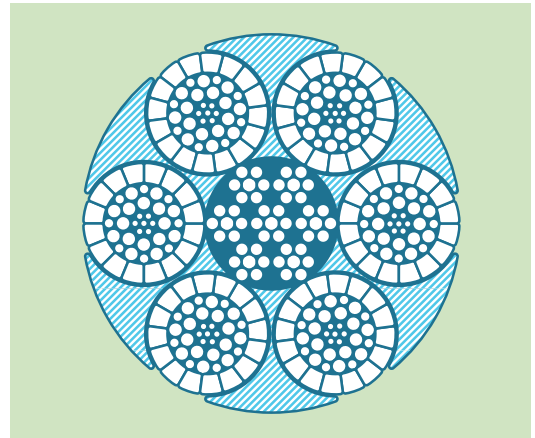
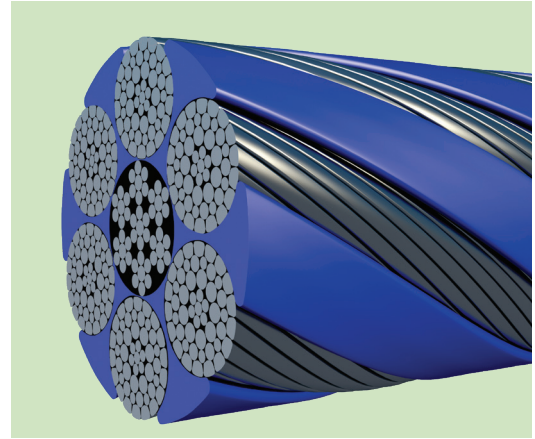
Rope Diameter		Weight Approx		Minimum Breaking force	
Inch	mm	lb/ft	kg/m	tons (2000 lbs)	metric tons
1-3/4	45	5.85	8.70	161	146
1-7/8	48	6.75	10.00	185	168
2	51	7.70	11.50	209	190
2-1/8	54	8.65	12.90	235	213
2-1/4	57	9.78	14.60	263	239
2-3/8	60	10.80	16.10	290	263
2-1/2	64	12.00	17.90	321	291
2-5/8	67	13.25	19.70	353	320
2-3/4	70	14.48	21.50	385	349
2-7/8	73	15.81	23.50	418	379

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Zebra

Product benefits

- Outperforms competing rope in cost per ton
- Up to 20% longer rope life
- Made to enhance performance and life in medium-sized shovels
- Engineered with unique formula of polymers and elastomers
- Resilient in extreme temperatures
- Designed to inhibit abrasion and bending fatigue
- Tested in extreme conditions
- Robust, crush-resistant Dyform construction



Rope Diameter		Weight Approx		Minimum Breaking force	
Inch	mm	lb/ft	kg/m	tons (2000 lbs)	metric tons
2-1/4	57	9.61	14.30	247	224
2-3/8	60	10.64	15.80	274	249
2-1/2	64	11.77	17.50	302	274
2-5/8	67	12.96	19.30	331	300
2-3/4	70	14.07	20.90	361	327
2-7/8	73	15.73	23.40	392	356

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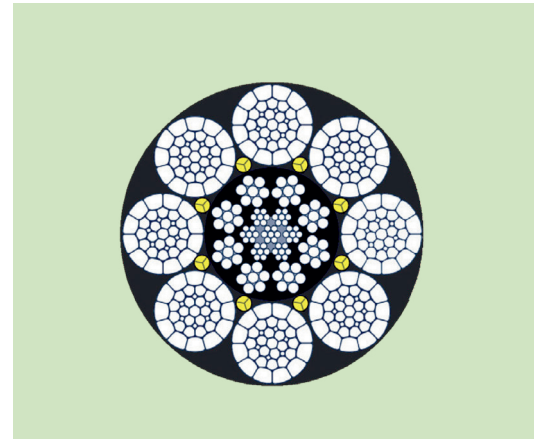
WRI[®]
shovel
ropes

CPX

Cushion Pac Extreme

Product benefits

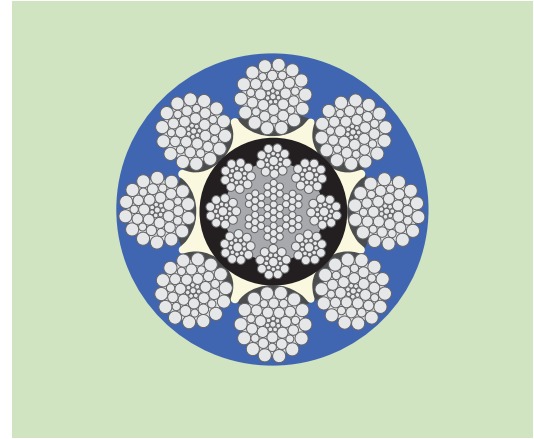
- Patented design with best in class shovel hoist rope
- Excellent service life
- Unbeatable annual savings
- Proven performance and consistency
- Operates in a wide range of temperatures
- Used on machines in the most rugged environments



Rope Diameter	Weight Approx		Minimum Breaking force	
	Inch	lb/ft	kg/m	tons
2 3/8	11.09	16.50	318	2829
2 1/2	12.27	18.25	350	3114
2 5/8	13.3	19.79	379	3372
2 3/4	14.49	21.56	398	2651
2 7/8	15.80	23.75	440	3914

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Cushion-Pac Ultra



Product benefits

- Patented design
- Reliable performance in all environments
- Outperforms competing ropes in many environments
- Maximum shovel productivity
- Proven to work in extreme temperature ranges
- Can be used on the largest shovels with bucket capacities over 70m

Rope Diameter		Weight Approx		Minimum Breaking force	
Inch	mm	lb/ft	kg/m	tons (2000 lbs)	metric tons
1 1/2	38	4.5	6.7	110	981
1 5/8	41	5.3	7.9	128	1,141
1 3/4	44	6.2	9.2	150	1,336
1 7/8	48	7.1	10.5	171	1,522
2	51	7.9	11.7	192	1,708
2 1/8	54	9.1	13.5	220	1,962
2 1/4	57	10.1	15.1	245	2,181
2 3/8	60	11.2	16.7	271	2,410
2 1/2	64	12.6	18.7	304	2,706
2 5/8	67	14	20.8	339	3,018
2 3/4	70	15.2	22.6	351	3,120
2 7/8	73	16.6	24.7	400	3,562
3	76	18.1	26.9	436	3,881

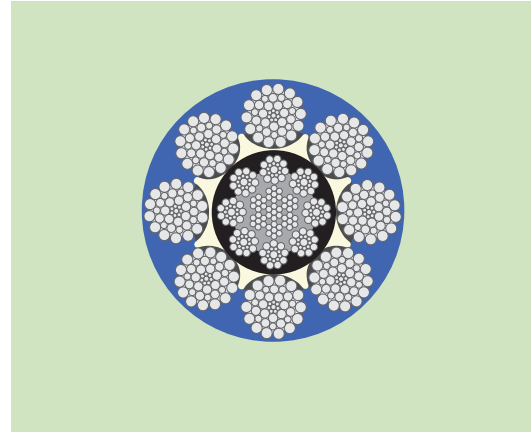
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WRI[®]
dragline
ropes

8 strand Cushion Ultra™

Product benefits

- Patented design delivers best in class hoist rope performance
- Significant reduction in downtime and number of rope change-outs
- Minimizes sheave and drum wear, eliminating the need for alternating left and right lay ropes
- Overall improvement in rope and machine cleanliness
- Separately extruded core allows for increased cycle life
- Enhanced plastic retention allows for greater abrasion resistance



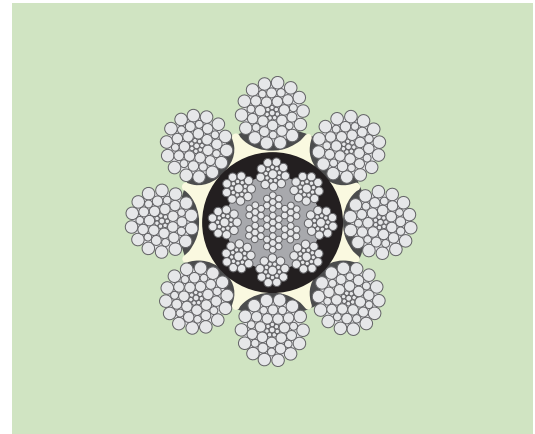
Rope Diameter		Weight Approx		Minimum Breaking force	
Inch	mm	lb/ft	kg/m	tons	kN
2 3/4	70	12.9	19.2	313	2,782
2 7/8	73	14.1	21	342	3,044
3	76	15.4	22.9	371	3,306
3 1/8	79	16.7	24.9	403	3,585
3 1/4	83	18.3	27.2	439	3,906
3 3/8	86	19.6	29.2	470	4,185
3 1/2	89	21.1	31.4	505	4,498
3 5/8	92	22.3	33.2	542	4,828
3 3/4	95	24.2	36	580	5,166
3 7/8	98	26	38.7	628	5,589
4	102	27.8	41.4	669	5,952
4 1/8	105	29.8	44.3	719	6,400
4 1/4	108	31.8	47.3	764	6,798
4 3/8	111	33.9	50.4	816	7,263
4 1/2	114	36	53.6	856	7,618
4 5/8	117	38.3	57	904	8,049
4 3/4	121	40.4	60.1	954	8,488
4 7/8	124	42.5	63.2	1,005	8,945
5	127	44.8	66.7	1,057	9,410

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8 strand Ultra™

Product benefits

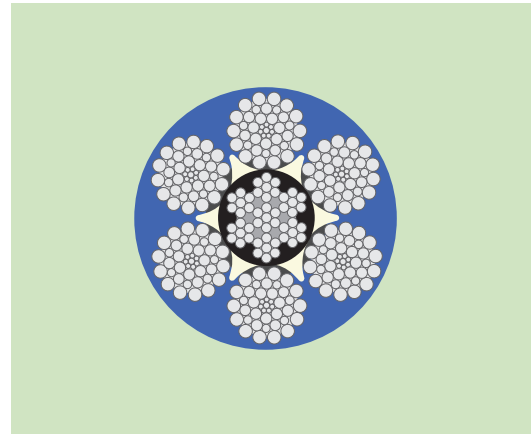
- Visibility of the outer strands for inspection
- Enhanced encapsulated core increases cycle life
- Clear value over standard 8-strand ropes on the market
- 8 strand configuration for hoist position



Rope Diameter		Weight Approx		Minimum Breaking force	
Inch	mm	lb/ft	kg/m	tons	kN
2 3/4	70	12.9	19.2	313	2,782
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6 strand Cushion Ultra™



Product benefits

- Patented design delivers best in class drag rope performance
- Longest lifetime of any dragline rope on the market
- Significant reduction in downtime and number of rope change-outs
- Minimizes sheave and drum wear, eliminating the need for alternating left and right lay ropes
- Overall improvement in rope and machine cleanliness
- Enhanced plastic retention allows for greater abrasion resistance

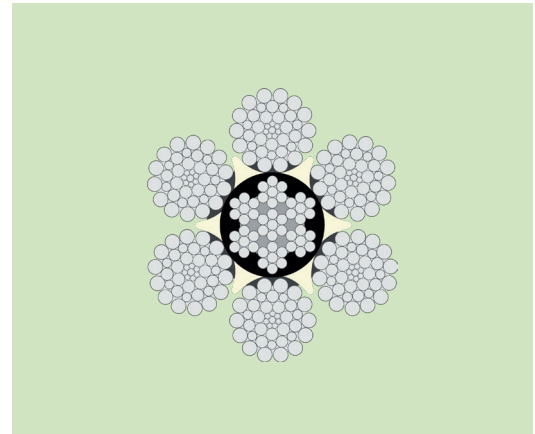
Rope Diameter		Weight Approx		Minimum Breaking force	
Inch	mm	lb/ft	kg/m	tons	kN
2 3/4	70	12.7	18.9	311	2,765
2 7/8	73	13.9	20.7	341	3,035
3	76	15.2	22.6	371	3,297
3 1/8	79	16.5	24.6	402	3,576
3 1/4	83	18	26.8	440	3,915
3 3/8	86	19.4	28.9	468	4,168
3 1/2	89	20.8	31	543	4,836
3 5/8	92	22.5	33.5	583	5,191
3 3/4	95	24	35.7	625	5,563
3 7/8	98	25.7	38.2	646	5,749
4	102	27.5	40.9	689	6,130
4 1/8	105	29.3	43.6	732	6,519
4 1/4	108	31.2	46.4	777	6,916
4 3/8	111	33.4	49.7	824	7,330
4 1/2	114	35.2	52.4	871	7,753
4 5/8	117	37.2	55.4	921	8,193
4 3/4	121	39.3	58.5	971	8,641
4 7/8	124	41.4	61.6	1,023	9,106
5	127	43.5	64.7	1,076	9,579

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6 strand Ultra™

Product benefits

- Visibility of the outer strands for inspection
- Clear value over standard 6-strand ropes on the market
- 6 strand design for drag position



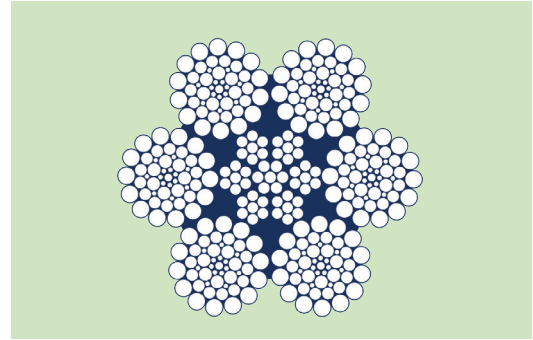
Rope Diameter		Weight Approx		Minimum Breaking force	
Inch	mm	lb/ft	kg/m	tons	kN
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4 1/2	114	35.2	52.4	871	7,753
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6S Basic

Product benefits

- Proven 6 strand design without jacketing
- Advanced lubricants extend rope life and reduce fly-off
- Rugged construction provides standard wear resistance

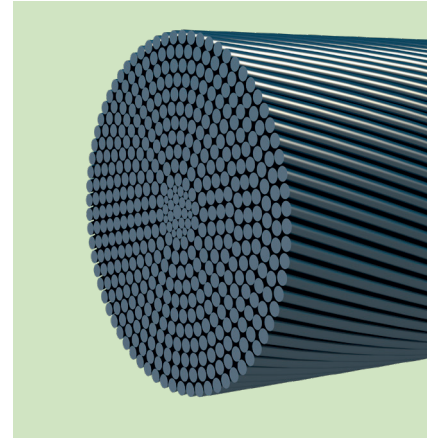


Rope Diameter		Weight Approx		Minimum Breaking force	
Inch	mm	lb/ft	kg/m	tons	kN
1 1/2	38	4.2	6.2	108	964
1 5/8	41	5	7.4	126	1,125
1 3/4	44	5.7	8.4	145	1,294
1 7/8	48	6.5	9.7	165	1,471
2	51	7.6	11.4	188	1,674
2 1/8	54	8.4	12.4	210	1,869
2 1/4	57	9.4	13.9	235	2,088
2 3/8	60	10.2	15.2	243	2,164
2 1/2	64	11.3	16.9	277	2,469
2 5/8	67	12.5	18.6	311	2,765
2 3/4	70	13.8	20.5	344	3,061
2 7/8	73	14.9	22.2	378	3,365
3	76	16.3	24.2	411	3,661
3 1/8	79	17.6	26.3	445	3,957
3 1/4	83	19.5	29.1	479	4,261
3 3/8	86	20.5	30.5	512	4,557
3 1/2	89	21.8	32.5	545	4,853
3 5/8	92	23.8	35.5	580	5,157
3 3/4	95	25.3	37.7	613	5,453
3 7/8	98	27.3	40.6	683	6,079
4	102	29.1	43.4	731	6,502
4 1/8	105	31.5	46.9	777	6,916
4 1/4	108	33.4	49.8	825	7,339
4 3/8	111	35.4	52.7	872	7,761
4 1/2	114	37.3	55.4	943	8,395
4 5/8	117	39.1	58.3	984	8,757
4 3/4	121	41.7	62.1	1,057	9,410

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pendants

Galvanized Structural Strand



Product benefits

- To ASTM A-586 for boom support pendants
- Usually supplied prestressed
- Cut-to-length and paint striped
- Parallel contact core construction with amorphous polypropylene lubricant available
- Class A zinc-coated wire

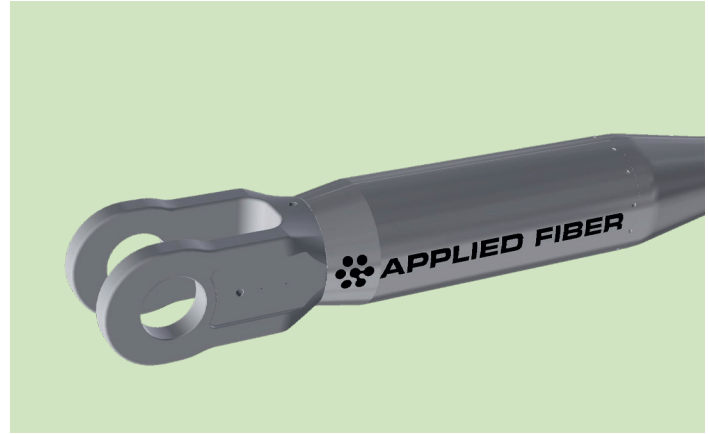
Rope Diameter		Approx. Metallic Area		Weight Approx.		Minimum Breaking Force	
Inch	mm	sq. in	sq. mm	lbs/ft	kg/m	tons (2000 lbs)	metric tons
1/2	12.7	0.15	97	0.52	0.80	15	14
5/8	15.9	0.23	148	0.82	1.20	24	22
3/4	19.1	0.34	219	1.18	1.80	34	31
7/8	22.2	0.46	297	1.61	2.40	46	42
1	25.4	0.60	387	2.10	3.10	61	55
1-1/8	28.6	0.76	490	2.66	4.00	78	71
1-1/4	31.8	0.94	606	3.28	4.90	96	87
1-3/8	34.9	1.13	729	3.97	5.90	116	105
1-1/2	38.1	1.35	871	4.73	7.00	138	125
1-5/8	41.3	1.59	1026	5.55	8.30	162	147
1-3/4	44.5	1.84	1187	6.43	9.60	188	171
1-7/8	47.6	2.11	1361	7.39	11.00	216	196
2	50.8	2.40	1548	8.40	12.50	245	222
2-1/8	54.0	2.71	1748	9.49	14.10	277	251
2-1/4	57.2	3.04	1961	10.64	15.80	310	281
2-3/8	60.3	3.38	2181	11.85	17.60	344	312
2-1/2	63.5	3.75	2419	13.13	19.50	376	341
2-5/8	66.7	4.13	2665	14.47	21.50	417	378
2-3/4	69.9	4.54	2929	15.88	23.60	452	410
2-7/8	73.0	4.96	3200	17.36	25.80	494	448
3	76.2	5.40	3484	18.90	28.10	538	488
3-1/8	79.4	5.86	3781	20.51	30.50	584	530
3-3/4	82.6	6.34	4090	22.18	33.00	625	567
3-3/8	85.7	6.83	4406	23.92	35.60	673	611
3-1/2	88.9	7.35	4742	25.73	38.30	724	657
3-5/8	92.1	7.88	5084	27.60	41.10	768	697
3-3/4	95.3	8.44	5445	29.53	43.90	822	746
3-7/8	98.4	9.01	5813	31.53	46.90	878	797
4	101.6	9.60	6194	33.60	50.00	925	839
4-1/4	108.0	10.80	6968	37.90	56.40	1040	943
4 3/8	111.1	11.50	7419	40.20	59.80	1100	998
4-1/2	114.3	11.80	7613	41.30	61.50	1140	1034
4-3/4	120.7	13.00	8387	45.50	67.70	1300	1179

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Tiger Blue Synthetic Pendants

Product benefits

- Reduced wear and lower operating cost
- Dampen boom jacking
- Reduced vibration
- Dramatic weight reduction
- Increased payload capacity
- Reduced boom fatigue



Open Spelter Sockets

Strand Dia.	Rope Dia.	Table of Dimensions, in.											Approx. Weight, Lbs.
		In	In.	A	B	C	D	E	G	J	K	L	
1/2	9/16 & 5/8	3	2-1/2	1-1/4	6-3/4	2-1/4	1-1/4	1 1/8	1-1/4	9/16	2-1/4	1-3/16	3.8
9/16 & 5/8	3/4	3-1/2	3	1-7/16	7-15/16	2-5/8	1-1/2	1-1/4	1-1/2	5/8	2-5/8	1-3/8	6.0
11/16 & 3/4	7/8	4	3-1/2	1-3/4	9-1/4	3-1/8	1-3/4	1-1/2	1-3/4	3/4	3-1/8	1-5/8	10.0
13/16 & 7/8	1	4-1/2	4	2-1/16	10-9/16	3-5/8	2	1-3/4	2	7/8	3-3/4	2	15.0
5/16 & 1	1-1/8	5	4-1/2	2-5/16	11-13/16	4	2-3/8	2	2-1/4	1	4-1/8	2-1/4	23.0
1-1/16 & 1-1/8	1-1/4 & 1-3/8	5-1/2	5	13-3/16	13-3/16	4-5/8	2-3/4	2-1/4	2-1/2	1-1/8	4-3/4	2-1/2	32.0
1-3/16 & 1-1/4	1-1/2	6	6	3-1/8	15-1/8	5-1/4	3	2-3/4	3	1-3/16	5-3/8	2-3/4	47.0
1-5/16 & 1-3/8	1-5/8	6-1/2	6-1/2	3-1/4	16-1/4	5-1/2	3-1/4	3	3	1-5/16	5-3/4	3	55.0
1-7/16 & 1-5/8	1-3/4 & 7/8	7-1/2	7	3-3/4	18-1/4	6-3/8	3-7/8	3-1/8	3-1/2	1-9/16	6-1/2	3-1/2	85.0
1-1/16 & 1-3/4	2 & 2-1/8	8-1/2	9	4	21-1/2	7-3/8	4-1/4	3-3/4	4	1-13/16	7	3-3/4	125.0
1-13/16 & 1-7/8	2-1/4 & 2-3/8	9	10	4-1/2	23-1/2	8-1/4	4-3/8	4	4-1/2	2-1/8	7-3/4	4-1/4	165.0
1-15/16 & 2-1/8	2-1/2 & 2-5/8	9-3/4	10-3/4	5	25-1/2	9-1/4	4-5/8	4-1/2	5	2-3/8	8-1/2	4-3/4	252.0
2-3/16 & 2-7/16	2-3/4 & 2-7/8	11	11	5-1/4	27-1/4	10-3/4	4-7/8	4-7/8	5-1/4	2-7/8	9	5	315.0
2-1/2 & 2-5/8	3 & 3-1/8	12	11-1/4	5-3/4	29	11-1/4	5-1/4	5-1/4	5-3/4	3	9-1/2	5-1/4	380.0
2-3/4 & 2-7/8	3-1/4 & 3-3/8	13	11-3/4	6-1/8	30-7/8	12-1/4	5-3/4	5-3/4	6-1/4	3-1/8	10	5-1/2	434.0
3 & 3-1/8	3-1/2 & 3-5/8	14	12-1/2	6-3/4	33-1/4	13	6-1/4	6-1/2	6-3/4	3-1/4	10-3/4	6	563.0
3-1/4 & 3-5/8	3-3/4 & 4	15	13-1/2	7-3/4	36-1/4	14-1/4	7	7-1/4	7-1/2	3-1/2	12-1/2	7	783.0
3-3/4 & 4		16	15	7-3/4	38-3/4	15-1/4	8-1/2	7-3/4	8	3-3/4	14	7-1/4	1018.0
4-1/8 & 4-3/8		17	15-1/2	8-3/4	41-1/4	16-1/4	9	8-3/4	9	4-1/8	15-1/2	8-1/4	1186.0

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Open Spelter Sockets

Strand Dia.	Rope Dia.	Table of Dimensions, in.											Ap- prox. Weight, Lbs.
		In	In.	A	B	C	D	E	G	J	K	L	
1/2	8	4-3/16	3-3/32	2-11/32	6.1	3	9-1/2	16-3/4	3/4	1-3/16	1-1/4	7-1/4	12.2
9/16 & 5/8	8	4-31/32	3-21/32	2-9/16	6.4	3-1/2	9-3/4	18	7/8	1-3/8	1-7/16	8-1/4	17.3
11/16 & 3/4	10	5-21/32	4-7/32	2-25/32	8.2	4	12	21-1/2	1	1-5/8	1-11/16	9-1/2	25.0
13/16 & 7/8	10	6-13/16	4-13/16	3-1/32	11.0	4-1/2	12-1/4	23-1/2	1-1/4	2	2-1/16	11-1/4	39.3
15/16 & 1	12	9-1/4	5-13/32	3-7/32	19.0	7	14-1/2	27-1/2	1-3/8	2-1/2	2-9/16	13	61.6
1-1/16 & 1-1/8	12	9-15/32	6-1/32	3-19/32	23.0	7	14-3/4	28-1/2	1-1/2	2-1/2	2-9/16	13-3/4	74.6
1-3/16 & 1-1/4	12	10-1/16	6-11/16	3-31/32	29.0	7-1/4	15-1/4	30-1/4	1-3/4	2-3/4	2-13/16	15	103.0
1-5/16 & 1-3/8	12	10-11/16	7-11/32	4-3/8	41.2	7-1/2	15-1/2	32	2	3	3-1/16	16-1/2	142.2
1-7/16 & 1-1/2	15	11-1/4	8	4-3/4	46.0	7-3/4	19	37	2-1/4	3-1/2	3-9/16	18	191.0
1-9/16 & 1-5/8	15	11-5/8	8-11/16	5-5/32	60.0	8	19	38	2-1/4	3-1/2	3-9/16	19	210.0
1-11/16 & 1-3/4	18	12-15/32	9-11/32	5-9/16	74.0	8-1/2	22-1/2	43	2-1/2	3-3/4	3-13/16	20-1/2	276.0
1-13/16 & 1-7/8	18	13-9/16	10-1/32	5-31/32	91.0	22-1/2	44	2	2-1/2	4	4-1/16	21-1/2	209.0
1-15/16 & 2	18	13-15/16	10-21/32	6-11/32	111.0	9-1/2	22-3/4	45-3/4	2-3/4	4-1/4	4-5/16	23	387.0
2-1/16 & 2-1/8	18	15-1/16	11-11/32	6-3/4	131.0	10-1/4	23-1/4	47-1/2	3	4-1/2	4-9/16	24-1/4	469.0
2-3/16 & 2-1/4	18	15-1/8	12	7-1/8	155.0	10-1/4	23-1/4	48-1/2	3	4-3/4	4-13/16	25-1/4	509.0
2-5/16 & 2-3/8	18	16-1/2	12-5/8	7-1/2	180.0	11-1/4	23-3/4	50-1/2	3-1/4	5	5-1/16	26-3/4	609.0
2-7/16	18	17-5/8	13-7/32	7-7/8	207.0	11-1/4	23-3/4	51-1/4	3-1/4	5	5-1/16	27-1/2	640.0
2-1/2	18	17-5/8	13-7/32	7-7/8	207.0	11-1/4	23-3/4	51-3/4	3-1/4	5-1/4	5-5/16	28	660.0
2-9/16 & 2-5/8	18	17-11/16	13-29/32	8-9/32	238.0	12	24-1/4	53-1/4	3-1/2	5-1/4	5-5/16	29	763.0
2-3/4	18	18-1/16	14-1/2	8-5/8	274.0	12	24-1/2	55	3-3/4	5-1/2	5-9/16	30-1/2	893.0
2-7/8	18	19-21/32	15-1/8	9	314.0	13-1/2	24-1/2	55-3/4	3-3/4	5-1/2	5-9/16	31-1/4	944.0
3	18	20	15-25/32	19-13/32	360.0	13-1/2	25	57-3/4	4	6	6-1/6	32-3/4	1113.0
3-1/8	24	22-1/8	16-7/16	9-25/32	390.0	15-1/2	31	64-1/2	4	6	6-1/16	33-1/2	1207.0
3-1/4	24	22-1/2	17	10-1/8	400.0	15-1/2	31-1/4	68-1/2	4-1/4	7	7-1/16	37-1/4	1413.0
3-3/8	24	23-3/4	7-11/16	10-17/32	455.0	16-1/2	31-3/4	71-1/2	4-1/2	7	7-1/16	39-3/4	1615.0
3-1/2	24	23-7/8	18-5/16	10-15/16	598.0	16-1/2	31-3/4	71-1/2	4-1/2	7	7-1/16	39-3/4	1756.0
3-5/8	24	25-1/4	18-7/8	11-1/4	633.0	17-1/2	32	73-1/4	4-3/4	7	7-1/16	41-1/4	1958.0
3-3/4	24	27-3/8	19-1/2	11-9/16	723.0	17-1/2	32	75	4-3/4	7-1/2	7-9/16	43	2103.0
3-7/8	24	27-3/8	20-3/16	11-13/32	728.0	18-1/2	32-1/2	76-1/4	5	7-1/2	7-9/16	43-3/4	2297.0
4	24	29-1/8	20-3/4	12-5/16	850.0	18-1/2	32-1/2	76-3/4	5	7-1/2	7-9/16	44-1/4	2370.0

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inspection.

Carefully conducted inspections are necessary to ascertain the condition of wire and strand during its working life on the machine. The primary objective of inspection is to detect conditions that could be detrimental to continued normal operation of the product.

Bridon's Life Cycle Management (LCM) program is designed to help miners extract the full Bridon value.

Our LCM program begins with careful inspection before installation and periodically through the life of the wire rope and strand pendant. These investigations are necessary to wear patterns, monitor retirement criteria and ant machine damage that would adversely affect service life.

The individual making the inspection should be familiar with the product and operation, as his judgement is important. Various codes, regulations, and publications provide inspection requirements for specific applications. All operating ropes and strands should be visually inspected at least once each working day with a record made of the inspection. A visual inspection consists of the observation of all rope or strand and end connections which can reasonably be expected to be in use during daily operations. The visual observations should be concerned with discovering gross damage such as those listed below, which may be an immediate concern:

- Distortion of rope or strand such as kinking, crushing, unlaying, bird caging, main strand displacement, or core protrusion
- Corrosion
- Broken or cut strands
- Number, distribution, and type of broken wires
- Lubrication

Special care should be taken when inspecting sections or areas subjected to rapid deterioration, such as the wedge sockets on drag and hoist ropes, areas adjacent to sockets on strand pendants, pick-up points on drums and sheaves, and areas operating through fair-lead sheaves. Special care should be given to boom hoist ropes, where present.

There are no precise rules provided for retirement of wire ropes used on mining equipment based on number of broken wires per lay. Continued use depends largely upon good judgment of the inspector in evaluating the remaining strength and useful life of the rope.

However, it is considered to be good practice to consider retirement, or conduct more frequent and detailed inspections, when there are more than six wire breaks per lay or more than three wire breaks per strand, per lay. Valley breaks should be given careful consideration, as this is an indication of core deterioration.

A good practice when broken wires are found early in the rope life is to cut off the broken wires in the valley so that the wires do not come out of position and fold over and damage adjacent wires during operation. This can then lead to additional wire breaks in the same area.

The location of the broken wires should be recorded to help future inspections. Strand pendants should be removed from service when more than 30% of the outer wires or more than 10% of the total number of wires are broken. Radiographic inspection is required to detect broken internal wires. Outer wire breakage can be detected by using special inspection techniques. Conditions that should alert the inspector to interior wire breakage are a reduction in strand diameter in an area up to 12 inches from the nose of the socket, evidence of corrosion, or corrosion at and adjacent to the socket nose.

Lubrication is important to the performance of all wire ropes and strand products used in surface mining applications. Important factors to consider are:

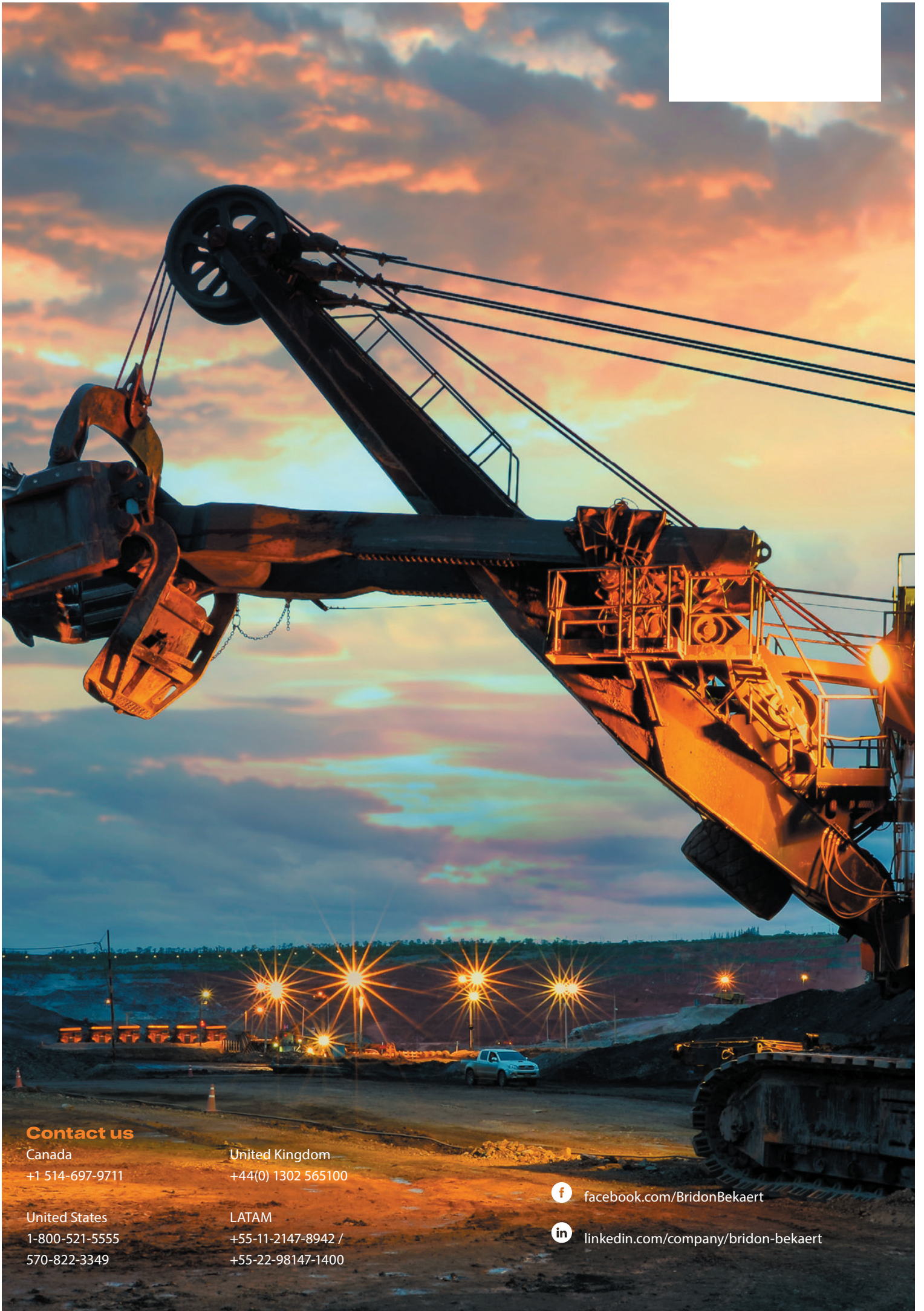
- A dirty rope cannot be relubricated. The rope and rope valleys must be clean so that the lubricant applied will penetrate into the core.
- The rope should be relubricated with a solvent cut back or liquid lubricant.
- Strands should be relubricated by using the lube nozzle provided in the basket of the socket to relubricate the interior of the strand at the nose of socket. An anti-wear and anticorrosion water displacing grease such as Castrol Molub-Alloy 860/220-0 ES® or equivalent lithium grease should be used for this purpose. The exterior of the strand should be lubricated with a solvent cutback or liquid lubricant in a 4- to 6-foot area adjacent to the socket.
- Used motor oil must never be used to relubricate wire rope or strands.

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