

Handling Steel Wire Rope

Unreeling and Uncoiling Wire Rope: When removing wire rope from the reel on which it was received, or from the coil if it is a coil shipment, it is imperative that the reel or coil rotates as the rope unwinds. Attempts to unwind rope from stationary coils or reels will result in kinking the rope, and once a kink is formed the rope at that point is ruined beyond repair.

Unreeling: If the rope is to be unwound from a reel, there are three correct methods of unreeling. 1) The reel may be mounted on a shaft supported by two jacks. The rope is then pulled from the reel by operators holding the end of the rope and walking away from the reel which rotates as the rope unwinds. This is the common approved method of unreeling wire rope. Care should be taken to avoid over-running. 2) The reel may be mounted on a turntable. It is then unwound in the same manner as described above. Care must be exercised to keep the rope from dropping below the lower reel head. Again avoid over-running. 3) The end of the rope may be held and the reel rolled along the ground.

Uncoiling: If the rope is to be removed from a coil, there is only one correct method of uncoiling. The end of the rope should be held and the coil rolled on the ground like a hoop.

Terminations: Wire Rope terminations should be suitable for their purpose and should have a strength of not less than 80% of the minimum breaking load of the rope. Any free end of the rope should be seized to prevent unlaying. The ends of any wire rope other than that on a lifting device, hoist or winch should be fixed to the suspension point with a thimble-eye splice or ferrule-secured eye termination or bulldog-grip fixing [to DIN 1142] or other rope coupling device giving a strength of not less than 80% of the breaking load of the wire rope. The ends of any wire rope feeding onto a reeling winch should be fastened onto the winch drum in the manner specified by the manufacturer and in addition should preferably have at least three turns left on the drum when the suspended item is at its lowest level, and in no circumstances less than two turns.

This information is reproduced with permission from the ABTT Code of Practice for Flying, 2000. See also The Lifting Engineers Handbook [page 402].



Lifting Equipment Engineers Association

Flints are full members of this association. Our staff frequently attend their informative courses and obtain specialist lifting qualifications. The association also keeps us right up to date with changing regulations.



FS 539611

ISO 9001

Flints is ISO 9001 registered. This certification is awarded by the International Standards Organisation. Flints has chosen the prestigious British Standards Institute to verify and audit our company to rigorous standards.

STOCK BLACK DRIFTS

Stock Black Drifts

Flints holds large stocks of a range of 5 mm diameter 7 x 19 construction galvanised black wire drifts designed to cover most backstage requirements. They are available with either thimble eyes at both ends or with a thimble eye on one end and 100 mm soft loop on the other end. The soft eye enables the wire to be choke hitched around appropriate materials. The Working Load Limit of all the wires is marked at 250 kg. Each wire is individually identified, CE marked and printed with the WLL. They are supplied with appropriate certification and instructions. Flints registers all the stock drift sales on our lifting database so that duplicate copies of certification can be raised [up to 2 years].

For Wire Straps, see page 357.



code	Type	length	price	10+
WIRHE1M	Thimble Eye Both Ends	1m	£24.04	£21.64
WIRHE2M	Thimble Eye Both Ends	2m	£25.82	£23.24
WIRHE3M	Thimble Eye Both Ends	3m	£27.49	£24.74
WIRHE4M	Thimble Eye Both Ends	4m	£29.27	£26.34
WIRHE5M	Thimble Eye Both Ends	5m	£30.75	£27.68
WIRHE6M	Thimble Eye Both Ends	6m	£32.38	£29.14
WIRHE7M	Thimble Eye Both Ends	7m	£34.14	£30.73
WIRHE8M	Thimble Eye Both Ends	8m	£35.87	£32.28
WIRHE10M	Thimble Eye Both Ends	10m	£39.40	£35.46
WIRSE1M	Soft and Thimble Eye	1m	£24.04	£21.64
WIRSE2M	Soft and Thimble Eye	2m	£25.82	£23.24
WIRSE3M	Soft and Thimble Eye	3m	£27.49	£24.74
WIRSE4M	Soft and Thimble Eye	4m	£29.27	£26.34
WIRSE5M	Soft and Thimble Eye	5m	£30.75	£27.68
WIRSE6M	Soft and Thimble Eye	6m	£32.38	£29.14
WIRSE7M	Soft and Thimble Eye	7m	£34.14	£30.73
WIRSE8M	Soft and Thimble Eye	8m	£35.87	£32.28
WIRSE10M	Soft and Thimble Eye	10m	£39.40	£35.46
WIRDCR	Duplicate certification retrieval fee [up to 2 years]		£10.00	-

MADE TO ORDER WIRE ROPE ASSEMBLIES

Wire Rope Assemblies and Crimping Charges

If our Stock Black Drifts listed left do not suit your purpose then we can make up wire rope assemblies to order.

Non-Lifting Wire Rope Assemblies

These assemblies are constructed in the same way as lifting assemblies but will not be marked with a WLL or individual identification. They will not be supplied with certification and are therefore not suitable for lifting purposes. We are also unable to supply certification for wire ropes under 1 mm in diameter so Micro Cable Assemblies will be priced as Non-Lifting Assemblies. To price up for budget purposes, use the codes given below plus the cost of the wire, allowing an additional 1m per assembly for the termination.

Lifting Wire Rope Assemblies

For lifting purposes the assemblies need dimensionally checking, and marking with individual identification, the WLL, UKCA, and CE marks. The wires will be supplied with the appropriate certification and instructions. Wires requiring a termination on one end only will be supplied with a "Test for Inclusion in the Technical File". Soft eyes complying with BS EN 13411-3 must have a length 15 x the diameter of the wire rope and the width of the eye should be half its length. To price up for budget purposes, use the codes given below plus the cost of the wire, allowing an additional 1m per assembly for the terminations. These prices include the certification but replacements for lost certificates will be charged at £10 per certificate.

code	description	per end
WIRDRIFT04	Wire Rope Assemblies up to 4mm	£3.00
WIRDRIFT58	Wire Rope Assemblies 5 - 8mm	£3.50

Current Technical Data

We have tried to include as much technical data as we can in this edition of our catalogue. We will always try to match products as closely as possible to the specifications listed but if you are using a product with very tight tolerances then we would advise that you give us a ring and we will be happy to check the dimensions and load ratings for you.

Wire Rope Terminology

The general purpose wire ropes used in the theatre are normally 6 x 19 fibre core or 7 x 19 steel core. The first number refers to the number of "Strands" in the "Wire Rope". The second number refers to the number of "Wires" in the "Strand". A 6 x 19 construction wire rope will be slightly more flexible than a 7 x 19 rope. However, 7 x 19 ropes are slightly stronger and are better able to resist crushing and heat. They are less liable to deform when running over sheaves.

Ropes with a construction of 1 x 19 are very stiff and are used for yachts' standing rigging, architectural rigging or handrailing applications. They must be terminated with roll swagged fittings as the wire cannot be formed into loops. The advantage of this construction is that it uses thicker wires which are better able to resist chafe and they present a smoother surface. We only stock them as stainless steel, but regrettably can no longer roll swage them for you.

All the wires that we hold in stock are "R.H.R.L." which stands for Right Hand Regular Lay. Nearly all ropes are "Right Hand Lay" but rarely a rope may need to be left hand lay for a special purpose such as drilling rigs. The "Regular Lay" means that the small "Wires" in each "Strand" are left hand lay to oppose the right hand lay of the rope. Some special purpose wire ropes are made with the wires laid in the same direction as the strands. This lay is called "Lang's Lay". These ropes are not suitable for making slings or drifts as they tend to unwind under load.

All our wire ropes are "Pre-formed". Pre-formed ropes do not tend to spring apart when being cut and are much preferred for general use. Wire ropes are made from various grades of steel. There are only two general grades used for Galvanised Steel Wire Ropes and these are 1,770 N/mm² and 1,960 N/mm². A rope made to 1,770 is manufactured from wire with tensile strengths between 1,570 and 1,960 N/mm². A rope made to 1,960 will have a minimum strength of 1,770 and a maximum of 2,160 N/mm². Stainless steel ropes are slightly weaker than galvanised steel ropes.

The Working Load Limit of a wire rope is based on a safety factor of 5:1 of the Minimum Breaking Load. This is industry general practice but higher safety factors may be specified for your specific application.

Flints supplies full certification for all the wires we supply above 1 mm in diameter.

Flints is a full member of the Lifting Equipment Engineers Association and is approved to ISO 9001 by British Standards Institute.

We are proud of the fact that our staff attend regular training courses and symposiums regarding lifting and working at height.

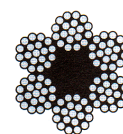


Lifting Equipment Engineers Association

Here are Flints' staff undertaking practical assessments at LEA training centre covering thorough examination of lifting accessories [wire rope slings, chain slings, textile slings, loose gear-shackles, eye bolts, rigging screws etc.].

GALVANISED WIRE ROPES [TO BS EN 12385/2002]

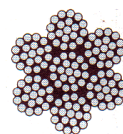
Galvanised Wire Rope [BS EN 12385:2002] 6 x 19 [Fibre Core] 1,960 N/mm²



This rope is the most flexible wire rope construction that we stock. It is a right-hand regular lay wire rope consisting of 6 strands of 19 wires around a fibre core. The wires are pre-formed so the wire will not spring apart when being cut. Choose it as a general purpose wire for making drifts or slings. If you are replacing a damaged wire in a set of wires, all the wires in the set should be replaced at the same time. The Working Load Limit specified is based on a 5:1 safety factor which must not be exceeded. Sometimes, in the theatre industry, higher safety factors of times eight or ten are required. The tensile strength of these wires is 1,960 N/mm². Supplied complete with certification. The minimum breaking load shown on the certificate may vary slightly from those given below due to fluctuations in batches.

per metre	WLL 5:1	wire rope ø	min BL	price
WIRO12	110kg	3mm	522kg	£0.44
WIRO14	196kg	4mm	982kg	£0.56
WIRO16	307kg	5mm	1534kg	£0.69
WIRO18	442kg	6mm	2209kg	£0.79
WIRO20	785kg	8mm	3927kg	£0.99
per drum	WLL 5:1	wire rope ø	min BL	price
WIRO12D	110kg	3mm	522kg	£34.00
WIRO14D	196kg	4mm	982kg	£46.00
WIRO16D	307kg	5mm	1534kg	£59.00
WIRO18D	442kg	6mm	2209kg	£73.00
WIRO20D	785kg	8mm	3927kg	£89.00

Galvanised Wire Rope [BS EN 12385:2002] 7 x 19 [Steel Core] 1,960 N/mm²



This rope is slightly stiffer than 6 x 19 construction wire rope but it is better at resisting crushing and less liable to deform when running around sheaves. The steel core also makes it a slightly stronger rope. It is a right-hand regular lay wire rope consisting of 6 strands of 19 wires around a steel core. The wires are pre-formed so the wire will not spring apart when being cut. Choose this rope for running rigging and when terminations state that they should only be used on steel core ropes [Gripples and Nicopress are examples]. If you are replacing a damaged wire in a set of wires, all the wires in the set should be replaced at the same time. The Working Load Limit specified is based on a 5:1 safety factor which must not be exceeded. Sometimes, in the theatre industry, higher safety factors of times eight or ten are required. The tensile strength of these wires is 1,960 N/mm². These ropes are supplied complete with certification. The minimum breaking load shown on the certificate may vary slightly from those given below due to fluctuations in batches. If you require these wires in 1,770 N/mm² then please add N17 to the code and allow five days.

per metre	WLL 5:1	wire rope ø	min BL	price
WIRO23	130kg	3mm	651kg	£0.44
WIRO24	232kg	4mm	1158kg	£0.65
WIRO25	362kg	5mm	1809kg	£0.80
WIRO26	521kg	6mm	2605kg	£0.79
WIRO28	926kg	8mm	4630kg	£1.32
per drum	WLL 5:1	wire rope ø	min BL	price
WIRO23D	130kg	3mm	651kg	£34.00
WIRO24D	232kg	4mm	1158kg	£53.50
WIRO25D	362kg	5mm	1809kg	£68.00
WIRO26D	521kg	6mm	2605kg	£72.00
WIRO28D	926kg	8mm	4630kg	£118.00

Low Rotation Wire Rope

These ropes are specially wound in contrary directions to reduce rotation to a minimum. Used mainly for single-point hanging of chandeliers etc. If using these wires with wedge sockets ensure the tail exceeds 20 times the diameter of the rope. Available to order only. Please phone our Rigging Department for details.

WIRE ROPES

BLACK WIRE ROPES

Black PVC-Covered Wire Rope 6 x 19 [BS EN 12385-2002] [Fibre Core] 1,770 N/mm²



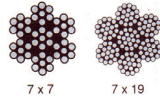
This is a 6 x 19 construction galvanised wire rope with a black PVC sheath. These covered wires are useful for disguising suspension lines. They can also be used for handrail and lanyard applications. This type of wire is not suitable for running rigging. It is essential that the PVC sheath is removed where terminations are made. We can also supply these wires coated in white PVC in 100 m drums POA. Please allow five days.

per metre	WLL 5:1	wire rope ø	finished ø (up to)	min BL	price
WIR032	100kg	3mm	4mm	499kg	£0.73
WIR034	177kg	4mm	5mm	887kg	£0.82
WIR036	277kg	5mm	6mm	1385kg	£1.00
per drum	WLL 5:1	wire rope ø	finished ø (up to)	min BL	price
WIR032D	100kg	3mm	4mm	499kg	£63.00
WIR034D	177kg	4mm	5mm	887kg	£72.00
WIR036D	277kg	5mm	6mm	1385kg	£89.00

Black Wire Rope [BS EN 12385-4] [Steel Core] 1,770 N/mm²



These popular matt black flexible wire ropes are suitable for use as running rigging whereas the PVC-coated cables listed above should not be used over pulley sheaves. Not suitable for use outdoors.



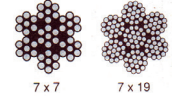
per metre	Construction	WLL 5:1	wire rope ø	min BL	price
WIR002	7 x 7	56kg	2mm	280kg	£0.99
WIR003	7 x 7	126kg	3mm	630kg	£1.05
WIR004	7 x 7	224kg	4mm	1120kg	£1.37
WIR005	7 x 19	327kg	5mm	1633kg	£2.65
WIR006	7 x 19	470kg	6mm	2352kg	£3.15
WIR008	7 x 19	836kg	8mm	4182kg	£3.15
per drum	Construction	WLL 5:1	wire rope ø	min BL	price
WIR002D	7 x 7	56kg	2mm	280kg	£68.33
WIR003D	7 x 7	126kg	3mm	630kg	£72.00
WIR004D	7 x 7	224kg	4mm	1120kg	£77.99
WIR005D	7 x 19	327kg	5mm	1633kg	£169.00
WIR006D	7 x 19	470kg	6mm	2352kg	£239.00
WIR008D	7 x 19	836kg	8mm	4182kg	£194.15

STAINLESS STEEL WIRE ROPES

Flexible Stainless Steel Wire Rope [BS EN 12385-2002] [Steel Core] 1,570 N/mm²



These flexible cables are made from 316 marinegrade stainless steel. They are suitable for running over sheaves or for forming thimble eyes. Ideal when high resistance to corrosion is needed or when the cables are being used for display purposes. Unlike galvanised wire, stainless wire will show no tell-tale signs of wear such as rust streaks, but as no cables last for ever it is a wise precaution to enforce a schedule of replacement depending on the wire's application.



code	per metre	code	per 100 m drum	Const.	wire rope ø	min BL	WLL 5:1
-	-	WIR049D	£35.00	7 x 7	1mm	61kg	12kg
WIR059	£0.45	WIR059D	£37.50	7 x 7	1.2mm	90kg	18kg
WIR050	£0.52	WIR050D	£40.00	7 x 7	1.5mm	140kg	28kg
WIR051	£0.56	WIR051D	£43.00	7 x 7	2mm	248kg	50kg
WIR054	£0.70	WIR054D	£54.00	7 x 7	2.5mm	388kg	78kg
WIR056	£0.78	WIR056D	£60.00	7 x 19	3mm	522kg	104kg
WIR055	£1.45	WIR055D	£92.50	7 x 19	4mm	927kg	185kg
WIR057	£1.74	WIR057D	£142.00	7 x 19	5mm	1449kg	290kg
WIR058	£2.46	WIR058D	£195.00	7 x 19	6mm	2086kg	417kg

Non-Flexible Stainless Steel Wire Rope [BS EN 12385-2002] [Steel Core] 1,570 N/mm²



These wire ropes are most typically used for standing rigging on yachts and for architectural and handrailing applications. They have a smoother appearance and are relatively stiff. Because the wires are thicker they are much less susceptible to surface wear which could cause sharp stray strands. They are NOT suitable for running over sheaves or for forming thimble eyes. 316-grade wire. These wire ropes being "Non Flexible" means they are not suited for general lifting purposes. Unlike galvanised wire, stainless wire will show no tell-tale signs of wear such as rust streaks, but as no cables last for ever it is a wise precaution to enforce a schedule of replacement depending on the wire's application. Regrettably we can no longer roll swage these for you in house, but we may be able to help point you in the right direction - please do email rigging@flints.co.uk with your enquiry.



per metre	Const.	WLL 5:1	wire rope ø	min BL	price
WIR081	1 x 19	151kg	3mm	746kg	£0.90
WIR082	1 x 19	269kg	4mm	1345kg	£1.40
WIR083	1 x 19	420kg	5mm	2101kg	£3.28
WIR084	1 x 19	605kg	6mm	3026kg	£2.78
per drum	Const.	WLL 5:1	wire rope ø	min BL	price
WIR081D	1 x 19	151kg	3mm	746kg	£72.00
WIR082D	1 x 19	269kg	4mm	1345kg	£116.00
WIR083D	1 x 19	420kg	5mm	2101kg	£173.00
WIR084D	1 x 19	605kg	6mm	3026kg	£229.00

Some observations on Stainless Steel

Stainless Steel has a lower tensile strength than ordinary steel. As a raw material it is rather weak but higher levels of strength can be obtained by the ability of austenitic stainless steel to be heavily cold worked. The two most common grades of stainless steel are AISI 304 and AISI 316. AISI stands for the American Iron and Steel Institute. They are often referred to as A2 and A4 grade. As a general rule, A2 is used for architectural purposes and A4 is used for marine purposes. A2 [304] is stronger but not so well suited to withstand salt water corrosion. Although A4 [316] is weaker it is virtually always specified for marine use. All our stainless wire ropes are made from A4 [316] grade except for the very small micro cables where the extra strength of 304 grade is essential. N.B. BS EN 13414-1: 2003 + A2: 2008 standard permits rope of both 1,770 N/mm² and 1,960 N/mm² to be used for Lifting. Our stainless steel rope (1,570 N/mm²) falls outside the standard.

Stainless steel resists corrosion by forming an oxide layer on its outer surface. If oxygen is prevented from getting to the steel to form this layer it will corrode rapidly. For this reason stainless steel is not suitable for underwater marine fastenings although it is perfect for standing rigging exposed to both salt water and oxygen. Do not expose stainless steel to hydrochloric acid of any concentration.

When using stainless steel wire ropes a rigorous regime of inspection should be employed as they will tend to look new even when they are old! Care should also be taken with stainless rigging screws which can suffer from cold welding. This is the phenomenon where screw threads can spontaneously weld themselves together without heat. Normally a little Anhydrous Lanolin will prevent this.