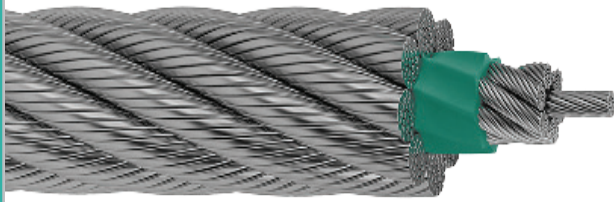


Steel wire ropes for **MINING**





SUMMARY

SURFACE MINING SHOVEL ROPES

- 4** IPH MP8A
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LATIN AMERICAN'S MOST LEADING EDGE INDUSTRIAL LOGISTICS SYSTEM





Wire ropes for MINING

The demands of mining equipment, and its particular environment, constitute a unique challenge for wire ropes. All IPH wire ropes for mining meet the main worldwide OEM's requirements.

Our investment in R + D and the technology applied to the production of mining ropes provides a perfect balance between flexibility and strength, which is essential to guarantee an optimum service life, taking into consideration the hard operative conditions that can be found in a mining environment.

IPH products are world class level, complying with international standards, thus providing constructive features suitable to every operation or market segment.



IPH QUALITY

IPH Quality Management System guarantees full traceability of products and compliance with international manufacturing standards. Quality controls are carried out throughout the whole process, from raw material reception to final product.

MANAGEMENT SYSTEM CERTIFICATIONS:

TÜV Rheinland, ISO 9001:2015.
Fundação Vanzolini NBR, ISO 9001:2015.

SPECIFIC CERTIFICATIONS:

Oil & Gas:
American Petroleum Institute,
API Monogram Spec Q1, Spec 9A for San Miguel
Plant: Av. Arturo Humberto Illía 4001 (B1663HRI),
San Miguel, Buenos Aires, Argentina.

Marine Use
Lloyd's Register plant certification.

General Purpose
ABNT NBR, ISO 2408 product certification.

Offshore container lifting slings
Product Certification DNV, 2.7-1.

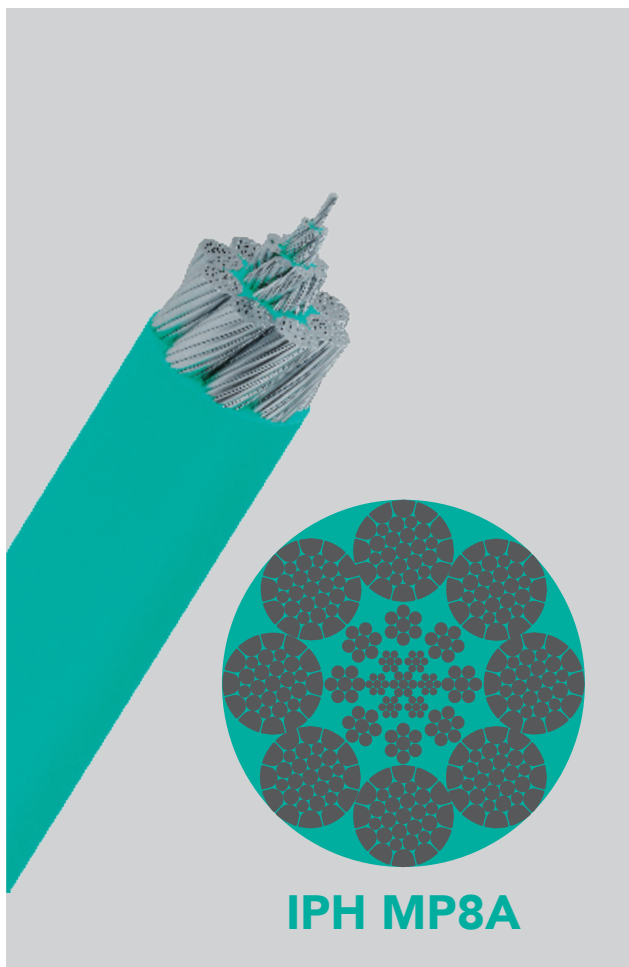
Wire rope slings
Flemish eye product certification IRAM 5221.

Elevators
INTI license according to resolution 897/99, applicable
standard IRAM 840

SURFACE MINING SHOVEL ROPES

The well-known advantages of mining ropes are enhanced by the thermo-plastic injection process developed and carried out in our own plant using state-of-the-art technology and in accordance with the highest quality standards. The specific characteristics of the polymer used allow getting

maximum benefits from this technology, and it can apply over both the core and the entire rope surface. Thus, IPH is able to supply two lines of ropes for the bucket movement requirements of electric shovels and draglines.



Advantages and features

- 8-strand compacted construction with steel core with full plastic injected.
- Plastic penetration inside the core minimizes contact tensions between wires and strands.
- Greater bending fatigue, corrosion and abrasion resistance, both inner and outer.
- Higher wear resistance, reducing sheaves and wire rope wear.
- The thermo-plastic technology protects the core from moisture and dust penetration.
- Bright coating with special lubrication, which minimizes friction wear between inner wires and thus increases service life.

Applications

- Hoist rope for draglines and shovels.
- Crowd and retract ropes for electric shovels.
- Drag rope for draglines.

Diameter		Weight factor	Minimum Breaking Load	
[mm]	[inch]	[kg/m]	[kN]	[t]
57,00	2 1/4	15,40	2340	239
60,00	2 3/8	17,10	2610	266
64,00	2 1/2	19,00	2880	294
67,00	2 5/8	20,90	3190	326
70,00	2 3/4	22,70	3500	357
73,00	2 7/8	25,10	3820	390
76,00	3	27,30	4160	424

Construction: 8x31 WSCO, depending on the diameter range. Coating: bright and lubricated. For other rope diameters not specified in this catalogue, please contact IPH.



IPH MP8A ULTRA

BREAKING LOAD



BENDING FATIGUE RESISTANCE



Advantages and features

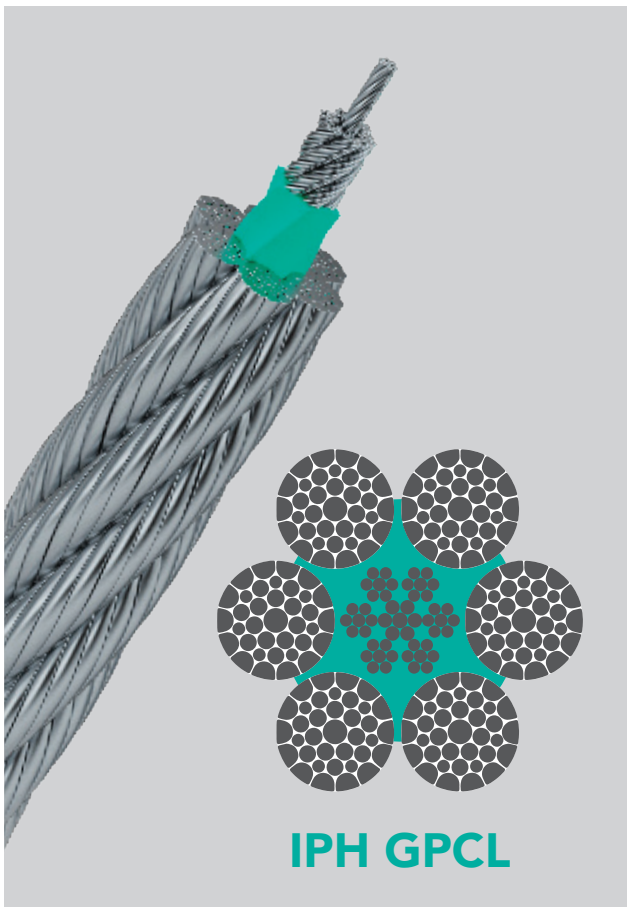
- Optimized design.
- Longer service life.
- Increased abrasion wear resistance.
- Greater adherence of steel-plastic interface, which increases resistance to superficial plastic detachment.
- Special design core, which provides extra flexibility and enhances thermo-plastic infiltration.
- Increases equipment availability, minimizing operative costs.



Diameter		Weight factor	Minimum Breaking Load	
[mm]	[inch]	[kg/m]	[kN]	[t]
57,00	2 1/4	15,40	2590	264
60,00	2 3/8	17,10	2890	295
64,00	2 1/2	19,00	3190	325
67,00	2 5/8	20,90	3530	360
70,00	2 3/4	22,70	3870	395
73,00	2 7/8	25,10	4230	431
76,00	3	27,30	4600	469

Construction: 8x31 WSCO, depending on diameter range. Coating: bright and lubricated.
For other rope diameters not specified in this catalogue, please contact IPH.

DRAGLINES ROPES



6-strand compacted ropes with injected plastic steel core, recommended for hoist and drag position as well as dump ropes. They are extra high resistant due to strand compacting and plastic covering injected on the steel core.

Advantages and features

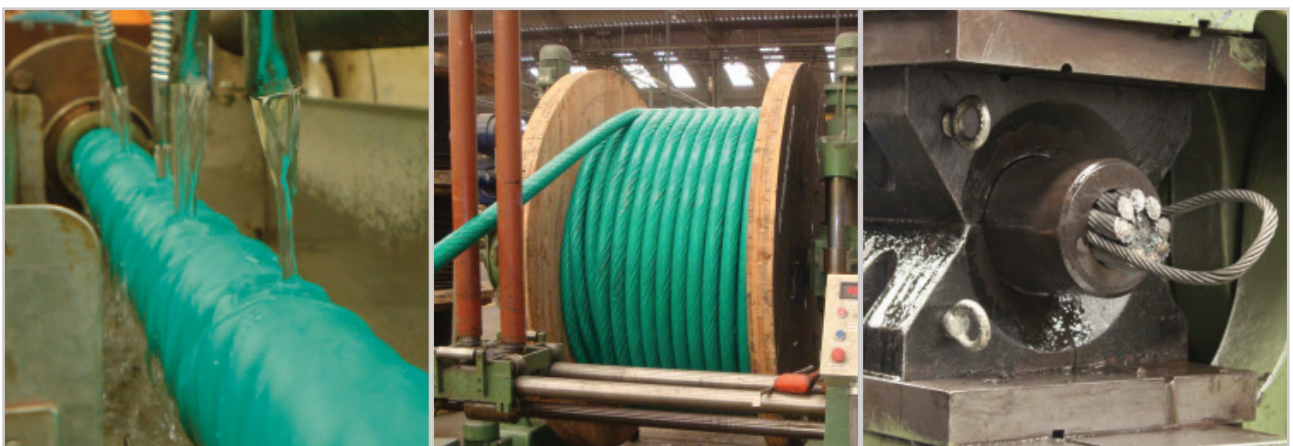
- 6x36 WS construction, with compacted strands and thermo-plastic cushion steel core.
- The thermo-plastic technology protects the core from moisture penetration and keeps a proper lubrication inside of it, minimizing internal corrosion.
- Lower abrasion wear, both on the sheaves and on the rope itself.
- Bright wires finishing and lubricated.

Applications

- Hoist and dragline ropes.
- Dump ropes.

Diameter		Weight factor	Minimum Breaking Load	
[mm]	[inch]	[kg/m]	[kN]	[t]
45,00	1 3/4	9,30	1620	165
48,00	1 7/8	10,70	1860	190
51,00	2	12,10	2120	216
54,00	2 1/8	13,70	2390	244
57,00	2 1/4	15,40	2680	273
60,00	2 3/8	17,10	2990	305
64,00	2 1/2	19,00	3310	338
67,00	2 5/8	20,90	3650	372
70,00	2 3/4	22,70	4020	410
73,00	2 7/8	25,10	4380	447
76,00	3	27,30	4770	487

Construction: 6x36 WSCO, depending on diameter range. Coating: bright and lubricated. For other rope diameters not specified in this catalogue, please contact IPH.



SOIL EXPLORATION AND SURVEYING

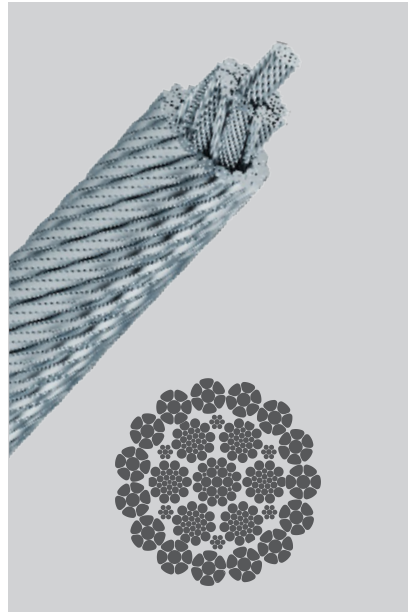
Our high-performance steel ropes are ideal for surface drilling equipment, in applications such as core retrieval (wireline) or rotary drilling for blasting. They are designed and manufactured to withstand the most demanding conditions, ensuring reliable operation and maximizing uptime.

ROTARY DRILLING EQUIPMENT ROPES

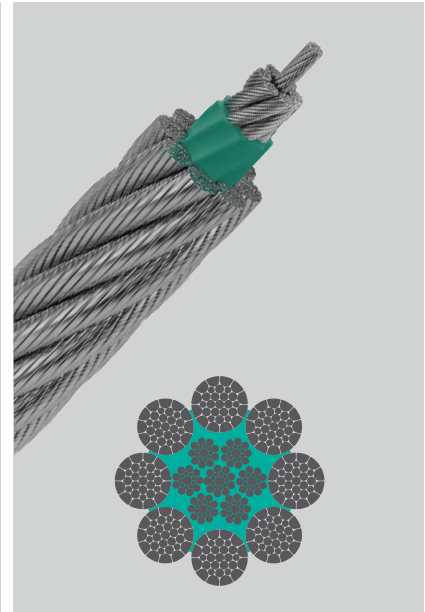
High-performance ropes with superior fatigue resistance, great flexibility, and ideal for operating in multilayer drum configurations.

Advantages and features

- Compacted surface providing high abrasion resistance and reduced wear on pulleys.
- High breaking load due to the increased metal area from the compaction process.
- Its great flexibility grants it excellent qualities to work under both simple bending and alternate bending.
- Excellent qualities for supporting compression loads in multilayer drum configurations.



IPH 157 C



IPH GPT

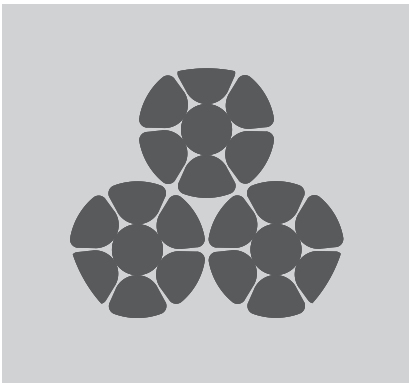
Diameter	Weight factor	MBL	Weight factor	MBL
[mm]	[kg/m]	[kN]	[kg/m]	[kN]
16,00	1,19	236	1,17	247
19,00	1,68	332	1,66	348
22,00	2,25	445	2,22	457
26,00			3,10	639
28,00			3,60	741
32,00			4,70	953
35,00			5,62	1140
38,00			6,62	1340

For other rope diameters not specified in this catalogue, please contact IPH.
Use of swivel only applicable to IPH 157C.



DRILLING WIRELINE FOR EXPLORATION

Bright 3x7 ultra-compacted rope developed for diamond drilling operations. It is used for applications in the oil and mining industries as a picker rope (sample extraction), also known as "wire line".



Advantages and features

- Higher breaking load.
- High process compacting.
- Longer service life.
- Rotation resistant.
- Low tendency to knots forming and permanent deformations.
- Easy to anchor by using 5mm sleeves, supplied by IPH.

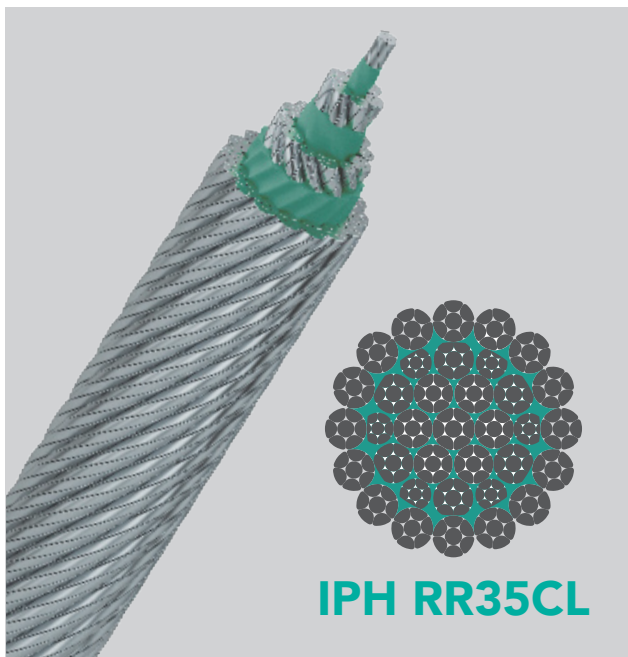
TECHNICAL DETAILS

Construction	3x7 CO	3x7 CO
Nominal Diameter	5.00 mm	6.40 mm
Diameter tolerance	5.00/5.35 mm	6.40/6.78 mm
Lay direction	Right Regular Lay	Right Regular Lay
Lubrication	Moderated	Moderated
Rope factor	0.1130 kg/m	0.1800 kg/m
Coating	Bright	Bright
Wire Rope Grade	2160 N/mm ²	2160 N/mm ²
Breaking Load	22[kN] / 2,24[t]	36[kN] / 3,67[t]

For other rope diameters not specified in this catalogue, please contact IPH.



UNDERGROUND MINING FRICTION HOIST ROPES (KOEPE)



Advantages and features

- Excellent resistance properties against rotation.
- Compact surface that provides great resistance to abrasion and lower sheave wear.
- Higher breaking load due to increase of metallic cross section thanks to the compacting process.
- Special design and Lang lay provide a great resistance to bending fatigue.
- Excellent properties for bearing compression loads in multilayer drums.
- Fully lubricated to achieve high protection against friction and corrosion, combined with galvanized coating.

Minimum Breaking Load

Diameter	Weight factor	Grade 2160 N/mm ²	
		[kN]	[t]
19,00	1,78	362	36,9
20,00	1,98	399	40,7
21,00	2,18	438	44,7
22,00	2,39	482	49,1
23,00	2,61	527	53,7
24,00	2,85	573	58,4
25,00	3,09	622	63,4
26,00	3,34	673	68,6
28,00	3,87	781	79,6
30,00	4,45	895	91,3
32,00	5,06	1010	103
34,00	5,71	1150	117
36,00	6,40	1280	131
38,00	7,13	1430	146
40,00	7,91	1580	161
42,00	8,72	1750	178
44,00	9,57	1910	195
46,00	10,46	2090	213
48,00	11,39	2280	232
50,00	12,40	2470	252
52,00	13,37	2540	259
54,00	14,40	2740	279
56,00	15,50	2950	301
58,00	16,62	3160	322
60,00	17,80	3390	346
64,00	20,20	3850	393

Construction: 35x7 CO o 35x19 CO depending on diameter range. Coating: Galvanized (bright on request), fully lubricated. Standard Lay: Lang. For other rope diameters not specified in this catalogue, please contact IPH.

FRICION HOIST ROPES (KOEPE)



Advantages and features

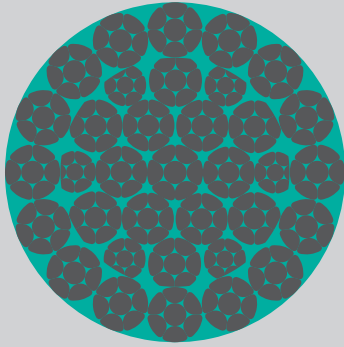
- Higher breaking load due to compacted strands that increase cross metallic section.
- Higher wear resistance, reducing sheaves and wire rope wear.
- Lower diameter reduction under tension.
- Increase of sheaves contact surface.
- Higher structural dynamic stability.
- Reduced internal friction due to plastic coating.
- Better Load distribution and improvement of bending fatigue resistance.

Minimum Breaking Load

Diameter	Weight factor	Grade 1960 N/mm ²		Grade 2160 N/mm ²	
		[mm]	[kg/m]	[kN]	[t]
20.00	1.83	351	35.8	385	39.3
21.00	2.02	380	38.8	417	42.5
22.00	2.22	417	42.5	457	46.6
23.00	2.43	455	46.4	500	51.0
24.00	2.64	496	50.6	544	55.5
25.00	2.87	538	54.9	590	60.2
26.00	3.10	582	59.4	639	65.1
27.00	3.34	628	64.1	689	70.2
28.00	3.60	675	68.9	741	75.5
29.00	3.86	721	73.5	794	81.0
30.00	4.13	775	79.1	851	86.8
31.00	4.41	815	83.1	895	91.3
32.00	4.70	869	88.6	953	97.2
33.00	4.99	924	94.2	1010	103
34.00	5.30	981	100	1080	110
35.00	5.62	1040	106	1140	116
36.00	5.94	1100	112	1210	123
37.00	6.28	1160	118	1280	131
38.00	6.62	1230	125	1340	137
39.00	6.98	1289	131	1420	145
40.00	7.34	1360	139	1490	152
42.00	8.09	1490	152	1640	167
44.00	8.88	1640	167	1810	185
46.00	9.50	1650	168	1850	189
48.00	10.00	1870	191	2060	210
50.00	11.50	2120	216	2320	237
52.00	12.40	2260	231	2480	253
54.00	13.40	2440	249	2670	272
56.00	14.40	2620	267	2870	293
58.00	15.50	2810	287	3080	314
60.00	16.50	3010	307	3300	337

Construction: 8x31 u 8x36 WSCO, depending on diameter range. Coating: Bright or galvanized, fully lubricated. For other rope diameters not specified in this catalogue, please contact IPH.

FRICION HOIST ROPES (KOEPE)



IPH RR35 ULTRA

Advantages and features

- Excellent resistance properties against rotation.
- Fully coated and filled with a solid polymer.
- Excellent balance between flexibility and resistance.
- Plastic penetration up to the core minimizes contact tensions between wires and strands.
- Greater adherence of steel-plastic interface, which increases resistance to superficial plastic detachment.
- Reduced wear on sheaves and drums thanks to its plastic coating.

Minimum Breaking Load

Diameter	Weight factor	Grade 2160 N/mm ²	
		[kN]	[t]
[mm]	[kg/m]		
19,00	1,78	362	36,9
20,00	1,98	399	40,7
21,00	2,18	438	44,7
22,00	2,39	482	49,1
23,00	2,61	527	53,7
24,00	2,85	573	58,4
25,00	3,09	622	63,4
26,00	3,34	673	68,6
28,00	3,87	781	79,6
30,00	4,45	895	91,3
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48,00	11,39	2280	232
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52,00	13,37	2540	259
54,00	14,40	2740	279
56,00	15,50	2950	301
58,00	16,62	3160	322
60,00	17,80	3390	346
64,00	20,20	3850	393

Construction: 35x7 CO o 35x19 CO depending on diameter range. Coating: Galvanized (bright on request), fully plastic coated. Standard Lay: Lang. For other rope diameters not specified in this catalogue, please contact IPH.

FITTING INSTALLATIONS AND PACKAGING SERVICE

All mining ropes are supplied in accordance with the most demanding needs and requirements of every customer. For instance,

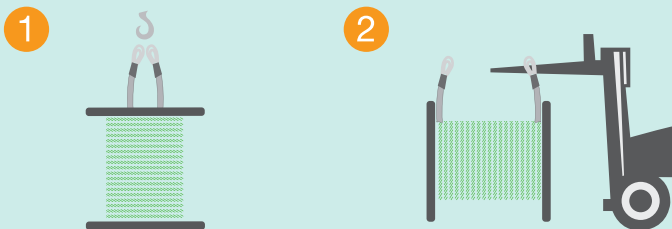
- Wooden or metallic reels.
- One or both ends outside.
- Twin ropes sets.
- Specific tolerance length ropes by measuring tape and under load.
- Welded and tapered ends.
- Bucket loop, welded or pressed for their installation.
- Swage button terminations.
- Spelter sockets.

Please, contact IPH to customize your rope exactly according to your mining equipment features.

HANDLING AND ASSEMBLY OF SHOVEL ROPES

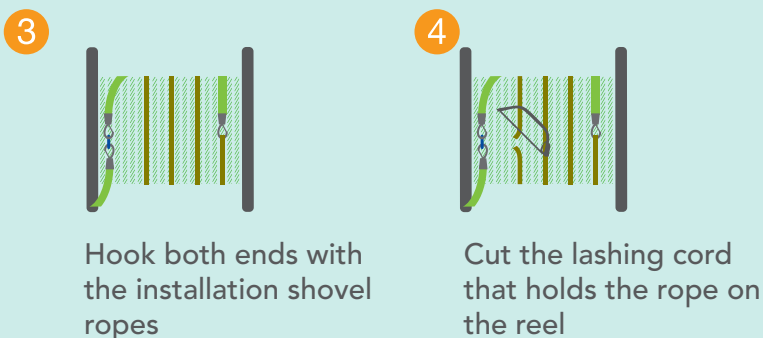
⚠ WARNINGS

HANDLING



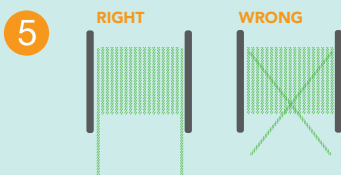
Lift the reel from its hoisting slings.

INSTALLATION



Hook both ends with the installation shovel ropes

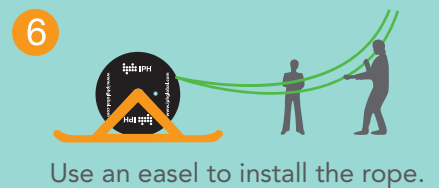
Cut the lashing cord that holds the rope on the reel



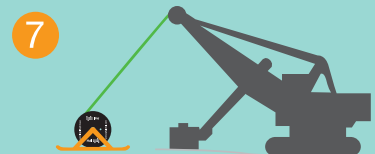
⚠ If ends are crossed, as a consequence the rope will suffer irreparable damage

CAUTIONS

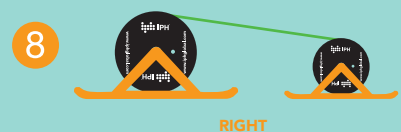
The rope must be uncoiled from the upper part of the reel and go into through the top of the shovel winch.



Use an easel to install the rope.



Correct direction of rope installation on the shovel.



RIGHT



WRONG

IPH VALUE

RESEARCH AND DEVELOPMENT

- Design engineering know - how.
- Field engineering applied to each operation and improvement opportunities analysis, according to every customer needs.
- Modern testing laboratory equipped with state - of - the - art machinery that can simulate actual operation efforts and conditions, enabling us to validate and guarantee rope performance.



INTEGRATION

Integration is part of the company's DNA, starting with the steelwire rod:

- Wire production.
- Strand production.
- Steel, synthetic and natural fiber core production.
- Plastic extrusion process.
- Fitting installation as sockets, standard and custom - made swage end terminals.
- Conditioning and packaging development according to every need.
- Slings manufacture.
- Wooden and steel reels manufacture.



CUTTING EDGE TECHNOLOGY

- Cutting edge facilities and equipment.
- Tools and devices designed & development for each product.
- Process automation and real time controls of key variables.



TRAINED PROFESSIONAL STAFF

- Highly trained engineers and technicians to evaluate, asses and advice the optimal solution for each application.
- Constant training for clients about good practices regarding the use and application of steel wire ropes, including installation, inspection and discard criteria.



SUPPORT & CERTIFICATION

- Full traceability of the product and its components up to their raw materials.
- Process and type certification.
- Third party tests and certifications.



LATIN AMERICA'S MOST LEADING EDGE INDUSTRIAL LOGISTICS SYSTEM

Founded in 1949 in Buenos Aires, Argentina, IPH has become one of the major players in the manufacturing of steel wire ropes in Latin America, placing itself into a position of leadership through the specialization in achieving solutions for the highest demands in the market.

Since its beginnings, IPH developed a business model based on innovation and high technology investment. Its high quality and customer service standards allow the company to be present among the most competitive markets in the five continents.

Located in Buenos Aires, Argentina, it's plant features 45,000 covered square meters and its production capacity reaches up to 1,500 tons per month. It combines cutting edge technology, highly skilled human resources and a quality management system complying with the leading international standards.

IPH's vertically integrated production process planning involves all steel wire rope's components, from its own manufacture of wires, fiber and steel cores for its ropes to wooden or steel reels and packaging according to customers specifications. This Integration Model is key to the design optimization, productive versatility and sustainability and quality assurance of finished products.

In its two modern Service Centers located in Buenos Aires - Argentina and São Paulo - Brazil, IPH keeps the widest stock of finished goods and facilities featuring state-of-the-art equipment and processes to provide with an excellent customer service and after sale support. IPH carries out multiple purpose steel wire ropes slings manufacturing, cut to length, polyester slings manufacturing, finished product conditioning, lab tests and certification, supplying the market with the most integral proposal on load lifting and handling solutions.

The factory, combined with the two sales and service centers, confers to IPH a highly efficient operation configuring the most modern industrial and logistic system in Latin America.

Bella Vista Service Center, Buenos Aires, Argentina.



San Miguel Plant, Buenos Aires, Argentina.

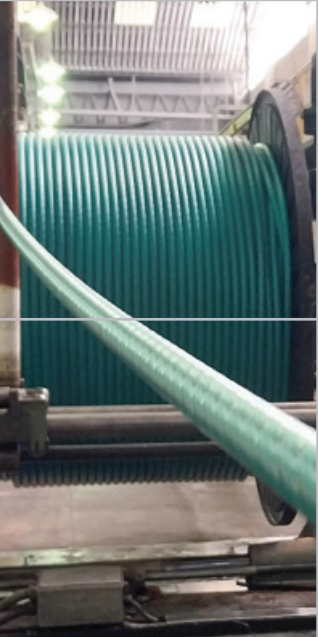


IPH. EVOLUTION AS AN ATTITUDE



Itapevi Service Center, São Paulo, Brazil.





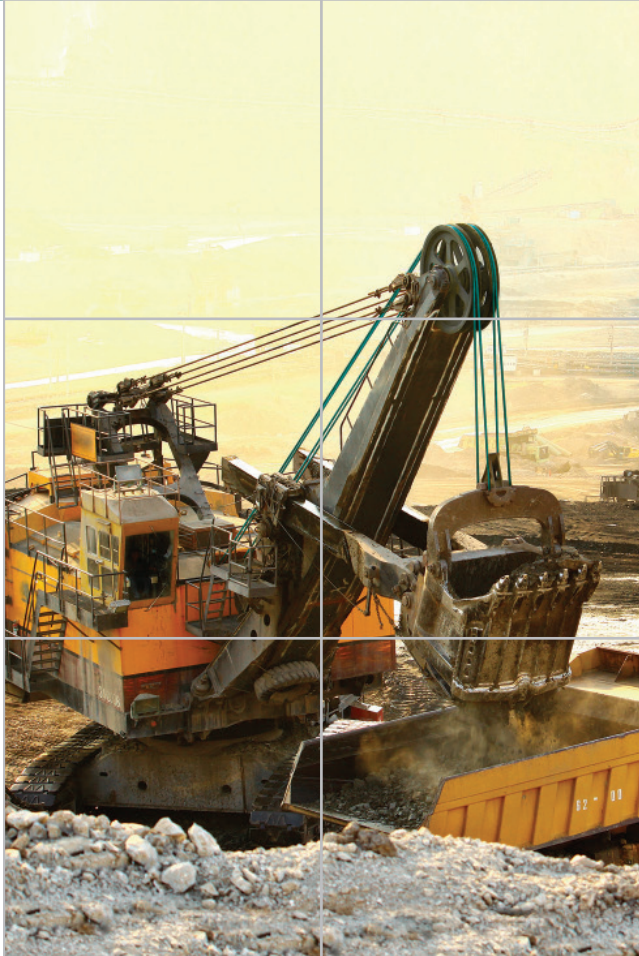
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