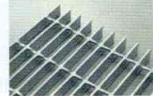


# 67

## Metal Sheets, Bars, etc.

Steel Materials  P. 67-1 ~ 8	Stainless Steel Materials  P. 67-8 ~ 9
Copper Materials  P. 67-9 ~ 10	Brass/Bronze Materials  P. 67-10 ~ 13
Aluminium Materials  P. 67-13 ~ 14	Lead/Zinc Materials  P. 67-14 ~ 17
Gratings   P. 67-18 ~ 20	Gauze Wire   P. 67-20

## Steel Rounds – Cold Finished

Redondos de Acero ミガキ丸形鋼 冷轧圆钢

For bolts, nuts, screws, and shaftings. Supplied in the following standard lengths.

Europe : 3 M U.S. : 12-20 ft.  
Japan : 4 M Singapore : 4 M

If you require a length other than the standard mentioned, please specify when ordering.



### How to order: CODE

Steel round, cold finished, DIAM mm x TOTAL LENGTH mtr

Unit Per Lgh.				
Diam mm	Kg Per Mtr	4 mtr (Japan & Singapore)	3 mtr (Europe)	12 feet - up to 5/8"(16 mm) 20 feet - over 5/8" (U.S.A.)
5	0.154	67 01 01	67 01 43	67 02 96
6	0.222	02	44	97
7	0.302	03	45	98
8	0.395	04	46	99
9	0.395	05	47	67 03 00
10	0.617	67 01 06	67 01 48	67 03 37
11	0.746	07	49	38
12	0.888	08	50	39
13	1.04	09	69	40
14	1.21	10	70	41
15	1.39	67 01 11	67 01 71	67 03 42
16	1.58	12	72	43
17	1.78	13	73	44
18	2.00	14	74	45
19	2.23	15	75	46
20	2.47	67 01 16	67 01 76	67 03 47
22	2.98	17	77	48
23	3.26	18	78	49
24	3.55	19	79	50
25	3.85	20	80	75
26	4.17	67 01 21	67 01 81	67 03 76
28	4.83	22	82	77
30	5.55	23	83	78
32	6.31	24	84	67 08 30
34	7.13	25	85	31
36	7.99	67 01 26	67 01 86	67 08 32
38	8.90	27	87	33
40	9.87	28	88	34
42	10.9	29	89	35
45	12.5	30	90	36
48	14.2	67 01 31	67 01 91	67 08 37
50	15.4	32	92	38
55	18.7	33	93	39
60	22.2	34	94	40
65	26.0	35	95	41
70	30.2	67 01 36	67 01 96	67 08 42
75	34.7	37	97	43
80	39.5	38	98	44
85	44.5	39	99	45
90	49.9	40	67 02 00	46
95	55.6	67 01 41	67 02 17	67 08 47
100	61.7	42	18	48

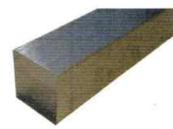
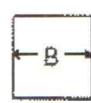
## Steel Squares – Cold Finished

Cuadrados de Acero - Laminado en Frio ミガキ角形鋼 冷轧方钢

For bolts, nuts, screws, and shaftings. Sizes larger than those listed below are available upon request. Supplied in the following standard lengths:

Europe : 3 M Japan : 4 M  
U.S. : 12 ft. Singapore : 12 ft.

If you require a length other than the standard mentioned, please specify when ordering.



### How to order: CODE

Steel square, cold finished, ACROSS FLAT mm x TOTAL LENGTH mtr

Unit Per Lgh.				
AF mm	Kg Per Mtr	4 mtr (Japan)	3 mtr (Europe)	12 feet (U.S.A. & Singapore)
6	0.245	67 02 01	67 02 37	67 08 77
7	0.333	02	38	78
8	0.435	03	39	79
9	0.551	04	40	80
10	0.680	05	41	89

\* AF denotes Across Flat.

## Steel Hexagons – Cold Finished

Hexagonales de Acero - Laminado en Frio ミガキ六角鋼 冷轧六角钢

Used for free cutting bolts, nuts, screws, and shaftings. Sizes larger than those listed below are available upon request. Supplied in the following standard lengths :

Europe : 3 M  
U.S. : 12 ft.  
Japan : 4 M  
Singapore : 12 ft.

If you require a length other than the standard mentioned, please specify when ordering.



### How to order: CODE

Steel hexagon, cold finished, ACROSS FLAT mm x TOTAL LENGTH mtr

Unit Per Lgh.				
AF mm	Kg Per Mtr	4 mtr (Japan)	3 mtr (Europe)	12 feet (U.S.A. & Singapore)
6	0.245	67 02 01	67 02 37	67 08 77
7	0.333	02	38	78
8	0.435	03	39	79
9	0.551	04	40	80
10	0.680	05	41	89

(to be continued)

AF mm	Kg Per Mtr	4 mtr (Japan)	3 mtr (Europe)	12 feet (U.S.A. & Singapore)	Unit Per Lgh.
12	0.979	<b>67 02 06</b>	<b>67 02 42</b>	<b>67 08 90</b>	
14	1.33	<b>07</b>	<b>43</b>	<b>91</b>	
17	1.96	<b>08</b>	<b>44</b>	<b>92</b>	
19	2.45	<b>09</b>	<b>45</b>	<b>93</b>	
21	3.00	<b>10</b>	<b>46</b>	<b>94</b>	
22	3.29	<b>67 02 11</b>	<b>67 02 47</b>	<b>67 08 95</b>	
25	4.25	<b>12</b>	<b>48</b>	<b>96</b>	
28	5.33	<b>13</b>	<b>49</b>	<b>97</b>	
32	6.96	<b>14</b>	<b>50</b>	<b>98</b>	
35	8.33	<b>15</b>	<b>67</b>	<b>99</b>	
38	9.82	<b>67 02 16</b>	<b>67 02 68</b>	<b>67 09 00</b>	

Size mm		Kg Per Mtr	5.5 mtr (Japan)	Unit Per Lgh. 6 mtr (Europe & Singapore)
b	D			
30	60	11.1	<b>67 02 85</b>	<b>67 02 93</b>
25	50	7.71	<b>87</b>	<b>94</b>
37.5	57	17.3	<b>88</b>	<b>95</b>

## Steel Squares – Hot Rolled

Cuadrados de Acero - Laminado en Caliente

角鉄 热轧方钢

Supplied in the following standard lengths. Sizes larger than those listed below are available upon request.

Europe : 6 M

U.S. : 20 ft.

Japan : 5.5 M

Singapore : 6 M



If you require a length other than the standard mentioned, please specify when ordering.

### How to order: CODE

Steel square, hot rolled, ACROSS FLAT mm x TOTAL LENGTH mtr

AF mm	Kg Per Mtr	5.5 mtr (Japan)	6 mtr (Europe & Singapore)	20 feet (U.S.A.)	Unit Per Lgh.
6	0.283	<b>67 03 01</b>	<b>67 03 19</b>	<b>67 09 42</b>	
7	0.385	<b>02</b>	<b>20</b>	<b>43</b>	
8	0.502	<b>03</b>	<b>21</b>	<b>44</b>	
9	0.636	<b>04</b>	<b>22</b>	<b>45</b>	
10	0.785	<b>05</b>	<b>23</b>	<b>46</b>	
12	1.13	<b>67 03 06</b>	<b>67 03 24</b>	<b>67 09 47</b>	
14	1.54	<b>07</b>	<b>25</b>	<b>48</b>	
16	2.01	<b>08</b>	<b>26</b>	<b>49</b>	
17	2.27	<b>09</b>	<b>27</b>	<b>50</b>	
19	2.83	<b>10</b>	<b>28</b>	<b>76</b>	
20	3.14	<b>67 03 11</b>	<b>67 03 29</b>	<b>67 09 77</b>	
22	3.80	<b>12</b>	<b>30</b>	<b>78</b>	
25	4.91	<b>13</b>	<b>31</b>	<b>79</b>	
28	6.15	<b>14</b>	<b>32</b>	<b>80</b>	
30	7.06	<b>15</b>	<b>33</b>	<b>81</b>	
32	8.04	<b>67 03 16</b>	<b>67 03 34</b>	<b>67 09 82</b>	
36	10.2	<b>17</b>	<b>35</b>	<b>83</b>	
40	12.6	<b>18</b>	<b>36</b>	<b>84</b>	

\* AF denotes Across Flat.

## Steel Hexagons – Hot Rolled

Hexagonales de Acero - Laminado en Caliente 六角鉄 六角钢

Supplied in the following standard lengths.

Europe : 3 M

U.S. : N/A

Japan : 5.5 M and Random

Singapore : 12 ft.

If you require a length other than the standard mentioned, please specify when ordering.



### How to order: CODE

Steel hexagon, hot rolled, ACROSS FLAT mm x TOTAL LENGTH mtr

AF mm	Kg Per Mtr	Unit Per Lgh.		
		5.5 mtr (Japan)	3 mtr (Europe)	12 feet (Singapore)
6	0.245	67 03 51	67 03 79	67 09 85
7	0.333	52	80	86
8	0.435	53	81	87
9	0.551	54	82	88
10	0.680	55	83	89
12	0.979	67 03 56	67 03 84	67 09 90
14	1.33	57	85	91
17	1.96	58	86	92
19	2.45	59	87	93
21	3.00	60	88	94
23	3.60	67 03 61	67 03 89	67 09 95
26	4.60	62	90	96
29	5.72	63	91	97
32	6.96	64	92	98
35	8.33	65	93	99
38	9.82	67 03 66	67 03 94	67 13 01
41	11.4	67	95	02
46	14.4	68	96	03
50	17.0	69	97	04
54	19.8	70	98	05
58	22.9	67 03 71	67 03 99	67 13 06
63	27.0	72	67 04 00	07
67	30.5	73	88	08
71	34.3	74	89	09

\* AF denotes Across Flat.

## Steel Flats – Hot Rolled

Pletinas de Acero - Laminado en Caliente 平鉄 热轧扁钢

Sizes larger than those listed below are available upon request. Supplied in the following standard lengths:

Europe : 6 M

U.S. : 20 ft.

Japan : 5.5 M

Singapore : 6 M

If you require a length other than the standard mentioned, please specify when ordering.



### How to order: CODE

Flat, hot rolled, THICKNESS x WIDTH mm x TOTAL LENGTH mtr

Size mm	Kg Per Mtr	Unit Per Lgh.		
		5.5 mtr (Japan)	6 mtr (Europe & Singapore)	20 ft (U.S.A.)
3 mm (1/8)	13	0.306	67 04 01	67 04 90
	16	0.377	02	98
	19	0.447	03	99
	22	0.518	91	13
	25	0.589	04	12
	32	0.754	05	15
	38	0.895	06	16
	50	1.180	07	17
	65	1.530	92	18
	22	0.777	67 04 93	67 05 45
4.5 mm (3/16)	25	0.880	08	46
	32	1.130	09	47
	38	1.340	10	48
	44	1.550	11	49
	50	1.770	12	50
	65	2.300	94	51
	75	2.650	95	52
	90	3.180	96	53
100	3.530	97	54	28

(to be continued)

Size mm	Kg Per Mtr	Unit Per Lgh.		
		5.5 mtr (Japan)	6 mtr (Europe & Singapore)	20 ft (U.S.A.)
6 mm (1/4)	13	0.612	67 05 01	67 05 55
	16	0.754	02	56
	19	0.895	03	57
	22	1.04	04	58
	25	1.16	67 04 13	59
	32	1.51	14	60
	38	1.79	15	61
	44	2.07	16	62
	50	2.36	17	63
	65	3.06	18	64
9 mm (3/8)	75	3.53	19	65
	90	4.24	20	66
	100	4.71	21	67
	125	5.89	67 05 05	68
	150	7.06	06	69
	175	8.24	07	70
	180	8.48	08	86
	200	9.42	09	87
	250	11.8	10	88
	300	14.1	11	89
9 mm (3/8)	16	1.13	67 05 13	67 05 90
	22	1.55	14	91
	25	1.77	67 04 22	92
	32	2.26	23	93
	38	2.68	24	94
	44	3.11	25	95
	50	3.53	26	96
	65	4.59	27	97
	75	5.30	28	98
	90	6.36	29	99
12 mm (1/2)	100	7.06	30	67 06 00
	125	8.83	31	28
	150	10.6	67 05 15	67 06 29
	165	11.7	16	30
	175	12.4	17	31
	180	12.7	18	32
	190	13.4	19	33
	200	14.1	20	34
	240	17.0	21	35
	250	17.7	22	36
12 mm (1/2)	290	20.5	23	37
	300	21.2	24	38
	25	2.36	67 04 32	67 06 39
	32	3.01	33	40
	38	3.58	34	41
	44	4.14	35	42
	50	4.71	36	43
	65	6.12	37	44
	75	7.06	38	45
	90	8.48	39	46
16 mm (5/8)	100	9.42	40	47
	125	11.8	41	48
	150	14.1	42	49
	200	18.8	43	50
	250	23.6	44	61
	300	28.3	45	62
	25	3.14	67 05 26	67 06 63
	32	4.02	67 04 46	64
	38	4.77	47	65
	50	6.28	48	66
16 mm (5/8)	65	8.16	49	67
	75	9.42	50	68
	90	11.3	51	69
	100	12.6	52	70
	125	15.7	53	71
	150	18.8	54	72
	180	22.6	55	73
	200	25.1	56	74
16 mm (5/8)	230	28.9	57	75
	250	31.4	58	76
	280	35.2	59	77
	300	37.7	60	78
	67 14 00			

(to be continued)

		Unit Per Lgh.		
Size mm	Kg Per Mtr	5.5 mtr (Japan)	6 mtr (Europe & Singapore)	20 ft (U.S.A.)
Thick	Width			
19 mm (3/4)	32	4.77	<b>67 05 28</b>	<b>67 06 79</b>
	38	5.67	<b>67 04 61</b>	80
	50	7.46	62	81
	65	9.69	63	82
	75	11.2	64	83
	90	13.4	65	84
	100	14.9	66	85
	125	18.6	67	86
	150	22.4	68	87
	180	26.8	69	88
22 mm (7/8)	200	29.8	70	89
	250	37.3	72	90
	300	44.7	74	91
	50	8.46	<b>67 04 75</b>	<b>67 06 92</b>
	65	11.2	76	93
	75	13.0	77	94
	90	15.5	78	95
	100	17.3	79	96
	125	21.6	80	97
	150	25.9	81	98
180 mm (1 1/2)	180	31.1	82	99
	200	34.5	83	<b>67 07 00</b>
	250	43.2	85	26
	300	51.8	87	27
	50	8.46		
	65	11.2		
	75	13.0		
	90	15.5		
	100	17.3		
	125	21.6		

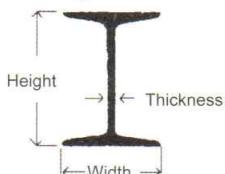
## Steel I Beams – Hot Rolled

Perfiles Doble T Acero - Laminado en Caliente I 形鋼 热轧工字钢

Supplied in the following standard lengths:

Europe : 6 M U.S. : 20 ft.  
Japan : 5.5 M Singapore : 6 M

If you require a length other than the standard mentioned, please specify when ordering.



How to order: CODE

Steel I beam, hot rolled, HEIGHT x WIDTH x THICKNESS mm x TOTAL LENGTH mtr

Unit Per Lgh.

Size mm		Kg Per Mtr	5.5 mtr (Japan)	6 mtr (Europe & Singapore)	20 ft (U.S.A.)
Height	Width	Thick			
75	75	5	11.9	<b>67 05 31</b>	<b>67 07 28</b>
100	75	5	12.9	32	29
125	75	5.5	16.1	33	30
150	75	5.5	17.1	34	31
150	125	8.5	36.2	35	32
180	100	6	23.6	<b>67 05 36</b>	<b>67 07 33</b>
200	100	7	26.0	37	34
200	150	9	50.4	38	35
250	125	7.5	38.3	39	36
250	125	10	55.5	40	37
300	150	8	48.3	<b>67 05 41</b>	<b>67 07 38</b>
300	150	10	65.5	42	39
300	150	11.5	76.8	43	40
350	150	9	58.5	44	62
300	150	8	48.3	<b>67 05 41</b>	<b>67 15 23</b>
300	150	10	65.5	42	24
300	150	11.5	76.8	43	25
350	150	9	58.5	44	26

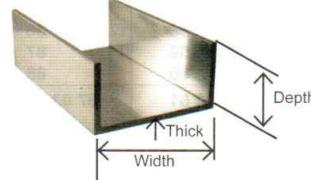
## Steel Channels – Hot Rolled

Perfiles U Acero - Laminado en Caliente 溝形鋼 热轧槽形钢

Supplied in the following standard lengths.

Europe : 6 M  
U.S. : 20 ft.  
Japan : 5.5M  
Singapore : 6 M

If you require a length other than the standard mentioned, please specify when ordering.



How to order: CODE

Steel channel, hot rolled , WIDTH x DEPTH x THICKNESS mm x TOTAL LENGTH mtr

Unit Per Lgh.

Size mm		Kg Per Mtr	5.5 mtr (Japan)	6 mtr (Europe & Singapore)	20 ft (U.S.A.)
Width	Depth	Thick			
75	40	5	6.92	<b>67 05 71</b>	<b>67 07 63</b>
100	50	5	9.36	72	64
125	65	6	13.4	73	65
150	70	6	15.8	74	66
150	75	6.5	18.6	75	67
150	75	9	24.0	<b>67 05 76</b>	<b>67 07 68</b>
180	75	7	21.4	77	69
200	80	7.5	24.6	80	70
200	90	8	30.3	81	71
250	90	9	34.6	85	72

## Steel Equal Angles – Hot Rolled

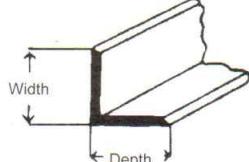
Ángulos Iguales de Acero - Laminado en Caliente

等辺アングル鋼 热轧等边角钢

Supplied in the following standard lengths.

Europe : 6 M  
U.S. : 20 ft.  
Japan : 5.5 M and random  
Singapore : 6 M

If you require a length other than the standard mentioned, please specify when ordering.



How to order: CODE

Steel equal angle, hot rolled, WIDTH x DEPTH x THICKNESS mm x TOTAL LENGTH mtr

Unit Per Lgh.

Size mm		Kg Per Mtr	5.5 mtr (Japan)	6 mtr (Europe & Singapore)	20 ft (U.S.A.)
Width	Depth	Thick			
20	20	3	0.885	<b>67 06 01</b>	<b>67 07 73</b>
25	25	3	1.12	02	74
30	30	3	1.36	03	75
30	30	5	2.16	04	76
40	40	3	1.83	05	77
40	40	5	2.95	<b>67 06 06</b>	<b>67 07 78</b>
50	50	4	3.06	07	79
50	50	6	4.43	08	80
65	65	6	5.91	09	90
65	65	8	7.66	10	91
75	75	6	6.85	<b>67 06 11</b>	<b>67 07 92</b>
75	75	9	9.96	12	93
75	75	12	13.0	13	94
90	90	7	9.59	14	95
90	90	10	13.3	15	96

(to be continued)

Size mm			Kg Per Mtr	5.5 mtr (Japan)	6 mtr (Europe & Singapore)	20 ft (U.S.A.)	Unit Per Lgh.
Width	Depth	Thick					
90	90	13	17.0	67 06 16	67 07 97	67 15 72	
100	100	7	10.7		98	73	
100	100	10	14.9		99	74	
100	100	13	19.1	67 08 00		75	
130	130	9	17.9	20	08	76	
130	130	12	23.4	67 06 21	67 08 09	67 15 77	
130	130	15	28.8		10	78	
150	150	12	27.3	23	11	79	
150	150	15	33.6	24	12	80	
150	150	19	41.9	25	13	81	
200	200	15	45.3	67 06 26	67 08 14	67 15 82	
200	200	20	59.7		15	83	

## Steel Unequal Angles - Hot Rolled

Ángulos Desiguales de Acero - Laminado en Caliente

不等辺アングル鋼 热轧不等边钢

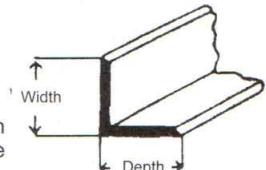
Supplied in the following standard lengths.

Europe : 6 M

U.S. : 20 ft.

Japan : 5.5 M and random

Singapore : 6 M



If you require a length other than the standard mentioned, please specify when ordering.

### How to order: CODE

Steel unequal angle, hot rolled, WIDTH x DEPTH x THICKNESS mm x TOTAL LENGTH mtr

Size mm			Kg Per Mtr	5.5 mtr (Japan)	6 mtr (Europe & Singapore)	20 ft (U.S.A.)	Unit Per Lgh.
Width	Depth	Thick					
65	50	5	4.36	67 06 51	67 08 23	67 15 84	
75	50	6	5.67		53	85	
75	65	6	6.38		55	86	
90	75	6	7.56		56	87	
90	75	9	11.0	57	27	88	
100	75	7	9.32	67 06 59	67 08 28	67 15 89	
100	75	10	13.0		60	29	90

## Steel Plates - Hot Rolled

Chapas de Acero - Laminado en Caliente 鋼板 热轧钢板

Ungalvanized or galvanized plates are available in the following sheet sizes:

914 x 1,829 mm (3 ft. x 6 ft.) or 1,219 x 2,438 mm (4 ft. x 8 ft.).

If you require a sheet size other than the ones listed above, please specify the dimensions you require in your order.



### Ungalvanized

### How to order: CODE

Steel plate, hot rolled, ungalvanized, THICKNESS x WIDTH x LENGTH mm, NUMBER of SHEETS required

Ungalvanized			Unit Per Sht.		
914 x 1,829 mm (3' x 6')			1,219 x 2,438 mm (4' x 8')		
CODE	Thickness mm	Kg Per Sht	CODE	Thickness mm	Kg Per Sht
67 07 01	0.6	7.8	67 07 41	1.6	37.3
02	0.8	10.5	42	2.0	46.7
03	1.0	13.1	43	2.3	53.7
04	1.2	15.8	44	3.2	74.7
05	1.6	21.0	45	4.5	105
67 07 06	2.0	26.3	67 07 46	5.0	140
07	2.3	30.2	47	8.0	187
08	3.2	42.0	48	9.0	210
09	4.5	59.1	49	10	233
10	6.0	78.8	50	11	257
67 07 11	8.0	105	67 07 51	12	280
12	9.0	118	52	16	373
13	10	131	53	19	443
14	11	144	54	22	513
15	12	158	55	25	583
67 07 16	16	210	67 07 56	28	653
17	19	249	57	32	747
18	22	289	58	36	840
19	25	328	59	40	933
20	28	368	60	45	1,050
67 07 21	32	420	67 07 61	50	1,167
22	36	473			
23	40	525			
24	45	591			
25	50	656			

### Galvanized

914 x 1,829 mm (3' x 6')

### How to order: CODE

Steel plate, hot rolled, galvanized, THICKNESS mm, 914 x 1,829 mm (3 ft. x 6 ft.), NUMBER of SHEETS required

Unit Per Sht.			Unit Per Sht.		
CODE	Thickness mm	Kg Per Sht	CODE	Thickness mm	Kg Per Sht
67 07 81	0.27	4.18	67 07 86	0.8	11.1
82	0.3	4.57	87	1.0	13.8
83	0.4	5.89	88	1.2	16.4
84	0.5	7.20	89	1.6	21.6
85	0.6	8.51			

## Steel Checker Plates - Hot Rolled

Chapas Estriadas de Acero - Laminado en Caliente

稿鋼板 热轧网纹钢板

For the construction or repair of floor plates, iron ladder steps, etc.

Standard sheet size: 914 x 1,829 mm

(3 ft. x 6 ft.) or 1,219 x 2,438 mm (4 ft. x 8 ft.).



If you require a different size sheet, please specify the dimensions you require in your order.

### How to order: CODE

Steel checker plate, hot rolled, WIDTH x LENGTH mm, THICKNESS mm, NUMBER of SHEETS required

Unit Per Sht.			Unit Per Sht.		
914 x 1,829 mm (3' x 6')			1,219 x 2,438 mm (4' x 8')		
CODE	Thickness mm	Kg Per Sht	CODE	Thickness mm	Kg Per Sht
67 08 01	3.2	44.8	67 08 16	3.2	79.6
02	4.5	61.8	17	4.5	110
03	6	81.5	18	6	145
04	8	108	19	8	192
05	9	121	20	9	215
67 08 06	10	134	67 08 21	10	238
07	12	167	22	12	285

## Tinned Plates

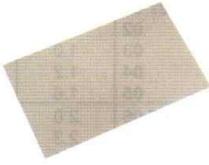
Chapas de Hojalata ブリキ板 镀锡钢板

Standard sheet size : 508 x 711.2 mm (20" x 28").

If you require a different size sheet, please indicate the dimensions of the sheet you require in your order.

### How to order: CODE

Tinned plate, 508 x 711.2 mm, THICKNESS mm, NUMBER of SHEETS required



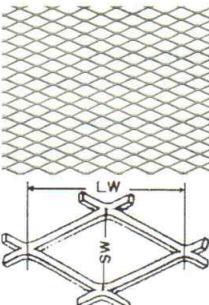
Unit Per Shrt.					
CODE	Thickness mm	Gram Per Shrt	CODE	Thickness mm	Gram Per Shrt
67 08 51	0.214	607	67 08 56	0.285	810
52	0.229	648	57	0.294	834
53	0.243	688	58	0.306	867
54	0.257	729	59	0.320	907
55	0.271	770	60	0.357	1,012

## Steel Bleaching Plates

(Diamond Expanded Metal)

Chapas Blanqueadas de Acero エキスパンドメタル 网眼钢板

Standard size: 914 x 1,829 mm (3 ft. x 6 ft.) or 1,219 x 2,438 mm (4 ft. x 8 ft.).



Made of rolled steel for use as a general structural material. When ordering, please specify the size of the mesh you require (as shown in the illustration as above) as well as the thickness of the mesh wire and the length and width of the sheet required for use.

### How to order: CODE

Steel bleaching plate, WIDTH x LENGTH mm, MESH (SW x LW) mm, THICKNESS mm, NUMBER of SHEETS required

Unit Per Shrt.							
914 x 1,829 mm (3' x 6')			1,219 x 2,438 mm (4' x 8')				
CODE	Mesh mm	Thickness mm	CODE	Mesh mm	Thickness mm		
	SW	LW		SW	LW		
67 08 81	25	61	3.2	67 08 86	25	61	3.2
82	34	135	4.5	87	34	135	4.5
83	34	135	6.0	88	34	135	6.0

## Carbon Tool Steel Rounds

Redondos de Acero Carbono para Harramientas 炭素工具鋼 圆碳钢棒

Water hardened carbon tool steel, SK3 (content ratio of carbon, 1 - 1.1 %), for taps, dies, chisels, etc.

SK5 type (content ratio of carbon, 0.8 - 0.9 %) tool steel is for stamping plates for letters and figures or as saw blades. Annealed and processed for the easiest machinability.

Supplied in the following standard lengths:

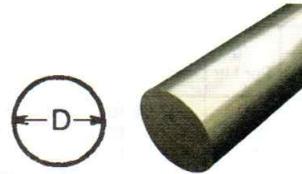
Europe : 3 M

Japan : 5.5 M

U.S. : 12 ft.

Singapore : 6 M

If you require a length other than the standard mentioned, please specify when ordering.



### How to order: CODE

Tool steel, carbon, round, SK3 or SK5, DIAM mm x TOTAL LENGTH mtr

Unit Per Lgh.

SK-3		5.5 mtr (Japan)	3 mtr (Europe)	12 feet (U.S.A.)	6 mtr (Singapore)
For Tap-Dies-Chisel etc.	Diam mm				
	10	0.62	67 09 01	67 15 91	67 16 60
	11	0.75		92	61
	12	0.89	03	93	62
	13	1.04	04	94	63
	14	1.21	05	95	64
	15	1.39	67 09 06	67 15 96	67 16 65
	16	1.58	07	97	66
	17	1.78	08	98	67
	18	2.00	09	99	68
	19	2.23	10	67 16 00	69
	20	2.47	67 09 11	67 16 20	67 17 20
	21	2.72	12	21	71
	22	2.98	13	22	72
	23	3.26	14	23	73
	24	3.55	15	24	74
	25	3.85	67 09 16	67 16 25	67 16 75
	26	4.17	17	26	76
	27	4.49	18	27	77
	28	4.83	19	28	78
	30	5.55	20	29	79
	32	6.31	67 09 21	67 16 30	67 16 80
	34	7.13	22	31	81
	36	7.99	23	32	82
	38	8.90	24	33	83
	40	9.87	25	34	84

Unit Per Lgh.

SK-5		5.5 mtr (Japan)	3 mtr (Europe)	12 feet (U.S.A.)	6 mtr (Singapore)
For Stamp Letter-Figure-Saw	Diam mm				
	10	0.62	67 09 51	67 16 35	67 16 85
	11	0.75	52	36	86
	12	0.89	53	37	87
	13	1.04	54	38	88
	14	1.21	55	39	89
	15	1.39	67 09 56	67 16 40	67 16 90
	16	1.58	57	41	91
	17	1.78	58	42	92
	18	2.00	59	43	93
	19	2.23	60	44	94
	20	2.47	67 09 61	67 16 45	67 16 95
	21	2.72	62	46	96
	22	2.98	63	47	97
	23	3.26	64	48	98
	24	3.55	65	49	99
	25	3.85	67 09 66	67 16 50	67 17 00
	26	4.17	67	51	01
	27	4.49	68	52	02
	28	4.83	69	53	03
	30	5.55	70	54	04
	32	6.31	67 09 71	67 16 55	67 17 05
	34	7.13	72	56	06
	36	7.99	73	57	07
	38	8.90	74	58	08
	40	9.87	75	59	09

## Steel Piano Wire

### (Music Wire)

Alambre de Acero para Piano

ピアノ線 钢琴钢丝

### How to order: CODE

Steel piano wire, DIAM mm x TOTAL LENGTH mtr



CODE	Diam. mm	Kg Per 1,000 m	CODE	Diam. mm	Kg Per 1,000 m	Unit Per Mtr.
67 10 01	0.08	0.0394	67 10 20	0.70	3.018	
02	0.09	0.0499	21	0.80	3.943	
03	0.10	0.0615	22	0.90	4.986	
04	0.12	0.0884	23	1.0	6.158	
05	0.14	0.121	24	1.2	8.867	
67 10 06	0.16	0.158	67 10 25	1.4	12.07	
07	0.18	0.199	26	1.6	15.77	
08	0.20	0.246	27	1.8	19.95	
09	0.23	0.325	28	2.0	24.63	
10	0.26	0.416	29	2.3	32.58	
67 10 11	0.29	0.518	67 10 30	2.6	41.62	
12	0.32	0.630	31	2.9	51.78	
13	0.35	0.754	32	3.2	63.05	
14	0.40	0.980	33	3.5	75.43	
15	0.45	1.247	34	4.0	98.52	
67 10 16	0.50	1.537	67 10 35	4.5	124.66	
17	0.55	1.863	36	5.0	153.94	
18	0.60	2.219	37	5.5	186.27	
19	0.65	2.603	38	6.0	221.64	

## Iron Wire

Alambre de Hierro 鉄線 低碳钢丝

Galvanized or ungalvanized wire is available.



### How to order: CODE

Iron wire, GALVANIZED or UNGALVANIZED, DIAM mm TOTAL LENGTH mtr

Galvanized Wire		Kg Per 1,000 m	Ungalvanized Wire		Unit Per Kg.
CODE	Diam. mm		CODE	Diam. mm	
67 11 01	0.23	0.326	67 11 51	0.23	
02	0.26	0.417	52	0.26	
03	0.29	0.518	53	0.29	
04	0.32	0.631	54	0.32	
05	0.35	0.755	55	0.35	
67 11 06	0.40	0.987	67 11 56	0.40	
07	0.45	1.25	57	0.45	
08	0.50	1.54	58	0.50	
09	0.55	1.87	59	0.55	
10	0.60	2.22	60	0.60	
67 11 11	0.65	2.60	67 11 61	0.65	
12	0.70	3.02	62	0.70	
13	0.80	3.95	63	0.80	
14	0.90	4.99	64	0.90	
15	1.0	6.17	65	1.0	
67 11 16	1.2	8.88	67 11 66	1.2	
17	1.4	12.1	67	1.4	
18	1.6	15.8	68	1.6	
19	1.8	20.0	69	1.8	
20	2.0	24.7	70	2.0	
67 11 21	2.3	32.6	67 11 71	2.3	
22	2.6	41.7	72	2.6	
23	2.9	51.8	73	2.9	
24	3.2	63.1	74	3.2	
25	3.5	75.5	75	3.5	
67 11 26	4.0	98.7	67 11 76	4.0	
27	4.5	125	77	4.5	
28	5.0	154	78	5.0	
29	5.5	187	79	5.5	
30	6.0	222	80	6.0	
67 11 31	6.5	260	67 11 81	6.5	

## Razor Wire

Alambre de cuchillas 蛇腹式レーザーワイヤー 蛇腹型刀片刺网

A concertina configured galvanized steel wire used for outer boundary fencing on ship's deck to defend ships from the vandals, like pirates. The razor wire prevents any intruders from penetrating by piercing or gripping them. Two patterns of loop are available ; Single Loop or Crossed Loop, and also standard diameter are available from 400 mm to 900 mm. Standard coil length when extended is 15 mtr, and they can be lengthened by connecting clips.



Single Loop



Crossed Loop

Unit Per Mtr.		Unit Per Mtr.			
CODE	Diameter	Standard Extended Length	CODE	Diameter	Standard Extended Length
<b>Single Loop</b>				<b>Crossed Loop</b>	
67 12 01	400 mm		67 12 11	400 mm	
02	500 "		12	500 "	
03	600 "	15 mtr	13	600 "	15 mtr
04	700 "		14	700 "	
05	800 "		15	800 "	
67 12 06	900 "	15 mtr	67 12 16	900 "	15 mtr

## Connecting Clips and Ties for Razor Wire



Single Clip



Connecting Tie

CODE	Unit	CODE	Unit
<b>Connecting Clip</b>			<b>Connecting Tie</b>
67 12 18	Per Piece	67 12 20	Per Piece
19	100's / Packet	21	100's / Packet

## Stainless Steel Razor Wire

Unit Per Mtr.

CODE	Circle Diam.	CODE	Circle Diam.
67 12 25	900 mm	67 12 26	1,000 mm

Remark: Standard length is 15 mtr per coil.

## Flat Wrap Razor Wire

Alambre plano de la maquinilla de afeitar

平面式レーザーワイヤー 扁平包裹剃刀电线

A flat wrap razor wire is suitable for installations where a neat appearance is required. Due to its flat construction, it does not overhang into neighboring property and will therefore not harm innocent bystanders. The flat wrap razor wire can be used to upgrade any existing fence or wall, by adding directly to a wire mesh fence, or adding it on top of a brick or pre-cast wall to instantly upgrade your security.



Unit Per Lgh.		
CODE	Diam.	Length
67 12 31	500 mm	10 mtr
32	700 "	

### Tools for Razor Wire Installation



19 01 41	Gloves for razor wire installation	Pr.
43	Arm Protector for razor wire installation	Pr.
45	Apron for installation razor wire	Pc.
61 17 65	Razor wire clip pliers	Pr.

### Barbed Wire

Alambre de espino 有刺鉄線 有刺铁丝

A galvanized wire with sharp edges to protect your property from invaders by fencing around.



67 12 41	Barbed wire, 250 mtr (App.28 kg)	Rls.
----------	----------------------------------	------

### Stainless Steel Rounds

#### Hot Rolled

Redodos de Acero Inoxidable - Laminado en Caliente

ステンレス鋼棒 热轧不锈钢

SUS 430 - AISI (ASTM) 430 ... 18 Chrome

SUS 304 - AISI (ASTM) 304 ... 18 Chrome & 8 Nickel

Supplied in the following standard lengths. If you require a length other than the standard mentioned, please specify when ordering.

Europe : 3 M

U.S. : 12 ft.

Japan : 4 M

Singapore : 6 M



#### How to order: CODE

Stainless steel round, SUS 430 or SUS 304, DIAM mm x TOTAL LENGTH mtr

Unit Per Lgh.					
SUS 430 18 Chrome		4 mtr (Japan)	3 mtr (Europe)	12 feet (U.S.A.)	6 mtr (Singapore)
Diam mm	Kg Per Mtr				
9	0.5	67 14 01	67 17 60	67 17 94	67 18 47
10	0.62		02	61	48
12	0.89		03	62	49
13	1.04		04	63	50
14	1.21		05	64	68
15	1.39	67 14 06	67 17 65	67 17 99	67 18 69
16	1.58		07	66	70
19	2.23		08	67	71
20	2.47		09	68	72
22	2.98		10	69	73

24	3.55	67 14 11	67 17 70	67 18 23	67 18 74
25	3.85	12	71	24	75
26	4.17	13	72	25	76
28	4.83	14	73	26	77
30	5.55	15	74	27	78
32	6.31	67 14 16	67 17 75	67 18 28	67 18 79
34	7.13	17	76	29	80
36	7.99	18	77	30	81
38	8.90	19	78	31	82
40	9.87	20	79	32	83
42	10.9	67 14 21	67 17 80	67 18 33	67 18 84
44	11.9	22	81	34	85
46	13.0	23	82	35	86
48	14.2	24	83	36	87
50	15.4	25	84	37	88
55	18.7	67 14 26	67 17 85	67 18 38	67 18 89
60	22.2	27	86	39	90
65	26.0	28	87	40	91
70	30.2	29	88	41	92
75	34.7	30	89	42	93
80	39.5	67 14 31	67 17 90	67 18 43	67 18 94
85	44.5	32	91	44	95
90	49.9	33	92	45	96
100	61.7	34	93	46	97

SUS 304 18 Chrome & 8 Nickel		4 mtr (Japan)	3 mtr (Europe)	12 feet (U.S.A.)	6 mtr (Singapore)
Diam mm	Kg Per Mtr				
9	0.5	67 14 51	67 18 98	67 19 75	67 20 09
10	0.62	52	99	76	10
12	0.89	53	67 19 00	77	11
13	1.04	54	23	78	12
14	1.21	55	24	79	13
15	1.39	67 14 56	67 19 25	67 19 80	67 20 14
16	1.58	57	26	81	15
19	2.23	58	27	82	16
20	2.47	59	28	83	17
22	2.98	60	29	84	18
24	3.55	67 14 61	67 19 30	67 19 85	67 20 19
25	3.85	62	31	86	20
26	4.17	63	32	87	21
28	4.83	64	33	88	22
30	5.55	65	34	89	23
32	6.31	67 14 66	67 19 35	67 19 90	67 20 24
34	7.13	67	36	91	25
36	7.99	68	37	92	26
38	8.90	69	38	93	27
40	9.87	70	39	94	28
42	10.9	67 14 71	67 19 40	67 19 95	67 20 29
44	11.9	72	41	96	30
46	13.0	73	42	97	31
48	14.2	74	43	98	32
50	15.4	75	44	99	33
55	18.7	67 14 76	67 19 45	67 20 00	67 20 34
60	22.2	77	46	01	35
65	26.0	78	47	02	36
70	30.2	79	48	03	37
75	34.7	80	49	04	38
80	39.5	67 14 81	67 19 50	67 20 05	67 20 39
85	44.5	82	72	06	40
90	49.9	83	73	07	41
100	61.7	84	74	08	42

### Stainless Steel Hexagons

#### Hot Rolled

Hexagonales de Acero Inoxidable - Laminado en Caliente

ステンレス六角鋼 六角不锈钢

(to be continued)

SUS 430 - AISI (ASTM) 430 ... 18 Chrome  
 SUS 304 - AISI (ASTM) 304 ... 18 Chrome & 8 Nickel  
 Supplied in the following standard lengths. If you require a length other than the standard mentioned, please specify when ordering.

Europe : 3 M  
 U.S. : 12 ft.  
 Japan : 4 M  
 Singapore : 12 M



#### How to order: CODE

Stainless steel hexagon, SUS 430 or SUS 304, ACROSS FLAT mm x TOTAL LENGTH mtr

Unit Per Lgh.

SUS 430 18 Chrome		4 mtr (Japan)	3 mtr (Europe)	12 feet (U.S.A. & Singapore)	Unit Per Lgh.
Across Flats mm	Kg Per Mtr				
12	0.979	67 15 01	67 20 43	67 20 63	
14	1.33	02	44	64	
17	1.96	03	45	65	
19	2.45	04	46	66	
21	3.00	05	47	67	
23	3.60	67 15 06	67 20 48	67 20 68	
26	4.60	07	49	69	
29	5.72	08	50	70	
32	6.96	09	51	71	
35	8.33	10	52	72	
38	9.82	67 15 11	67 20 53	67 20 73	
41	11.4	12	54	74	
46	14.4	13	55	75	
50	17.0	14	56	76	
54	19.8	15	57	77	
58	22.9	67 15 16	67 20 58	67 20 78	
63	27.0	17	59	79	
67	30.5	18	60	80	
71	34.3	19	61	81	
77	40.3	20	62	82	

Unit Per Lgh.

SUS 304 18 Chrome & 8 Nickel		4 mtr (Japan)	3 mtr (Europe)	12 feet (U.S.A. & Singapore)	Unit Per Lgh.
Across Flats mm	Kg Per Mtr				
12	0.979	67 15 31	67 20 83	67 21 45	
14	1.33	32	84	46	
17	1.96	33	85	47	
19	2.45	34	86	48	
21	3.00	35	87	49	
23	3.60	67 15 36	67 20 88	67 21 50	
26	4.60	37	89	51	
29	5.72	38	90	52	
32	6.96	39	91	53	
35	8.33	40	92	54	
38	9.82	67 15 41	67 20 93	67 21 55	
41	11.4	42	94	56	
46	14.4	43	95	57	
50	17.0	44	96	58	
54	19.8	45	97	59	
58	22.9	67 15 46	67 20 98	67 21 60	
63	27.0	47	99	61	
67	30.5	48	67 21 00	62	
71	34.3	49	43	63	
77	40.3	50	44	64	

#### Stainless Steel Plates

##### Hot Rolled

Chapas de Acero Inoxidable - Laminado en Caliente

ステンレス鋼板 不锈钢板

SUS 304 - AISI (ASTM) 304 ... 18 Chrome & 8 Nickel

Supplied in the following standard sizes.

Europe : 1 x 2 M  
 Japan : 1 x 2 M  
 U.S. : 4 x 8 ft.  
 Singapore : 4 x 8 ft.



#### How to order: CODE

Stainless steel plate, SUS 304, THICKNESS mm, 1 x 2 mtr,  
 NUMBER of SHEETS required

Unit Per Sht.

Thickness mm	Kg Per Sht	1 x 2 mtr (Japan & Europe)	4 x 8 feet (U.S.A. & Singapore)
0.5	8.0	67 16 01	67 21 65
0.6	9.6	02	66
0.8	12.7	03	67
1.0	15.9	04	68
1.5	23.8	05	69
2.0	31.7	67 16 06	67 21 70
2.5	39.6	07	77
3.0	47.6	08	78
4.0	63.4	09	79
5.0	79.3	10	80
6.0	95.2	67 16 11	67 21 81
7.0	111	12	82
8.0	127	13	83
9.0	143	14	84
10.0	159	15	85
12.0	190	67 16 16	67 21 86
15.0	238	17	87
20.0	317	18	88
25.0	396	19	89

#### Copper Rounds

Redondo de Cobre 銅棒 铜棒

Supplied in the following standard lengths. If you require a length other than the standard mentioned, please specify when ordering.



Europe : 4 M

Japan : 4 M

U.S. : 12 ft.

Singapore : 12 ft.

#### How to order : CODE

Copper round, DIAM mm x TOTAL LENGTH mtr

Unit Per Lgh.

Diam mm	Kg Per Sht	4 mtr (Japan & Europe)	12 feet (U.S.A.& Singapore)
10	0.698	67 18 01	67 21 90
12	1.01	02	91
13	1.18	03	92
14	1.37	04	93
15	1.57	05	94
16	1.79	67 18 06	67 21 95
19	2.52	07	96
20	2.79	08	97
22	3.38	09	98
25	4.36	10	99
28	5.47	67 18 11	67 22 00
30	6.28	12	24
32	7.15	13	25
35	8.55	14	26
38	10.1	15	27
40	11.2	67 18 16	67 22 28
42	12.3	17	29
45	14.1	18	30
50	17.5	19	31

#### Copper Wire

Alambre de Cobre 銅線 铜线



**How to order: CODE**

Copper wire, DIAM mm x TOTAL LENGTH mtr

Unit Per Kgs.

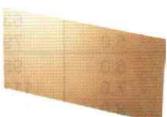
CODE	Diameter		Kg Per 1,000 m	CODE	Diameter		Kg Per 1,000 m
	mm	Swg			mm	Swg	
67 18 51	0.3	31	0.6284	67 18 61	1.6	16	17.88
52	0.4	27	1.117	62	1.8	15	22.63
53	0.5	25	1.746	63	2.0	14	27.93
54	0.6	23	2.513	64	2.3	13	36.94
55	0.7	22	3.421	65	2.6	12	47.20
67 18 56	0.8	21	4.469	67 18 66	3.0	11	62.84
57	0.9	20	5.656	67	3.5	9	85.53
58	1.0	19	6.982				
59	1.2	18	10.05				
60	1.4	17	13.68				

**How to order: CODE**

Brass round, DIAM mm x TOTAL LENGTH mtr required

Unit Per Lgh.

Diam mm	Kg Per Mtr	4 mtr (Japan & Singapore)	3 mtr (Europe)	12 feet (U.S.A.)
3	0.060	67 21 01	67 22 32	67 23 33
3.5	0.081	02	33	34
4	0.105	03	34	35
4.5	0.133	04	35	36
5	0.165	05	36	37
5.5	0.20	67 21 06	67 22 37	67 23 38
6	0.237	07	38	39
7	0.323	08	39	40
8	0.422	09	40	41
9	0.534	10	41	42
10	0.660	67 21 11	67 22 42	67 23 43
11	0.797	12	43	44
12	0.950	13	44	45
13	1.11	14	45	46
14	1.29	15	46	47
15	1.48	67 21 16	67 22 47	67 23 48
16	1.69	17	48	49
17	1.90	18	49	50
18	2.14	19	50	73
19	2.38	20	84	74
20	2.64	67 21 21	67 22 85	67 23 75
21	2.91	22	86	76
22	3.19	23	87	77
23	3.49	24	88	78
24	3.80	25	89	79
25	4.12	67 21 26	67 22 90	67 23 80
26	4.46	27	91	81
27	4.81	28	92	82
28	5.17	29	93	83
30	5.94	30	94	84
32	6.76	67 21 31	67 22 95	67 23 85
34	7.63	32	96	86
35	8.08	33	97	87
36	8.55	34	98	88
38	9.53	35	99	89
40	10.6	67 21 36	67 23 00	67 23 90
42	11.6	37	27	91
44	12.7	38	28	92
45	13.4	39	29	93
46	14.0	40	30	94
48	15.2	67 21 41	67 23 31	67 23 95
50	16.5	42	32	96

**Copper Sheets**

Láminas de Cobre 銅板 铜片

Supplied in the following standard sizes :

Europe : 1,000 x 500 mm or 1,000 x 1,000 mm  
 Japan : (1) W 365 x L 1,200 mm, 0.4 - 10 mm thick  
          (2) W 1,000 x L 2,000 mm, 0.5 - 10 mm thick  
 Singapore : 1 x 1 M, 0.5 - 3 mm thick.

**How to order: CODE**Copper sheet, WIDTH x LENGTH mm, THICKNESS mm,  
NUMBER of SHEETS required

Unit Per Shrt.

365 mm x 1,200 mm		1,000 mm x 2,000 mm			
CODE	Thickness mm	Kg Per Shrt	CODE	Thickness mm	Kg Per Shrt
67 19 01	0.4	1.558	67 19 51	0.5	8.89
02	0.5	1.947	52	0.6	10.67
03	0.6	2.336	53	0.7	12.45
04	0.7	2.726	54	0.8	14.22
05	0.8	3.115	55	1.0	17.78
67 19 06	1.0	3.894	67 19 56	1.2	21.34
07	1.2	4.673	57	1.4	24.90
08	1.4	5.453	58	1.5	26.68
09	1.5	5.843	59	1.6	28.44
10	1.6	6.228	60	1.8	32.0
67 19 11	1.8	7.008	67 19 61	2.0	35.56
12	2.0	7.788	62	2.3	40.9
13	2.3	8.957	63	2.6	46.22
14	2.6	10.12	64	2.9	51.56
15	2.9	11.29	65	3.2	56.9
67 19 16	3.2	12.46	67 19 66	4.0	71.12
17	4	15.58	67	5.0	88.90
18	5	19.47	68	6.0	106.7
19	6	23.36	69	7.0	124.5
20	7	27.26	70	8.0	142.2
67 19 21	8	31.15	67 19 71	10	177.8
22	10	38.94			

**Brass Squares**

Cuadrados de Latón 黄銅 (真鍮) 角棒 方形黄铜棒

Copper 60 %, Zinc 40 %. Supplied in the following standard lengths:



Europe : 3 M

U. S. : 12 ft.

Japan : 4 M

Singapore : 12 ft.

If you require a length other than the standard mentioned, please specify when ordering.

**How to order: CODE**

Brass square, ACROSS FLAT mm, TOTAL LENGTH mtr

Unit Per Lgh.

Across Flats mm	Kg Per Mtr	4 mtr (Japan)	3 mtr (Europe)	12 feet (U.S.A. & Singapore)
8	0.538	67 21 71	67 23 97	67 24 14
9	0.680	72	98	15
10	0.840	73	99	16
11	1.02	74	67 24 00	17
12	1.21	75	12	18
13	1.42	67 21 76	67 24 13	67 24 19

**Brass Rounds**

Redondos de Latón 黄銅 (真鍮) 棒 黄铜棒

Copper 60 %, Zinc 40 %. Supplied in the following standard lengths:

Europe : 3 M

Japan : 4 M

U.S. : 12 ft.

Singapore : 4 M

If you require a length other than the standard mentioned, please specify when ordering.

## Brass Hexagons

Hexagonales de Latón 黄銅（真鍮）六角棒 六角黃銅

Supplied in the following standard lengths.

Europe : 3 M  
U. S. : 12 ft.  
Japan : 4 M  
Singapore : 4 M



If you require a length other than the standard mentioned, please specify when ordering.

### How to order: CODE

Brass hexagon, ACROSS FLAT mm x TOTAL LENGTH mtr

Across Flats mm	Kg Per Mtr	Unit Per Lgh.		
		4 mtr (Japan & Singapore)	3 mtr (Europe)	12 feet (U.S.A.)
6	0.262	67 22 01	67 24 20	67 24 65
7	0.356		02	66
8	0.465		03	67
9	0.589		04	68
10	0.727		05	69
12	1.05	67 22 06	67 24 36	67 24 70
14	1.43		07	71
17	2.10		08	72
19	2.62		09	73
21	3.20		10	74
23	3.84	67 22 11	67 24 52	67 24 75
25	4.54		12	76
30	6.54		13	77
32	7.44		14	78
35	8.90		15	79
40	11.6	67 22 16	67 24 57	67 24 80
41	12.2		17	81
46	15.4		18	82
50	18.2		19	83
54	21.2		20	84
58	24.4	67 22 21	67 24 62	67 24 85
63	28.8		22	86
67	32.6		23	87

## Brass Plates

Láminas de Latón 黄銅（真鍮）板 黃銅板



Standard Sizes:

1) W 365 x L 1,200 mm ... 0.15 to 30 mm thick

2) W 1,000 x L 2,000 m ... 0.5 to 30 mm thick.

Please specify if you require plates of a size other than those listed above.

### How to order: CODE

Brass plate, WIDTH x LENGTH mm, THICKNESS mm, NUMBER of SHEETS required

365 mm x 1,200 mm			1,000 mm x 2,000 mm		
CODE	Thickness mm	Kg Per Sht	CODE	Thickness mm	Kg Per Sht
67 22 51	0.15	0.551	67 23 01	0.6	8.39
52	0.2	0.735	02	0.6	10.1
53	0.25	0.919	03	0.7	11.7
54	0.3	1.10	04	0.8	13.4
55	0.35	1.29	05	1.0	16.8
67 22 56	0.4	1.47	67 23 06	1.2	20.1
57	0.45	1.65	07	1.4	23.5
58	0.5	1.84	08	1.5	25.2
59	0.6	2.20	09	1.6	26.8
60	0.7	2.57	10	1.8	30.2

(to be continued)

67 22 61	0.8	2.94	67 23 11	2.0	33.6
62	1.0	3.67	12	2.3	38.6
63	1.2	4.41	13	2.5	42.0
64	1.4	5.14	14	3.0	50.3
65	1.5	5.51	15	3.2	53.7
67 22 66	1.6	5.88	67 23 16	3.5	58.7
67	1.8	6.61	17	4	67.1
68	2.0	7.35	18	5	83.9
69	2.3	8.45	19	6	101
70	2.5	9.19	20	7	117
67 22 71	3.0	11.0	67 23 21	8	134
72	3.2	11.8	22	10	168
73	3.5	12.9	23	15	252
74	4	14.7	24	20	336
75	5	18.4	25	25	420
67 22 76	6	22.0	67 23 26	30	503
77	7	25.7			
78	8	29.4			
79	10	36.7			
80	15	55.1			
67 22 81	20	73.5			
82	25	91.9			
83	30	110			

## Brass Wire

Alambre de Latón 黄銅（真鍮）線 黃銅絲



Sizes other than those listed below are available upon request.

### How to order: CODE

Brass wire, DIAM mm x TOTAL LENGTH mtr

CODE	Diameter		Kg Per 1,000 m	CODE	Diameter		Kg Per 1,000 m
	mm	Swg			mm	Swg	
67 23 51	0.5	25	1.6830	67 23 61	1.8	15	21.7057
52	0.55	24	2.0169	62	2.0	14	25.98
53	0.6	23	2.4129	63	2.3	13	34.40
54	0.65	-	2.6852	64	2.5	-	43.31
55	0.7	22	3.2197	65	2.8	-	49.74
67 23 56	0.8	21	4.2817	67 23 66	3.0	-	60.26
57	0.9	20	5.2477	67	3.2	10	68.60
58	1.0	19	6.6947	68	3.5	9	86.87
59	1.2	18	9.6525	69	3.8	-	91.57
60	1.4	17	13.1297	70	4.0	8	107.16
				67 23 71	4.3	-	128.70
				72	4.5	7	135.50

## Brass Shims

(Brass Strips)

Rámicas de Latón 黄銅（真鍮）条 黃銅垫片



A solid shim stock of precision laminated brass. These strips can be easily cut by a power saw or hacksaw and can be punched, bored, or milled by ordinary machinery. The thin stock can be cut easily with metal shears. Supplied in the following standard sizes :

- 1) 125 mm x 5 mtr
- 2) 150 mm x 5 mtr
- 3) 175 mm x 5 mtr

Please specify if you require sizes other than those listed above.

**How to order: CODE**

Brass shim, WIDTH x LENGTH mm, THICKNESS mm, NUMBER of SHEETS required

125 mm x 5 mtr			150 mm x 5 mtr			Unit Per Sht.
CODE	Thickness mm	Kg Per Sht	CODE	Thickness mm	Kg Per Sht	
67 24 01	0.1	0.525	67 24 21	0.1	0.63	
02	0.16	0.84	22	0.16	1.005	
03	0.2	1.05	23	0.2	1.26	
04	0.26	1.365	24	0.26	1.635	
05	0.3	1.575	25	0.3	1.89	
67 24 06	0.35	1.85	67 24 26	0.35	2.2	
07	0.4	2.1	27	0.4	2.515	
08	0.5	2.62	28	0.5	3.145	
09	0.6	3.145	29	0.6	3.775	
10	0.7	3.67	30	0.7	4.405	
67 24 11	0.8	4.195	67 24 31	0.8	5.05	
175 mm x 5 mtr						
CODE	Thickness mm	Kg Per Sht	CODE	Thickness mm	Kg Per Sht	
67 24 41	0.1	0.735	67 24 47	0.4	2.935	
42	0.16	1.175	48	0.5	3.675	
43	0.2	1.47	49	0.6	4.405	
44	0.26	1.91	50	0.7	5.15	
45	0.3	2.2	51	0.8	5.85	
67 24 46	0.35	2.57				

**Naval Brass Rounds**

Redondo de Latón ネーパル黄銅（真鍮）棒 船用圓形黃銅棒

Used for shafting or similar parts processing.  
Resists corrosion from salt water.

Supplied in the following standard lengths:

Europe : 3 M  
Japan : 4 M  
U. S. : 12 ft.  
Singapore : 4 M



Please specify if you need to have the bar cut to a required length.

**How to order: CODE**

Naval brass round, DIAM mm x TOTAL LENGTH mtr

Diam mm	Kg Per Mtr	4 mtr (Japan & Singapore)	3 mtr (Europe)	12 feet (U.S.A.)	Unit Per Lgh.
10	0.661	67 25 01	67 25 19	67 25 37	
13	1.12	02	20	38	
16	1.69	03	21	39	
19	2.39	04	22	40	
22	3.20	05	23	41	
25	4.13	67 25 06	67 25 24	67 25 42	
28	5.19	07	25	43	
30	5.95	08	26	44	
32	6.77	09	27	45	
35	8.10	10	28	46	
38	9.55	67 25 11	67 25 29	67 25 47	
42	11.7	12	30	48	
45	13.4	13	31	49	
50	16.5	14	32	50	
55	20.0	15	33	69	
60	23.8	67 25 16	67 25 34	67 25 70	
65	27.9	17	35	71	
70	32.4	18	36	72	

**High-Tension Brass Rounds**

Redondos Latón de Alta Tensión

高力黄銅（真鍮）棒 高拉力圓形黃銅棒

Resists corrosion by salt water. Used chiefly in the manufacture of propeller shafts, etc.  
Supplied in the following standard lengths:



Europe : 3 M

Japan : 4 M

U. S. : 12 ft.

Singapore : 4 M

If you require a length other than the standard mentioned, please specify when ordering.

**How to order: CODE**

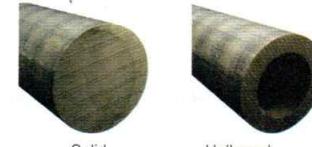
High tension brass round, DIAM mm x TOTAL LENGTH mtr

Diam mm	Kg Per Mtr	4 mtr (Japan & Singapore)	3 mtr (Europe)	12 feet (U.S.A.)	Unit Per Lgh.
10	0.661	67 25 51	67 25 73	67 25 91	
13	1.12	52	74	92	
16	1.69	53	75	93	
19	2.39	54	76	94	
22	3.20	55	77	95	
25	4.13	67 25 56	67 25 78	67 25 96	
28	5.19	57	79	97	
30	5.95	58	80	98	
32	6.77	59	81	99	
35	8.10	60	82	67 26 00	
38	9.55	67 25 61	67 25 83	67 26 01	
42	11.7	62	84	02	
45	13.4	63	85	03	
50	16.5	64	86	04	
55	20.0	65	87	05	
60	23.8	67 25 66	67 25 88	67 26 06	
65	27.9	67	89	07	
70	32.4	68	90	08	

**Bronze Castings**

Fundiciones de Bronce, Redondos 青銅鑄物 (BC) 青铜铸棒

Solid or hollow castings are available in standard lengths of 300 mm. This anticorrosive material is widely used for sleeves, rebushing, etc. Sizes other than those listed below are available upon request. When ordering, please specify whether you require solid or hollow castings. When ordering hollow castings, please specify the required inner or outer diameters.



Solid      Hollowed

**How to order: CODE**

Bronze casting, SOLID or HOLLOWED, DIAM mm x TOTAL LENGTH mtr

Solid Length 300 mm			Hollowed Length 300 mm			Unit Per Lgh.
CODE	Diam. mm	Kg Per Length	CODE	Size mm	Kg Per Length	
				O.D.	I.D.	
67 27 01	20	1.0	67 27 51	40	20	3.0
02	25	1.5	52	45	20	3.9
03	30	2.1	53	45	25	3.4
04	35	2.9	54	50	20	4.9
05	40	3.7	55	55	25	5.6

(to be continued)

Solid Length 300 mm			Hollowed Length 300 mm			Unit Per Lgh.
CODE	Diam. mm	Kg Per Length	CODE	Size mm		Kg Per Length
				O.D.	I.D.	
67 27 06	45	4.6	67 27 56	60	30	6.4
07	50	5.7	57	65	30	7.7
08	55	6.8	58	65	35	7.1
09	60	8.1	59	70	35	8.5
10	65	9.5	60	75	35	10.1
67 27 11	70	11.0	67 27 61	80	40	11.0
12	75	12.5	62	90	45	13.9
13	80	14.2	63	100	50	17.0
14	85	16.0	64	110	60	19.3
15	90	17.9	65	120	60	24.8
67 27 16	95	20.0	67 27 66	140	90	26.0
17	100	22.7	67	200	100	68.0

## Phosphor Bronze Wire

Alambre de Bronce Fosforado リン青銅線 磷青铜丝

Sizes larger or smaller than those listed below are also available upon request.



### How to order: CODE

Phosphor bronze wire, DIAM mm x TOTAL LENGTH mtr

Unit Per Kgs.							
CODE	Diameter		CODE	Diameter		Kg Per 1,000 m	
	mm	Swg		mm	Swg		
67 28 11	0.5	25	1.746	67 28 21	1.8	15	22.63
12	0.55	24	2.112	22	2.0	14	27.93
13	0.60	23	2.513	23	2.3	13	36.94
14	0.65	-	2.950	24	2.5	12	43.64
15	0.7	22	3.421	25	2.8	-	54.74
67 28 16	0.8	21	4.469	67 28 26	3.0	11	62.84
17	0.9	20	5.656	27	3.2	-	71.49
18	1.0	19	6.982	28	3.5	9	85.53
19	1.2	18	10.05	29	3.8	-	
20	1.4	17	13.68	30	4.0	8	111.7
			67 28 31	4.3	-		
			32	4.5	7	141.4	

## Aluminium Rounds

Redondos de Aluminio アルミ丸棒 圆铝棒

Supplied in the following standard lengths

Europe : 6 M

Japan : 5 M

U. S. : 12 ft.

Singapore : 16 ft.



If you require a length other than the standard mentioned, please specify when ordering.

### How to order: CODE

Aluminium round, DIAM mm x TOTAL LENGTH mtr

Diam mm	Kg Per Mtr	5 mtr (Japan)	6 mtr (Europe)	12 feet (U.S.A.)	16 feet (Singapore)	Unit Per Lgh.
6	0.0766	67 30 01	67 30 11	67 30 21	67 30 31	
10	0.212	02	12	22	32	
15	0.478	03	13	23	33	
20	0.852	04	14	24	34	
25	1.33	05	15	25	35	
30	1.92	67 30 06	67 30 16	67 30 26	67 30 36	
35	2.61	07	17	27	37	
40	3.41	08	18	28	38	
45	4.31	09	19	29	39	
50	5.32	10	20	30	40	

## Aluminium Squares

Cuadrados de Aluminio アルミ角棒 方铝棒

Sizes other than those listed below are also available upon request. Supplied in the following standard lengths:

Europe : 6 M

Japan : 5 M

U. S. : 12 ft.

Singapore : 16 ft.



If you require a length other than the standard mentioned, please specify when ordering.

### How to order: CODE

Aluminium square, ACROSS FLAT mm, TOTAL LENGTH mtr

Across Flats mm	Kg Per Mtr	5 mtr (Japan)	6 mtr (Europe)	12 feet (U.S.A.)	16 feet (Singapore)	Unit Per Lgh.
6	0.0976	67 30 41	67 30 51	67 30 61	67 30 71	
8	0.173	42	52	62	72	
10	0.271	43	53	63	73	
12	0.390	44	54	64	74	
15	0.610	45	55	65	75	
20	1.08	67 30 46	67 30 56	67 30 66	67 30 76	
25	1.69	47	57	67	77	
30	2.44	48	58	68	78	
40	4.34	49	59	69	79	
50	6.78	50	60	70	80	

## Aluminium Hexagons

Hexagonales de Aluminio アルミ六角棒 六角铝棒

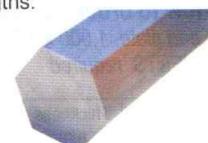
Supplied in the following standard lengths:

Europe : 6 M

Japan : 5 M

U. S. : 12 ft.

Singapore : 12 ft.



If you require a length different from the standard, please specify when ordering.

### How to order: CODE

Aluminium hexagon, ACROSS FLAT mm,

TOTAL LENGTH mtr

Across Flats mm	Kg Per Mtr	5 mtr (Japan)	6 mtr (Europe)	12 feet (U.S.A. & Singapore)	Unit Per Lgh.
6	0.0845	67 30 81	67 30 91	67 31 22	
8	0.150	82	92	23	
10	0.235	83	93	24	
15	0.528	84	94	25	
20	0.939	85	95	26	
25	1.47	67 30 86	67 30 96	67 31 27	
30	2.11	87	97	28	
35	2.88	88	98	29	
40	3.76	89	99	30	
50	5.87	90	67 31 00	31	

## Aluminium Plates or Sheets

Chapas o Láminas de Aluminio アルミ板 铝板或铝片

Standard sheet sizes :

400 mm x 1,200 mm,

1,000 mm x 2,000 mm



### How to order: CODE

Aluminium plate, WIDTH x LENGTH mm, THICKNESS mm,

NUMBER of SHEETS required

400 mm x 1,200 mtr			1,000 mm x 2,000 mtr			Unit Per Sht.
CODE	Thickness mm	Kg Per Sht	CODE	Thickness mm	Kg Per Sht	
67 31 01	0.2	0.260	67 31 51	0.2	1.08	
02	0.25	0.325	52	0.25	1.36	
03	0.3	0.390	53	0.3	1.63	
04	0.4	0.520	54	0.4	2.17	
05	0.5	0.650	55	0.5	2.71	
67 31 06	0.6	0.780	67 31 56	0.6	3.25	
07	0.7	0.911	57	0.7	3.79	
08	0.8	1.04	58	0.8	4.34	
09	1.0	1.30	59	1.0	5.42	
10	1.2	1.56	60	1.2	6.50	
67 31 11	1.5	1.95	67 31 61	1.5	8.13	
12	2.0	2.60	62	2.0	10.8	
13	2.5	3.25	63	2.5	13.6	
14	3.0	3.90	64	3.0	16.3	
15	3.5	4.55	65	3.5	19.0	
67 31 16	4	5.20	67 31 66	4	21.7	
17	5	6.50	67	5	27.1	
18	6	7.80	68	6	32.5	
19	8	10.4	69	8	43.4	
20	10	13.0	70	10	54.2	
67 31 21	12	15.6	67 31 71	12	65.0	

## Lead Plates or Sheets

Chapas o Láminas de Plomo 鉛板 铅板

Standard size sheets are 1,000 x 1,000 mm or cut to a specified length up to 5 meters.



### How to order: CODE

Lead plate, 1,000 x 1,000 mm, THICKNESS mm, NUMBER of SHEETS required

CODE	Thickness mm	Kg Per 1 m <sup>2</sup>	CODE	Thickness mm	Kg Per 1 m <sup>2</sup>	Unit Per Sht.
67 33 01	1.0	11.3	67 33 04	3.0	34.0	
02	1.5	17.0	05	4.0	45.4	
03	2.0	22.7	06	5.0	56.7	

## Lead Wire

Alambre de Plomo 鉛線 铅丝



For caulking and to bind or secure cloth hose or insulation to piping. Sold by coil.

### How to order: CODE

Lead wire, DIAM mm x TOTAL LENGTH mtr

CODE	Diam. mm	Standard Coil	CODE	Diam. mm	Standard Coil	Unit Per Kgs.
67 33 21	0.5	1 kg	67 33 28	3.5	2.5 kg	
22	0.8	1 kg	29	4.0	2.5 kg	
23	1.0	2.5 kg	30	4.5	2.5 kg	
24	1.5	2.5 kg	31	5.0	2.5 kg	
25	2.0	2.5 kg	32	5.5	2.5 kg	
67 33 26	2.5	2.5 kg	67 33 33	6.0	2.5 kg	
27	3.0	2.5 kg	34	6.3	2.5 kg	

## Zinc Casting Rounds

Zinc Redondos Fundidos 亜鉛合金丸棒 铸锌圆棒

Standard length : 300 mm. Specify if you require a hollow or solid casting. If a hollow casting is required, please indicate the size of the inner and outer diameters of the casting. Sizes other than those listed below are available upon request.

### How to order: CODE

Zinc casting round, DIAM mm x TOTAL LENGTH mtr



Unit Per Lgh.

Solid Standard Length 300 mm					
CODE	Diam. mm	Kg Per Length	CODE	Diam. mm	Kg Per Length
67 34 01	20	0.7	67 34 11	70	8.3
02	25	1.1	12	75	9.5
03	30	1.5	13	80	10.9
04	35	2.1	14	85	12.3
05	40	2.7	15	90	13.7
67 34 06	45	3.4	67 34 16	95	15.3
07	50	4.2	17	100	17.0
08	55	5.1	18	105	18.7
09	60	6.1	19	110	20.5
10	65	7.2	20	115	22.4

## Zinc Plates

Chapas de Zinc 亜鉛板 锌板



These zinc plates (anodes) are specially designed for use in the cathodic protection of a ship's hull, propeller, ballast tanks, cylinder liner, seawater pipes, etc. The plates are also used for the protection of equipment carrying seawater such as heat exchangers, condensers, and salt water evaporators.

### How to order: CODE

Zinc plate, THICKNESS x WIDTH x LENGTH mm, NUMBER of SHEETS required

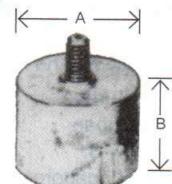
CODE	Sizes mm Thick x Width x Length	CODE	Sizes mm Thick x Width x Length	Unit Per Sht.
67 34 41	19 x 70 x 150	67 34 44	19 x 150 x 300	
42	25 x 70 x 150	45	25 x 150 x 300	
43	12 x 150 x 300	46	12 x 150 x 300	

## Zinc Anode Replacement Elements

Elementos de Reemplazo o Repuestos de Ánodo de Zinc

パイプ用防蝕亜鉛 可更换式阳极锌块

An easily replaceable zinc element for use in pipes which are continuously exposed to seawater. Serves to protect heat exchangers, piping, tanks, pumps, and other hydraulic equipment from corrosion. The anode supplies a continuous protective current to eliminate the corrosion current flowing from a metal surface. Has the same components as the MIL-A-18001-H U. S. A.

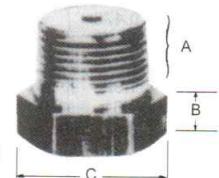


CODE	Type	Size A x B	Weight Grm	Retaining Plug Size
67 35 01	G - 500	12.7 x 19.1	18	NPT 3/8"
02	- 625	15.9 x 19.1	27	" 1/2"
03	- 825	21.0 x 19.1	45	" 3/4"
04	- 1050	26.7 x 19.1	66	" 1"

## Zinc Anode Retaining Plugs

Tapones de Retención de Ánodo de zinc

防蝕亜鉛プラグ 锌块固定栓



A hexagon brass pipe plug containing an anode element.

Unit Per Pcs.					
CODE	Size NPT	Element Type	CODE	Size NPT	Element Type
67 35 11 12	3/8" 1/2"	G-500 G-625	67 35 13 14	3/4" 1	G- 825 G-1050

## Adhesive Anticorrosive Zinc Tapes

Cintas Adhesivas Anti-corrosivas de Zinc

錆止め亜鉛テープ 带粘性的防腐蚀锌带

Highly effective anticorrosive tape developed with a base film of adhesive molten galvanized zinc.



Zinc coated layer will not be infiltrated by water, gas, etc. and will not age from ultraviolet rays, so corrosion does not develop from the inner layer.

As the zinc layer of this tape is thick and uniform, it lasts longer than a molten galvanized coating. It can be easily applied and will prevent corrosion at jointed steel parts or pipes.

Unit Per Rls.

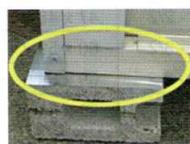
CODE	Width	Thick	Length
67 35 21	25 mm		
22	50 mm		
23	100 mm	0.1 mm	20 mtr

## Anti-corrosive Zinc Sheets

### ZAP Sheet

Hoja de zinc anticorrosivo 亜鉛防触材 防腐蝕的锌板

Suitable for protection against corrosion of outdoor structures. Made of rolled zinc plate with purity more than 99.99%.



Unit Per Shrt.					
CODE	Thick mm	Width x Length mm	CODE	Thick mm	Width x Length mm
67 35 31	1	500 x 1,000	67 35 35	5	
32	2	500 x 1,000	36	6	600 x 1,000
33	3	600 x 1,000	37	7	
34	4	600 x 1,000			

Name of Mfr. : Mitsui-Kinzoku Co., Ltd.

## Metal Anodes

Ánodos de Metal 金属陽極 金属阳极

For protection of hulls of ships, tugs, barges, etc. against sea water corrosion. Corrosion of steel in sea water is an electro chemical process. Metals (zinc, aluminium, magnesium), when suitably connected to steel in the presence of sea water, will generate an electrical current. This current flows from the anode through the sea water to the structure to be protected. The current generated by the metal anode – steel couple is of sufficient magnitude to mitigate corrosion of the steel. Consequently, the metal anode sacrificially corrodes and the steel is protected.

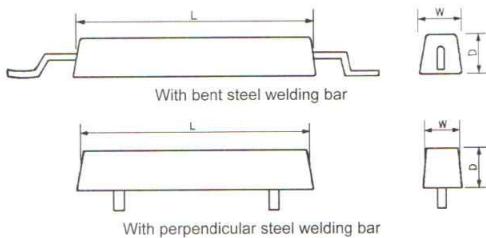
## Zinc Anodes

Ánodos de Zinc 防触亜鉛 锌阳极

Zinc Anodes have the following characteristics :

1. No sparking problem.
2. Excellent self regulating property, low generation of hydrogen gas.
3. Zn compounds formed react as corrosion inhibitors.
4. Free from troubles caused by electrolytic products.
5. Low anodic polarization and stable protective current.
6. Highest current efficiency.

### Standard Products for Ballast Tanks



### For Clean Ballast Tanks

Type	Size mm D x W x L	Weight kg	Core mmø	Life Year		
				30%	40%	45%
MZS- 90P-1	51 x 53 x 1,000	20.2	13		2	
MZS-100P-1	57 x 53.5 x 1,000	22.3	16	3		2
MZS-135P-1	63.5 x 64 x 1,000	30.0	16	4	3	
MZS-150P-1	65 x 70 x 1,000	34.0	16			3
MZS-180P-1	72 x 80.5 x 1,000	41.7	16		4	
MZS-200P-1	80 x 81 x 1,000	47.2	16			4
SN- 2/2	37 x 37 x 500	5.5	13			1
SN- 4/4	53 x 54 x 250	6.6	13		2	
SO- 2/2	43 x 44 x 500	7.3	13	2		
SO- 4/2	62 x 62 x 500	14.3	13	4		
SP- 2/2	48 x 49 x 500	8.9	13			2
SP- 3/2	60 x 61 x 500	13.4	13		2	
SP- 4/2	74 x 74 x 500	20.4	16		4	
SP- 4/4	74 x 74 x 250	10.3	13		3	
SR	34 x 36 x 1,200	10.8	13	2		
ST	48 x 58 x 1,200	21.7	13	4		

### For Permanent Ballast Tanks

Type	Size mm D x W x L	Weight kg	Core mmø	Life Year		
				30%	40%	50%
SN - 2	37 x 37 x 1,000	10.4	13	2		
SN - 3	45 x 44 x 1,000	14.8	13	3		
SN - 4	54 x 53.5 x 1,000	21.5	16	4		
SO - 2	44 x 43 x 1,000	14.0	13		2	
SO - 3	54 x 53.5 x 1,000	21.5	16		3	
SO - 4	63 x 62 x 1,000	28.9	16		4	
SP - 2	49 x 48 x 1,000	17.5	13			2
SP - 3	61 x 60 x 1,000	27.2	16			3
SP - 4	74 x 74 x 1,000	40.1	16			4

### Guide of How to order

When ordering, please specify the following points :

CODE ..... 67 - 35 - 51

Name ..... Zinc anode

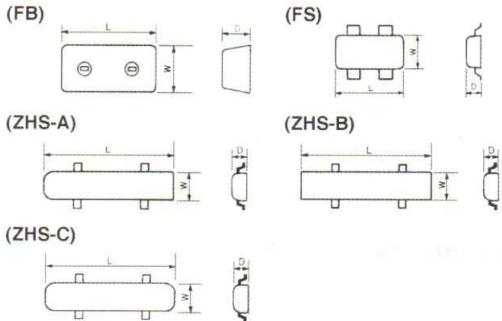
Used for ..... For clean ballast tanks

Type of Welding Bar ..... With bent steel welding bar

Type ..... MZS-90P-1

Size ..... 51 x 53 x 1,000 mm.

## Standard Products for Hulls of Ships



Type	Size mm D x W x L	Weight Kg	Life Year	Type of Installation
3FB	20 x 100 x 200	2.4	0.6	Bolt-on
4FB	30 x 100 x 200	3.5	1.0	"
6FB	20 x 150 x 300	5.8	1.3	"
8FB	20 x 150 x 300	8.5	1.7	"
11FB	35 x 150 x 300	10.0	1.9	"
14FB	35 x 200 x 300	13.6	2.5	"
15FB	40 x 200 x 300	15.8	2.7	"
21FB	57 x 100 x 600	19.3	2.4	"
3FS	20 x 100 x 200	2.9	0.6	Weld-on
4FS	30 x 100 x 200	4.2	1.1	"
5FS	40 x 100 x 200	5.2	1.3	"
10FS	30 x 150 x 300	9.5	1.7	"
11FS	35 x 150 x 300	10.7	2.0	"
15FS	35 x 200 x 300	14.8	2.3	"
10ZHS (A.C.)	40 x 50 x 800	9.9 - 10.1	1.3	"
15ZHS (A.B.C)	48 x 65 x 800	14.7 - 15.5	1.9 - 2.0	"
18ZHS (A.B.C)	50 x 75 x 800	20.5 - 22.3	2.6 - 2.7	"
48ZHS (A.B.C)	85 x 120 x 800	47.2 - 59.2	5.0 - 5.2	"

Note : Other types of Zinc Anode are available on request.

## Guide of How to order

When ordering, please specify the following points :

**CODE.....67 - 35 - 51**

Name.....Zinc anode

Used for.....For hull of ships

Type .....3FB

Size .....20 x 100 x 200 mm

Type of installation .....Bolt-on

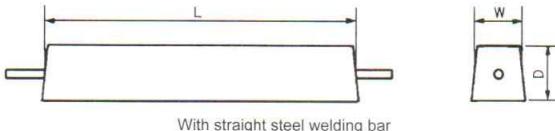
## Aluminium Anodes

Ánodos de Aluminio 防錆アルミ 铝阳极

This is a new aluminium anode, with the composition of Al-Zn-In. It has been used by ship builders and harbour constructors as the most advanced and ideal galvanic anode for corrosion prevention. It has the following characteristics:

1. Lightweight.
2. Highest current capacity.
3. Lowest cost per ampere year.
4. Extremely small anodic polarization tendency.
5. Stabilized current output throughout anode life.
6. Optimum driving voltage without over-protection.
7. Uniform anode consumption.
8. Excellent, self-regulating property.
9. Low hydrogen generation.

## Standard Products for Ballast Tanks



With straight steel welding bar

Type	Size mm W x D x L	Weight Kg	Type of Installation
SA - 2	41 x 27 x 1,000	5.6	Weld-on
SA - 3	51 x 50 x 1,000	8.0	"
SA - 4	60 x 59 x 1,000	10.5	"
SB - 2	47 x 48 x 1,000	7.1	"
SB - 3	60 x 59 x 1,000	10.5	"
SB - 4	71 x 70 x 1,000	14.5	"
SC - 2	54 x 54 x 1,000	8.9	"
SC - 3	69 x 69 x 1,000	13.3	"
SC - 4	81 x 80 x 1,000	18.1	"
SD - 2	35 x 34 x 1,000	4.4	"
SD - 3	42 x 42 x 1,000	6.0	"
SD - 4	51 x 49 x 1,000	7.8	"
SA - 2L	36 x 36 x 2,000	8.8	"
SA - 3L	45 x 44 x 2,000	12.4	"
SA - 4L	53 x 52 x 2,000	16.8	"
SB - 2L	43 x 42 x 2,000	11.5	"
SB - 3L	53 x 52 x 2,000	16.6	"
SB - 4L	62 x 61 x 2,000	22.3	"
SC - 2L	48 x 47 x 2,000	14.0	"
SC - 3L	58 x 58 x 2,000	20.1	"
SC - 4L	69 x 68 x 2,000	27.0	"
SA - 3/2	51 x 50 x 500	4.4	"
SB - 2/2	47 x 48 x 500	3.8	"
SB - 3/2	60 x 59 x 500	5.6	"
SC - 3/2	69 x 68 x 500	6.9	"
SC - 4/2	81 x 80 x 500	9.3	"
SCS - 4	90 x 90 x 500	12.0	"

## Guide of How to order

When ordering, please specify the following points :

**CODE ..... 67 - 36 - 01**

Name ..... Aluminium anode

Used for ..... For ballast tank

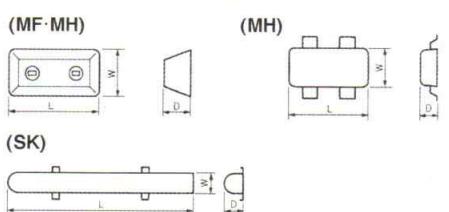
Type of Welding Bar ..... With straight steel welding bar

Type ..... SA-2

Size ..... 4 x 27 x 1,000 mm

Type of installation ..... Weld-on

## Standard Products for Ship Hulls and Stern Parts



Type	Size mm D x W x L	Weight Kg	Type of Installation
MF - 10	20 x 100 x 200	1.0	Bolt-on
MF - 14	30 x 100 x 200	1.4	"
MF - 34	30 x 150 x 300	3.4	"
MF - 53	35 x 200 x 300	5.3	"
MH - 12	20 x 100 x 200	1.2	Weld-on
MH - 17	30 x 100 x 200	1.7	"
MH - 40	30 x 150 x 300	4.0	"
MH - 60	35 x 200 x 300	6.0	"
SK - 1	40 x 50 x 800	4.4	"
SK - 2	57 x 75 x 800	8.8	"

### Guide of How to order

When ordering, please specify the following points :

**CODE .....** **67 - 36 - 01**

Name ..... Aluminium anode

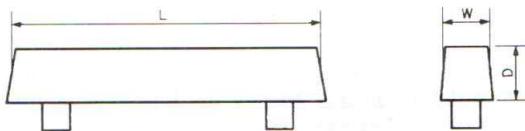
Used for ..... For ships hulls and stern parts

Type ..... MF-10

Size ..... 20 x 100 x 200 mm

Type of installation ..... Bolt-on

### Standard Products for Drilling Rigs



With Perpendicular Steel Welding Bar

Type	Life Year	Size mm W x D x L	Weight Kg
54KA - 2.5	4 - 5	70 x 96 x 2,500	52.9
62KA - 0.9	4 - 6	140 x 146 x 900	62.0
73KA - 2.0	4 - 5	110 x 112 x 2,000	73.1
78KA - 2.0	9 - 11	105 x 110 x 2,000	74.0
80KA - 2.5	4 - 5	100 x 105 x 2,500	78.4
80KA - 1.0	8 - 10	160 x 170 x 1,000	80.4
110KA - 0.6	9 - 11	250 x 250 x 600	110.0
116KA - 1.8	7 - 8	140 x 146 x 1,800	116.0
120KA - 2.5	8 - 10	155 x 103 x 2,500	117.3
163KA - 2.0	15 - 20	160 x 170 x 2,000	159.4
390KA - 2.0	18 - 22	260 x 260 x 2,000	409.0
415KA - 2.4	20 - 25	250 x 253 x 2,400	415.1
470KA - 2.7	20 - 25	247 x 247 x 2,700	470.0
513KA - 2.0	25 - 30	290 x 290 x 2,000	513.0
590KA - 3.0	25 - 30	270 x 275 x 2,930	595.0

### Guide of How to order

When ordering, please specify the following points :

**CODE .....** **67 - 36 - 01**

Name ..... Aluminium anode

Used for ..... For drilling rigs

Type of Welding Bar ..... With perpendicular steel welding bar

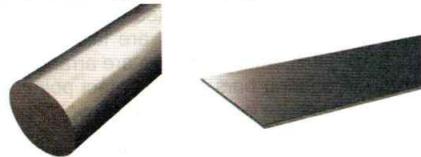
Type ..... 54KA-2.5

Size ..... 70 x 96 x 1,500 mm

## Soft Magnetic Irons

Hierro Sueco 電磁軟鐵 软磁铁

Also called Pure Iron or Swedish Iron. For use in cathodic protection, also for electrical application such as cores, yokes, armatures, etc. Bar type and strip type available.



### 1. Soft Magnetic Iron Bars

Standard Size

Diameter (mm)	Standard Length
6, 6.5, 7, 8, 9, 9.5, 10, 11.1, 12, 15, 16	3 Mtrs

### Characteristics

Class	Symbol	Magnetic characteristic					Hardness
		Magnetic flux density T	Coercive force A/m	B <sub>2</sub>	B <sub>3</sub>	B <sub>5</sub>	
Class 0	SUYB 0	1.1 min.	1.25 min.	1.35 min.	1.55 min.	63.2 max.	
Class 1	SUYB 1	1 min.	1.2 min.	1.35 min.	1.55 min.	79.1 max.	
Class 2	SUYB 2	0.75 min.	1.1 min.	1.3 min.	1.55 min.	103 max.	60 to 90
Class 3	SUYB 3	0.4 min.	0.8 min.	1.1 min.	1.5 min.	142 max.	110 to 195

Remarks: 1. B<sub>2</sub>, B<sub>3</sub>, B<sub>5</sub> and B<sub>25</sub> mean the symbols denoting the magnetic flux densities at the magnetic field intensity of 159.2 A/m, 238.8 A/m, 398 A/m and 1,990 A/m, respectively.

2. Coercive force (H<sub>c</sub>) shall be the values for the magnetic flux density of 1.5 T.

**How to order: 67 - 37 - 01**

Soft magnetic iron bar, class x diameter (kg)

### 2. Soft Magnetic Iron Plates

Standard Size

Thickness (mm)	Standard W x L mm Approx.
0.6, 0.8, 1, 1.2, 1.3, 1.5, 1.6, 1.75, 1.8, 2, 2.1, 2.3, 2.4, 2.8, 2.85, 3.2, 3.5, 4, 4.5	200 x 300, 400 mm

### Characteristics

Class	Symbol	Magnetic characteristic					Hardness
		Magnetic flux density T	Coercive force A/m	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	
Class 0	SUYP 0	0.8 min.	1.1 min.	1.25 min.	1.35 min.	1.55 min.	63.2 max.
Class 1	SUYP 1	0.5 min.	1 min.	1.2 min.	1.35 min.	1.55 min.	79.1 max.
Class 2	SUYP 2	0.2 min.	0.75 min.	1.1 min.	1.3 min.	1.55 min.	103 max.
Class 3	SUYP 3	0.1 min.	0.4 min.	0.8 min.	1.1 min.	1.5 min.	142 max.

Remarks: 1. B<sub>1</sub>, B<sub>2</sub>, B<sub>3</sub>, B<sub>5</sub> and B<sub>25</sub> mean the symbols denoting the magnetic flux densities at the magnetic field intensity of 79.6 A/m, 159.2 A/m, 238.8 A/m, 398 A/m and 1,990 A/m, respectively.

2. Coercive force (H<sub>c</sub>) shall be the values for the magnetic flux density of 1.5 T.

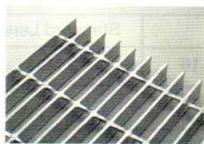
## Plain Style Gratings

Rejilla Planas o Dentadas グレーチング 普通棚格镀锌钢板

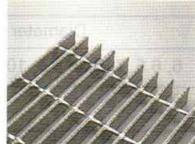
Ideal for use in ships' flooring, stair tread of gangway, catway, pump room, engine room, etc.

Plain style grating consists of twisted square cross bars and plain bearing bars. Bearing bars are laid parallel to each other at 1-3/16" pitch, and cross bars are arranged in 4" pitch vertically to the bearing bars. The contact points of bearing bars and cross bars are electro forged by welding.

Serrated style grating is a type of grating with toothed style on the surface, providing enhanced friction and anti-slip effect.



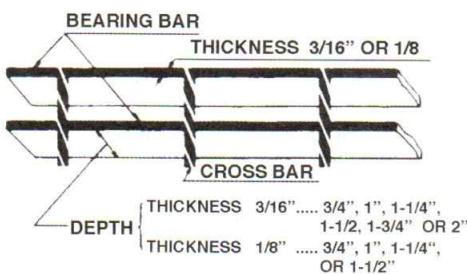
Plain Style



Serrated Style

### 1. Bearing Bars

Load carrying members which run between the supports and rest directly on them and which are parallel to each other.

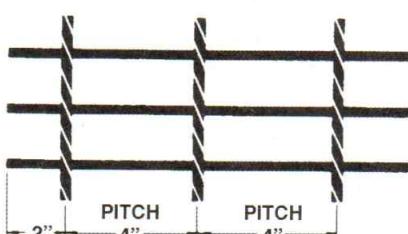


### 2. Cross Bars

Connecting members which run across bearing bars in a perpendicular direction. Twisted 1/4" x 1/4" square bars are used as cross bars in all types of plain style grating.

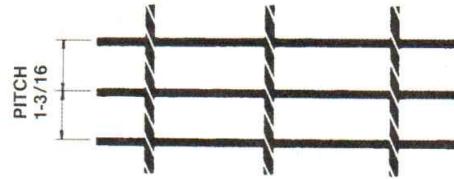
### 3. Pitch of Cross Bars

Pitch means the distance center to center of each cross bar. The pitch is 4" for every type. The distance from the outer end of the bearing bar to the next cross bar is 2".



### 4. Pitch of Bearing Bars

The pitch is the distance from center to center of each bearing bar. The pitch is 1-3/16" whether the thickness of the bearing bar is 3/16" or 1/8".



### 5. Width & Length of the Gratings

No matter what size of grating it may be, the direction in which the bearing bars run is referred to as the length, and direction in which the cross bars run is referred to as the width.

Most common plain style sizes are as follows and are available as ready made stock.

#### How to order: CODE

Grating, plain style or serrated style, galvanized iron, SIZE, PITCH of bearing bar and cross bar

CODE	Size	Style	Bearng Bar			Cross Bar		Unit Per Sht.
			Thickness	Depth	Pitch	Twist	Pitch	
67 38 01	2' x 20'	Plain	1/8"	1"	1-3/16"	1/4"	4"	Galvanized Iron
	2' x 24'					x		
	3' x 20'					1/4"		
	3' x 24'							
67 38 05	2' x 20'	Serrated	1/8"	1"	1-3/16"	1/4"	4"	Galvanized Iron
	2' x 24'					x		
	3' x 20'					1/4"		
	3' x 24'							

Besides the above sizes, a wide variety of sizes are available. When ordering, please specify the following points to avoid errors and delays.

1. Type of Grating
2. Size of Bearing Bar
3. Dimensions (Width x Length)
4. Number of Gratings
5. Standard Finish (unpainted, grey primary coated, black primary coated or galvanized)

## Fiber Reinforced Plastic Gratings (FRP Gratings)

Rejilla Plastica Reforzada con Fibra

ファイバーグレーティング 玻璃纤维加固栅格板

Designed to meet the standards of harsh marine environments and suitable for varied applications such as electrical control flooring, platforms, catwalks, bilges, and drain troughs.

Made of a non-wear synthetic polyester resin which is resistant to salt water corrosion and will withstand contact with acid or industrial chemicals. Although FRP grating is much lighter and easier to handle than metal gratings ( $18.5 \text{ kg/m}^2$ ), when compared with iron and aluminium on a scale of strength, iron is about 5.4, aluminium is 7, and FRP is 15. This grating is very easy to work with and install wherever it is required, whether in the engine room, on staircases, or on walkways on deck. FRP is indispensable on tankers because it is a non spark, inflammable surface which can be used in situations where it undergoes continual friction with metal surfaces.

FRP has no magnetic properties and will not conduct electricity.

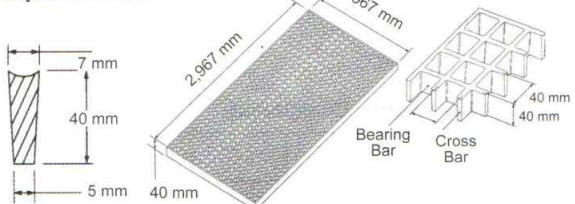
Will be supplied in grey unless otherwise specified.



Square Mesh



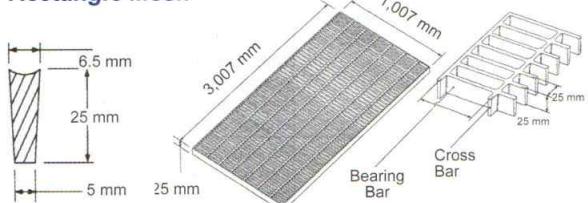
Rectangle Mesh

**Square Mesh****How to order: CODE**

Grating, square mesh, W 2,967 x L 967 x H 40 mm, MATERIAL, FEATURE

CODE	Material	Features	Weight	
			kg/shrt	kg/m <sup>2</sup>
67 38 11	Synthetic Polyester Resin	Fire Resistant Chemical resistant/Sparkless	53	18.5
67 38 12	Synthetic Polyester Resin	Chemical resistant/ Sparkless	53	18.5
67 38 13	Epoxy Acrylate Resin	Chemical resistant/ Sparkless/Acid, Alkali resistant	53	18.5

When ordering, please specify the material and size you require. If no specific size is necessary, it is suggested that you order the grating by sheet.

**Rectangle Mesh****How to order: CODE**

Grating, rectangle mesh, W 3,007 x L 1,007 x H 25 mm, MATERIAL, FEATURE

CODE	Material	Features	Weight	
			kg/shrt	kg/m <sup>2</sup>
67 38 15	Synthetic Polyester Resin	Fire Resistant Chemical resistant/Sparkless	35	11.5
67 38 16	Synthetic Polyester Resin	Chemical resistant/ Sparkless	35	11.5
67 38 17	Epoxy Acrylate Resin	Chemical resistant/ Sparkless/Acid, Alkali resistant	35	11.5

When ordering, please specify the material and size you require. If no specific size is necessary, it is suggested that you order the grating by sheet.

**Grating Clamps**

Herrajes de fijación para rejilla グレーチング固定金具 格栅固定配件

To securely fasten and holding gratings in place. Available different sizes and two kinds of materials, galvanized iron and FRP. Please specify material, cell size and depth of grating when ordering.

67 38 18	For galvanized iron gratings with bolt/nut & top/bottom plate	Set
67 38 19	For FRP (Fiber Reinforced Plastic) gratings with bolt/nut & top/bottom plate	Set

**Phenolic Fiberglass Gratings****DURAGRID®**

Rejilla de Fibra de Vidrio Fenólica

フェノリックファイバーグラスグレーティング 玻璃纤维格栅板

A high strength, light weight, and easy to install fire integrity composite grating for ships and vessels, offering a "Fit it and Forget it" solution to walkway grating.



DURAGRID® Phenolic's corrosion- and fire- resistance has made this product a champion in the Marine and Offshore Oil and Gas industries for decades.

**Features :**

- Higher strength than equivalent steel grating.
- No Rust – typically outlasts the ship's lifespan (can be transferred).
- Dependable anti-skid surface for safety and comfort.
- Light weight - up to 75% lighter than comparable steel grating.
- Safe and easy to install – no welding or hot works.

**Regulatory Information and Approvals\*:**

- ASTM: First composite grating to meet ASTM F3059-15 standard, an enhancement to and expected replacement of USCG PFM2-98.
- USCG: 164.040/16/0 (38 mm and 45 mm (1-1/2" - 1-3/4")).
- IMO: Meets requirements for Safe Access to Tanker Bows (Resolution MSC.62(67)) (SC 253 Dec 2011 Rev 1 May 2016).
- Numerous Class Approvals such as ABS, DNV, and LR.
- \* For a current and complete list of these approvals, please contact Strongwell directly.

**Typical Ship Applications :**

- Center passage walkway grating
- Oil spill tank grating
- Winch stand grating
- Manifold grating
- Various stage areas (Monkey, Wheel House, etc.)

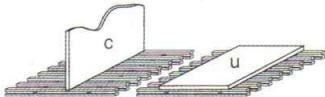
**Availability\* & Panel Sizes :**

- Factory: I-6000 in 3' x 20', 4' x 20', 1M x 6M (38 mm (1-1/2") or 45 mm (1.75") thickness)
- Rotterdam or Factory: 1M x 6M (38 mm (1.5") thickness)
- Weight: 38 mm thickness - 16.8 kg/M<sup>2</sup> (3.4 lb/ft<sup>2</sup>)  
45 mm thickness - 19.0 kg/M<sup>2</sup> (3.9 lb/ft<sup>2</sup>)

\*Strongwell can also drop ship to a specific location or port.

**Performance (I-6000 38 mm) :**

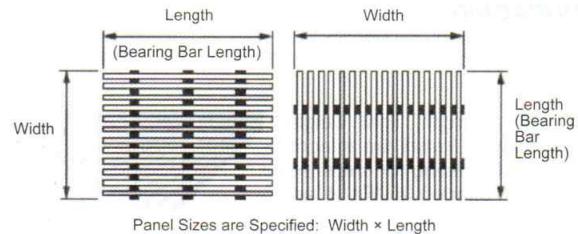
- 16.8 kN/m<sup>2</sup> (350 lb/ft<sup>2</sup>) uniform loading\* (SF [Safety Factor] + 6:1)
- 11.7 kN/m (11.7 lb/ft) concentrated loading\* (SF + 5:1)



\* Based on a midspan deflection of 6.35 mm (.25") on qualified span of 1,120 mm (44")

**Installation :**

DURAGRID® Phenolic installs similar to how steel grating is installed. The bearing bar (BB) is the load carrying member which runs between supports. This is the panel length and is typically designated with a (BB) after the dimension to avoid confusion. DURAGRID® Phenolic does not require any banding after cutting. Loads are effectively transferred by a series of cross-rods spaced every 6" (150 mm) (sometimes referred to as "cross-rod pitch").



Installation is easy; the grating can be cut using simple hand tools such as a circular saw (diamond or masonry blades suggested) or a jig saw (carbide grit blades suggested). Panels are lightweight – single panels are typically moved by hand.

**How to order : 67 - 38 - 21**

Grating, Phenolic Fiberglass, DURAGRID,.....

When ordering, please specify:

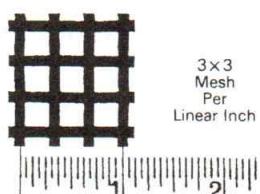
- Square Foot (SF) or Square Meter (M<sup>2</sup>) Measurements of the areas that needs grating.
- Hardware (Part # 744 clip & 797 bolt set) – 4 clips per panel or 4 clips per M<sup>2</sup>.

**Gauze Wire**

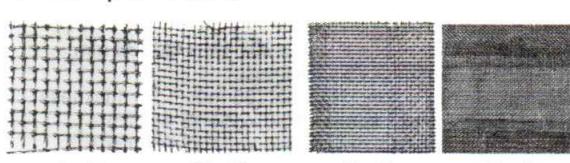
Tela Metálica 金網 纤丝网

Available :

- 1) Galvanized Iron
- 2) Brass – Copper
- 3) Nylon
- 4) Plastic Coated Iron
- 5) Bronze
- 6) Stainless Steel



Mesh denotes the number of openings horizontally and vertically per linear inch. It is measured from center to center of the parallel wires, as illustrated above.

**Actual Square Meshes**

10 x 10

20 x 20

30 x 30

60 x 60

When in doubt about the correct wire size and mesh, the safest and surest way is to send a cut sample of the gauze cloth required and indicate its proposed use in advance. The standard width of stainless steel gauze wire is 1,000 mm and for other materials the width is 910 mm, all supplied in varying lengths.

**How to order : 67 - 39 - 01**

Gauze wire, for PROPOSED USE, MATERIAL – MESH – WIDTH and LENGTH

**Copper Alloy Approx. Constituent**

Name	Approx. main constituent			Descriptions
Brass	Copper Zinc Others	70% or 30 or 40 * * *		Brass is generally an alloy of copper and zinc, although some brasses may contain other elements. Most commercial brass contains about 60 - 70% copper and 40 - 30% zinc. Other alloys are frequently added so as to change its physical characteristics.
Munz Metal	Copper Zinc Others	60% 40 *		An alloy of copper zinc and lead patented by C. F. Munz, an English-man, about 1833, when rolled and annealed it becomes strong and malleable. Used mainly for ship construction, particularly as sheathing, bolts and rivets which are exposed to sea water.
Admiralty Brass	Copper Zinc Tin	71% 28 1		An alloy resistant to corrosion from salt water. Used chiefly in the manufacture of condenser tubes.
Naval Brass	Copper Zinc Tin	60% 39 1		Brass composed usually of 60% copper, 39% zinc, 1% tin and used for bolts or other parts which are submerged under water.
Bronze	Copper Tin Zinc Phosphor Tin	99-75% 1-25 * * *		Bronze is the general name for alloys of copper and tin. Frequently, other alloys such as zinc, lead, manganese, nickel, phosphorus and aluminium, are added to create desired characteristics.
Gunmetal	Copper Tin Others Zinc	88% 10 2 *		An alloy of copper, tin and zinc, iron and lead. Used in the manufacture of sleeves for rubber stocks and propeller shafts, pump manifolds, bolts and nuts, ship's bell, gland and gland bushings and many other uses where strength is required.
Phosphor Bronze	Copper Tin Phosphor	89% 10 1		A bronze of great hardness, elasticity and toughness which superiority is due to the introduction of a small amount of phosphorus.
Monel Metal	Nickel Copper Others	67% 28 5		Trademark – used for an alloy of approximately 67% nickel, 28% copper and 5% other elements that is made by direction from ore in which the constituent metals occur in these properties.
Babbitt Metal	Tin Antimony Copper	93-77% 5-15 2-8		A very soft alloy, variable in its composition of tin, copper and antimony. It is used as linings for bearings and to reduce friction.

\* – denotes very little constituent.