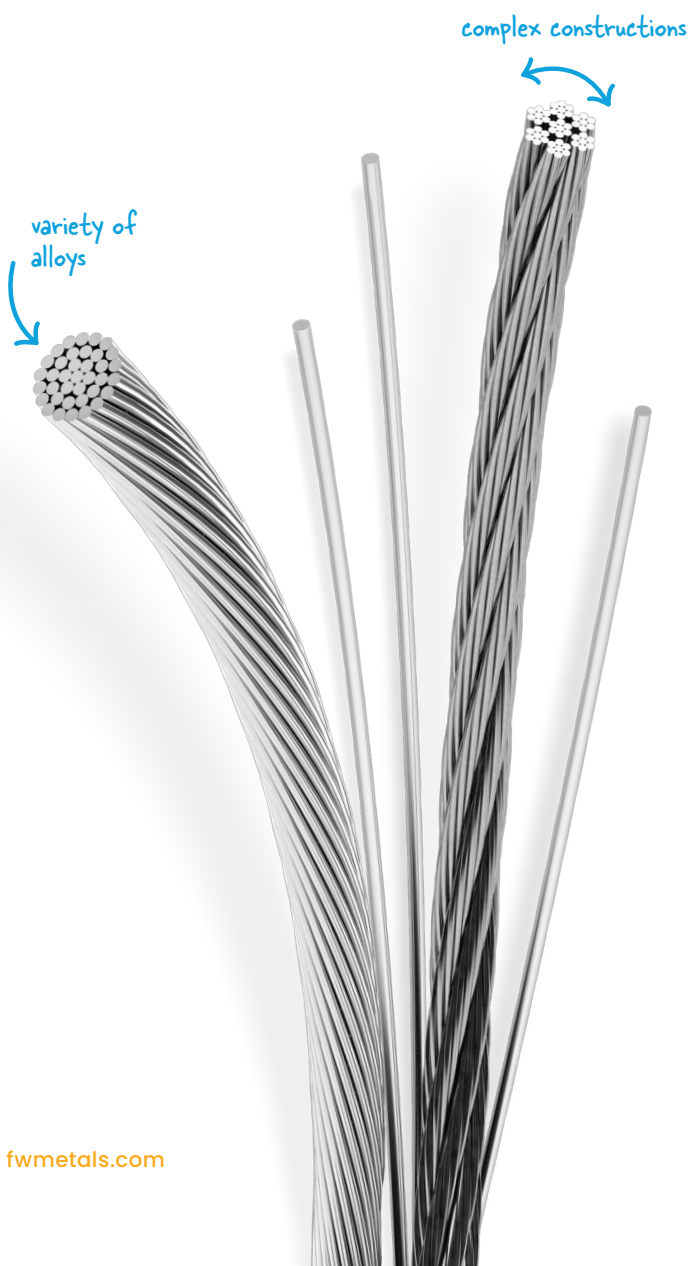




# Strands and cables

Configuration and calculation guide



## Strands

Every strand or cable begins with the same basic ingredient: wire. When several wires are wrapped together, they form a strand.

### Single wire



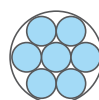
1 x 2



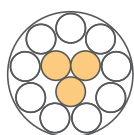
1 x 3



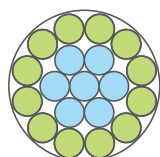
1 x 7



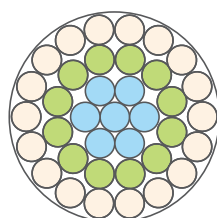
3 + 9



1 x 19



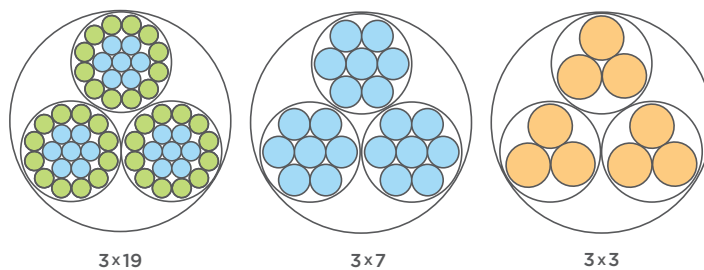
1 x 37



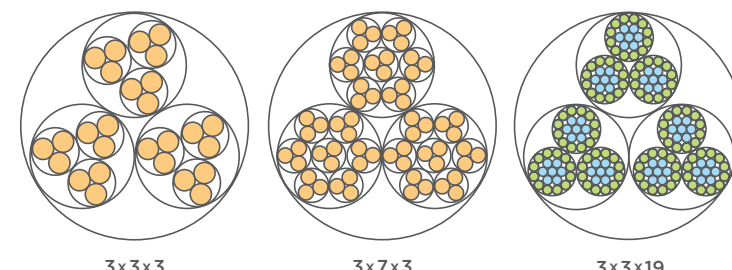
## 1st order cables

A 1st order cable is simply made of several strands that are wrapped together, forming a cable in its most basic form.

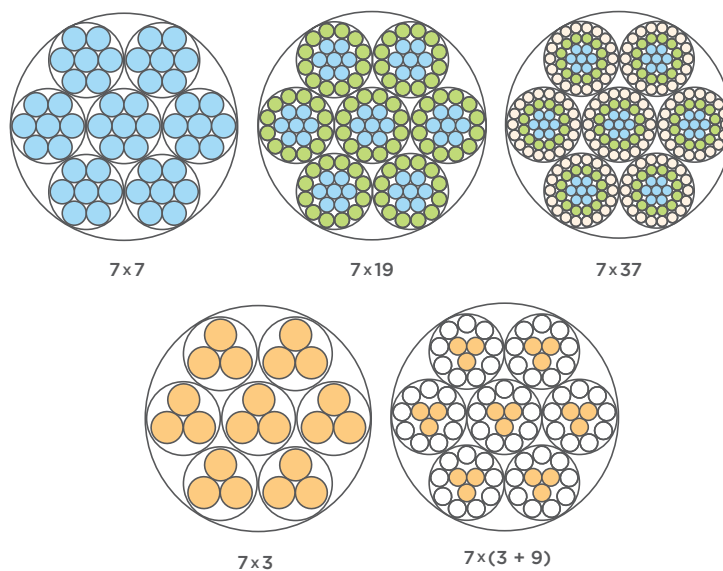
### 3 x cable (1st) options



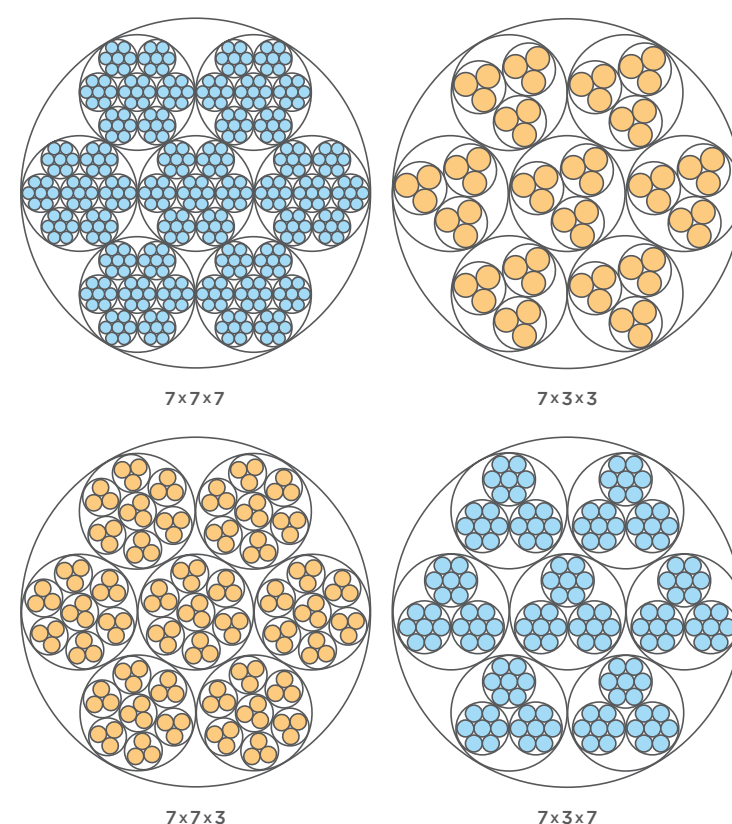
### 3 x cable (2nd) options



### 7 x cable (1st) options



### 7 x cable (2nd) options



## Understanding cable naming conventions

When we list cable constructions, there are several factors that create the information you see. Let's break it down.

### BARE CABLE

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

**Tungsten 7 x 37 x 0.001; 0.021 / 0.019 x 12.00 in | hard as drawn black**

- |  |  |
|--|--|
| ① <b>TUNGSTEN</b> Alloy                                | ⑤ <b>0.021 IN</b> Bare cable diameter                            |
| ② <b>7</b> Number of strands equals 7                  | ⑥ <b>0.019 IN</b> "/" decrease in diameter denoting swaged cable |
| ③ <b>37</b> Each single strand consists of 37 wires    | ⑦ <b>12.00 IN</b> Discrete cut length                            |
| ④ <b>0.001 IN</b> Individual homogeneous wire diameter | ⑧ <b>HARD</b> Condition  |
|  | ⑨ <b>AS DRAWN BLACK</b> Finish                                   |

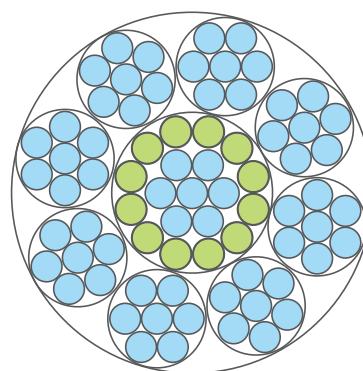
### COATED CABLE

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

**304V 7 x 7 x 0.0016; 0.0144 / 0.035 in | hard PFA clear**

- |   |  |
|---|--|
| ① <b>304V</b> Alloy                                     | ⑤ <b>0.0144 IN</b> Bare cable diameter                           |
| ② <b>7</b> Number of strands equals 7                   | ⑥ <b>0.035 IN</b> "/" increase in diameter denoting coated cable |
| ③ <b>7</b> Each single strand consists of 7 wires       | ⑦ <b>HARD</b> Condition  |
| ④ <b>0.0016 IN</b> Individual homogeneous wire diameter | ⑧ <b>PFA CLEAR</b> Type of coating                               |

### 1 x 19 + 8 (1 x 7) option

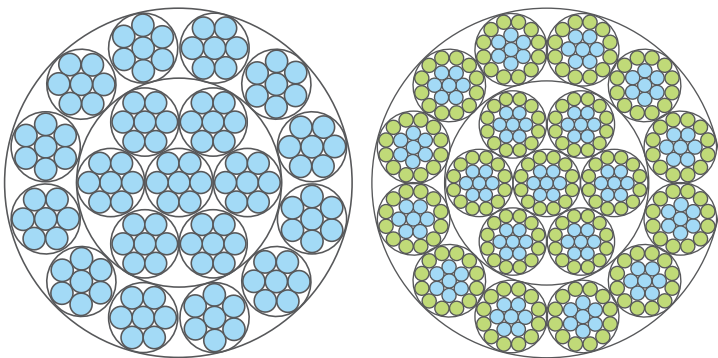


1x19 + 8 (1x7)

## 3rd order cables

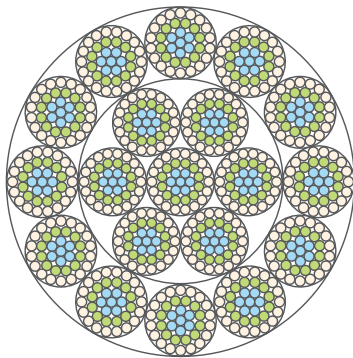
A 3rd order cable is made of a cable, which is made of strands, with more strands wrapped around it.

### 19 x cable (3rd) options



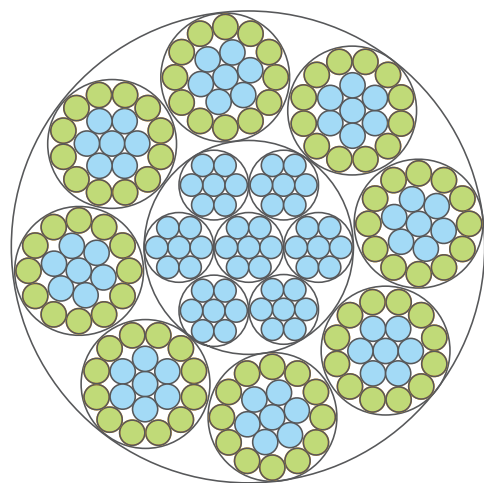
19x7

19x19



19x37

### 7 x 7 + 8 (1 x 19) cable (3rd) option

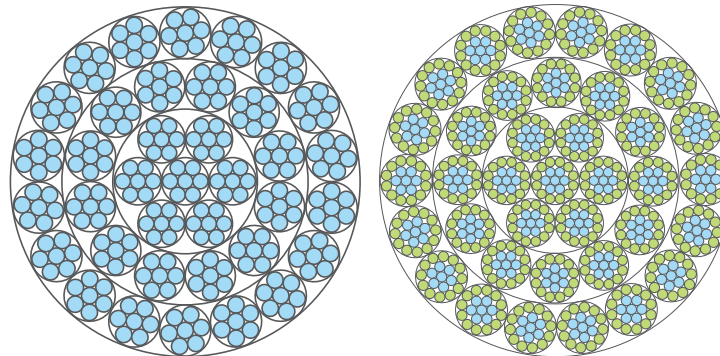


7x7 + 8 (1x19)

## 4th order cables

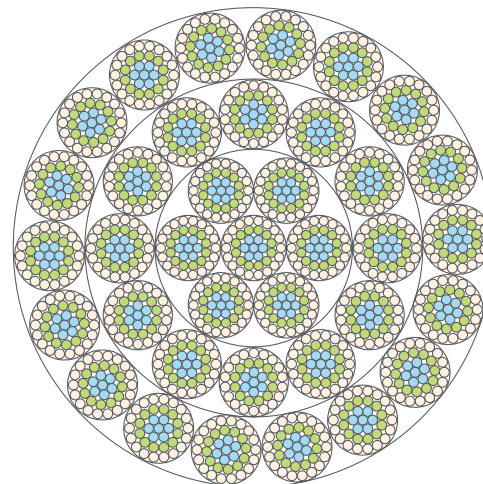
A 4th order cable is made of a 3rd order cable, with more strands wrapped around it.

### 37 x cable (4th) options



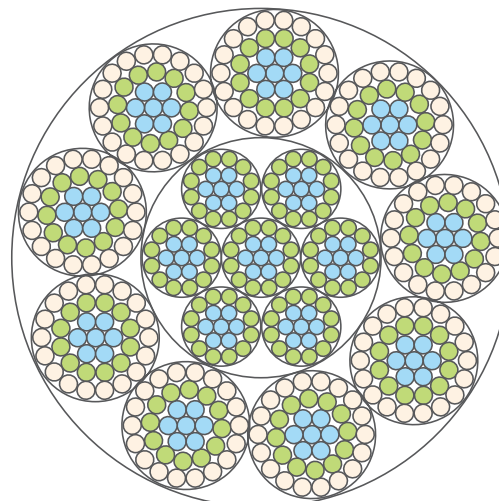
37x7

37x19



37x37

### 7 x 19 + 9 (1 x 37) cable (4th) option



7x19 + 9 (1x37)

## Calculate the possibilities

The chart below can help you find missing pieces of information by using what you already know. You can also use it to find out how many wires are in each construction.

**To find the size of each wire,** take the overall diameter of your wire construction and divide it by the multiplier found in the chart below. This will give you the size of each individual wire.

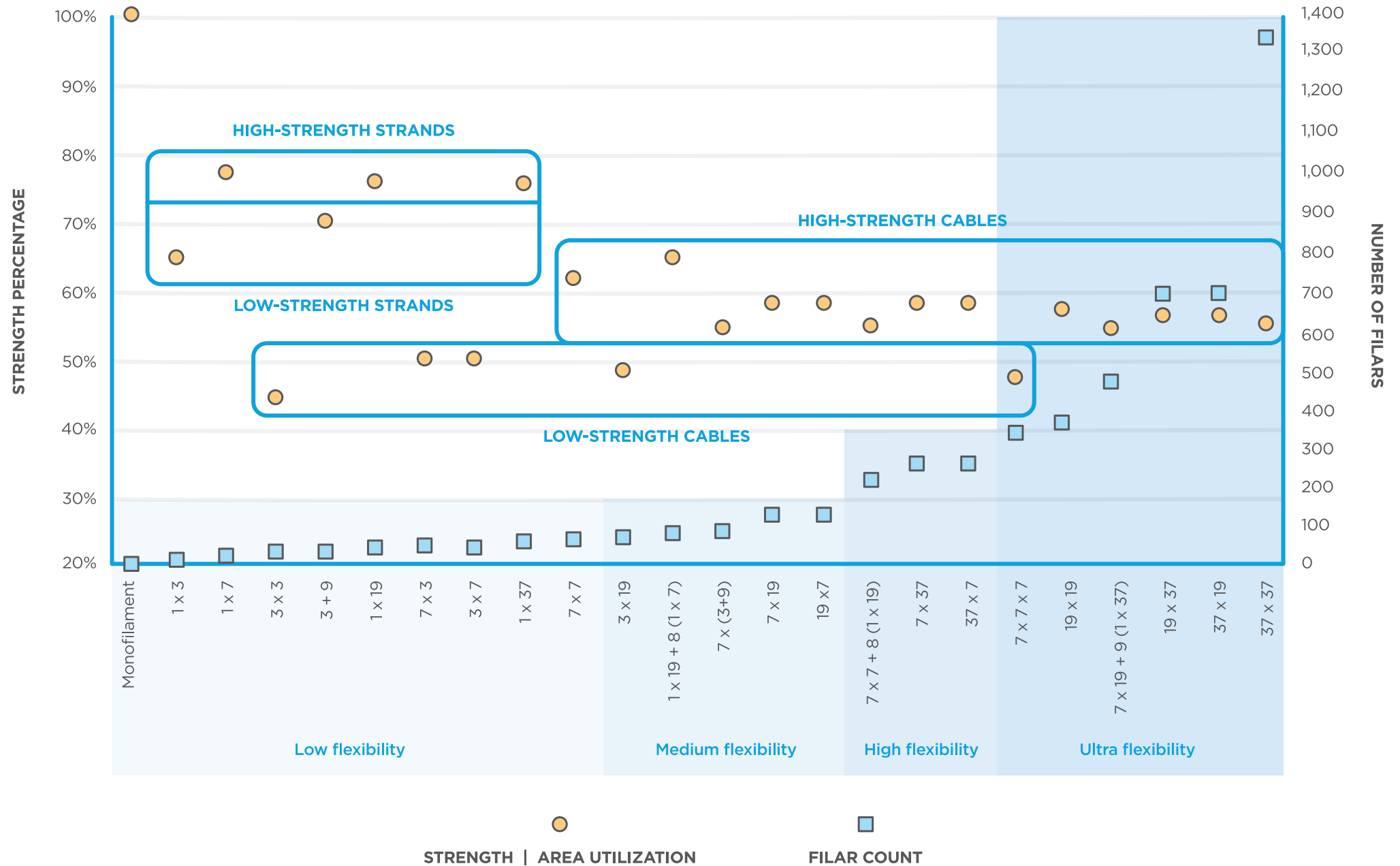
**To find the overall diameter of your strand or cable** when you only know the size of each individual wire, draw a line horizontally through the center of the strand and count the number of wires from one end to the other. Take that number and multiply it by the individual wire size.

Construction	Wire count	Multiplier (D)
Monofilament	1	1
1x2	2	2
1x3	3	2.15
1x7	7	3
3+9	12	4.15
1x19	19	5
1x37	37	7
3x3	9	4.62
3x7	21	6.45
7x3	21	6.45
7x7	49	9
3x19	57	10.75
1x19+8(1x7)	75	11
7x(3+9)	84	12.45
7x19	133	15
7x37	259	21
3x3x3	27	9.94
3x3x7	63	13.87
3x7x3	63	13.87
7x3x3	63	13.87
7x3x7	147	19.35
7x7x3	147	19.35
7x7x7	343	27
19x7	133	15
7x7+8(1x19)	201	19
19x19	361	25
7x19+9(1x37)	466	29
19x37	703	35
37x7	259	21
37x19	703	35
37x37	1369	49

We offer a wide variety of constructions, not all of which are included in this handout. Reach out to your Sales Representative to discuss the possibilities for your application.

## Strength and flexibility

Use the graph below to compare strength and flexibility for various strand and cable constructions. Typically, gaining strength means compromising flexibility, and vice versa. Strength refers to how much weight the construction can hold, and flexibility refers to how much it can bend without permanent deformation.



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