



catalog supplement/string tension specifications



A complete technical reference for fretted instrument string tensions



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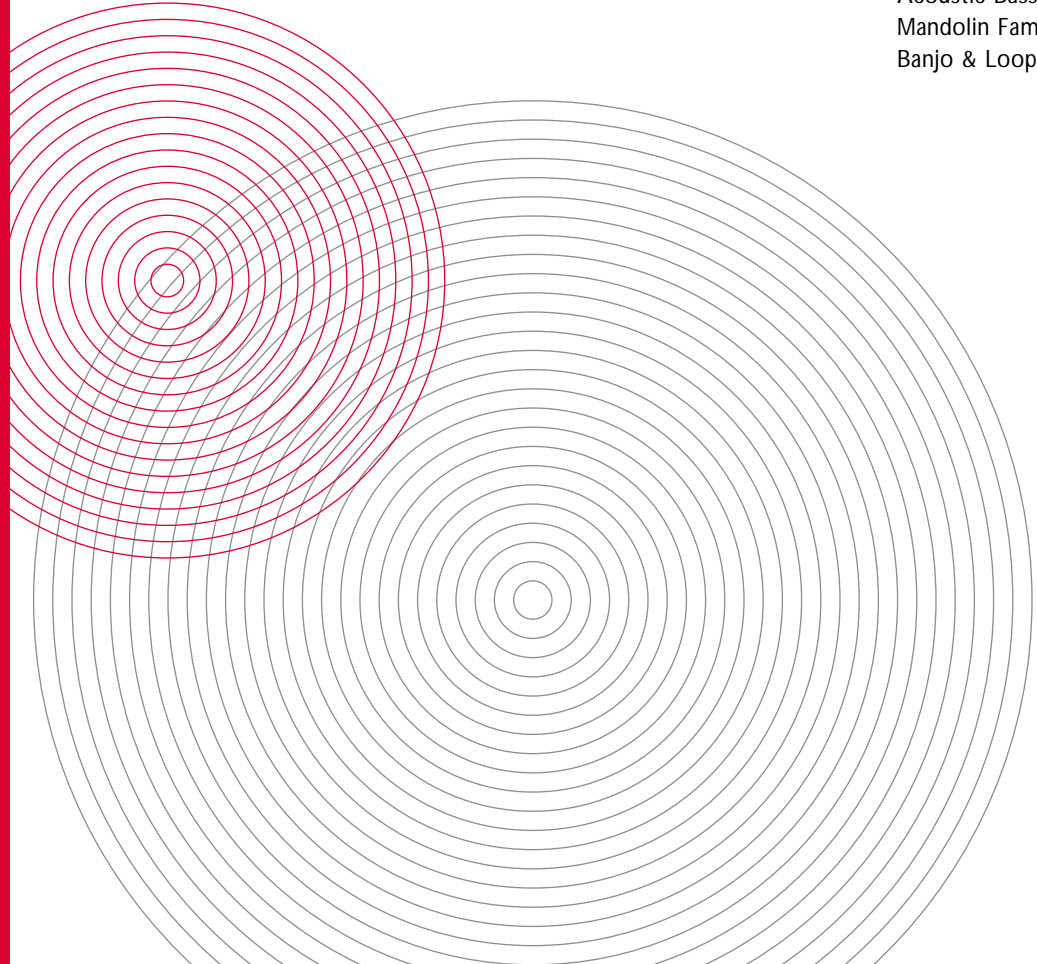
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### String Tensions

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**T**his brochure was created to assist in selecting the ideal string for your instrument and playing style. Included in this brochure are tension tables and formulas to help you calculate what tension a particular string will have on your instrument.



# A complete technical reference for fretted instrument string tensions

## Understanding what determines string tension.

In order to determine the tension at which a string will vibrate, you need three pieces of information: the Unit Weight, the Scale Length, and the Frequency of the string. You can use the charts in this brochure to get a pre-calculated tension for the D'Addario strings listed or you can use the formulas below to calculate the exact tension for any string using the scale length of your particular instrument. All of the charts illustrate string tensions for each string at a variety of pitches, in case you use alternative tunings.

- UW-** Unit Weight. In all the charts and formulas in the brochure, unit weight is expressed in pounds per linear inch (lb/in).
- L-** Scale Length. This is the vibrating length of the string. This is determined by measuring the distance from the nut to the bridge of the instrument in inches (in).
- F-** Frequency or pitch. This is the pitch at which you will be tuning the string expressed in cycles per second (Hertz).

On the following page are two fingerboard graphics detailing the various frequencies for the standard guitar and electric bass guitar.

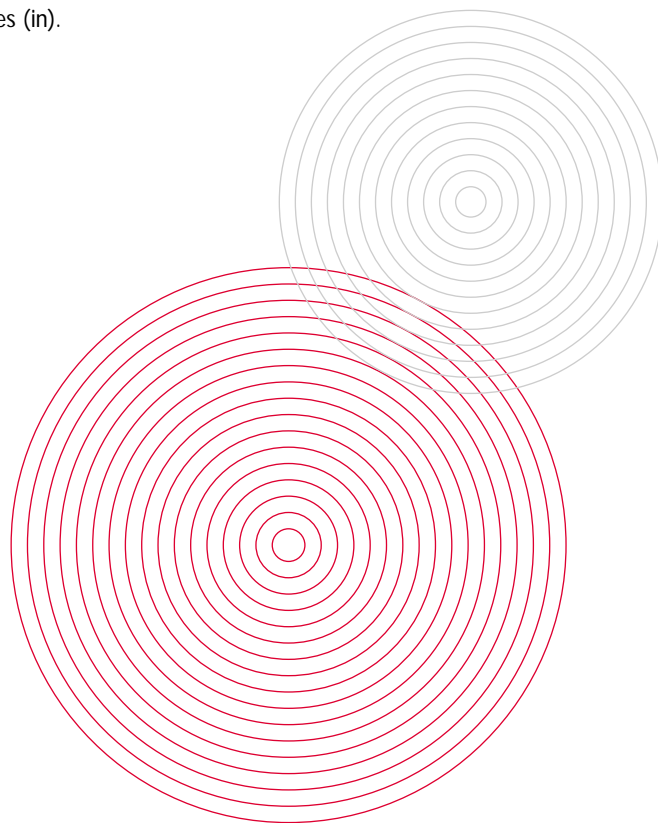
To calculate the tension of a string in pounds use the formula below, inserting the three variables described above:

$$T \text{ (Tension)} = (UW \times (2 \times L \times F)^2) / 386.4$$

To convert the result into Newtons, simply multiply by 4.45.

If you know what tension you want the string to have, you can calculate the string unit weight. You can then use the charts in this guide to locate a string with approximately the same desired unit weight.

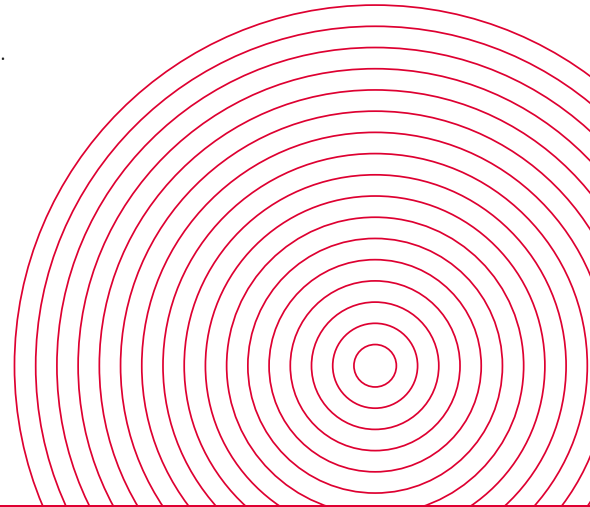
$$UW \text{ (unit weight)} = (T \times 386.4) / (2 \times L \times F)^2$$



## Scale Lengths

To calculate the exact tension for a string on your instrument, measure the scale length (nut to bridge) of your instrument and then use the formula on the previous page. The following scale lengths were used to determine the string tensions found on the tension charts in this brochure.

- Acoustic/Electric/Classical Guitar = 25 1/2"
- Electric Bass Guitar (Superlong Scale) = 36"
- Electric Bass Guitar (Long Scale) = 34"
- Electric Bass Guitar (Medium Scale) = 32"
- Electric Bass Guitar (Short Scale) = 30"
- Mandolin = 13 7/8"
- Mandola = 15 7/8"
- Mandocello = 25"
- Mandobass = 42"
- Banjo = 26 1/4" (19 5/8" for 5th string)



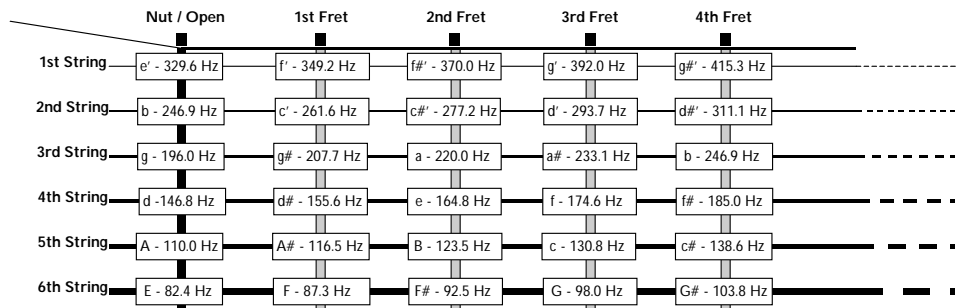
## fingerboard legends for pitch and frequency at standard tuning

### Guitar and Bass Guitar Fingerboard Legends

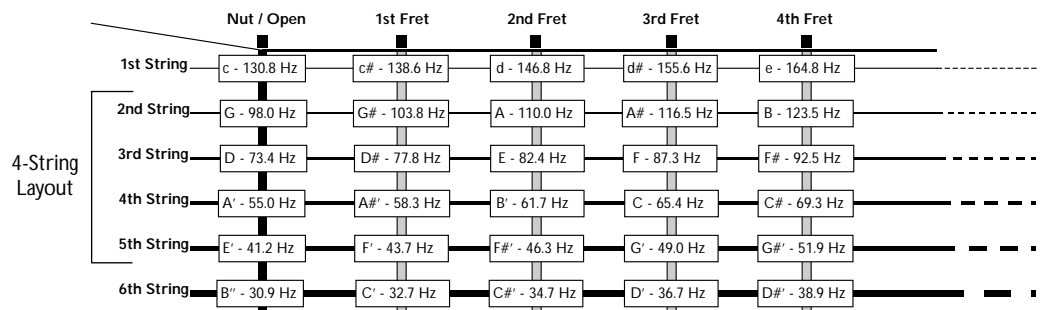
Use these graphics to determine the frequency (in Hertz) of the pitch you are looking for. Standard tunings were used for all guitar and electric bass guitar frequency measurements.

### Pitch Notation

- c' (Middle c) = 261.6 Hz
- Note Above = d'
- Note Below = b
- Octave Above = c''
- Octave Below = c
- 2 Octaves Below = C
- 3 Octaves Below = C'



**Guitar Fingerboard Layout**  
(Standard Tuning)



**Bass Guitar Fingerboard Layout**  
(Standard 6-String Tuning)

# Acoustic or electric guitar

## Plain Steel - Lock Twist

Item#	Unit Weight	g'	f'	e'	d'	c'	b	a	g
PLO07	.00001085	11.2	8.9	7.9	6.3	5.0	4.5	3.5	2.8
PLO08	.00001418	14.7	11.6	10.4	8.2	6.5	5.8	4.6	3.7
PLO085	.00001601	16.6	13.1	11.7	9.3	7.4	6.6	5.2	4.1
PLO09	.00001794	18.6	14.7	13.1	10.4	8.3	7.4	5.8	4.6
PLO095	.00001999	20.7	16.4	14.6	11.6	9.2	8.2	6.5	5.2
PLO10	.00002215	22.9	18.2	16.2	12.9	10.2	9.1	7.2	5.7
PLO105	.00002442	25.3	20.0	17.9	14.2	11.3	10.0	8.0	6.3
PLO11	.00002680	27.7	22.0	19.6	15.6	12.3	11.0	8.7	6.9
PLO115	.00002930	30.3	24.0	21.4	17.0	13.5	12.0	9.5	7.6
PLO12	.00003190	33.0	26.2	23.3	18.5	14.7	13.1	10.4	8.2
PLO13	.00003744	38.7	30.7	27.4	21.7	17.2	15.4	12.2	9.7
Item#	Unit Weight	d'	c'	b	a	g	f	e	d
PLO135	.00004037	23.4	18.6	16.6	13.2	10.4	8.3	7.4	5.9
PLO14	.00004342	25.2	20.0	17.8	14.1	11.2	8.9	7.9	6.3
PLO15	.00004984	28.9	23.0	20.5	16.2	12.9	10.2	9.1	7.2
PLO16	.00005671	32.9	26.1	23.3	18.5	14.7	11.6	10.4	8.2
PLO17	.00006402	37.2	29.5	26.3	20.9	16.6	13.1	11.7	9.3
Item#	Unit Weight	b	a	g	f	e	d	c	B
PLO18	.00007177	29.5	23.4	18.6	14.7	13.1	10.4	8.3	7.4
PLO19	.00007997	32.8	26.1	20.7	16.4	14.6	11.6	9.2	8.2
PLO20	.00008861	36.4	28.9	22.9	18.2	16.2	12.9	10.2	9.1
Item#	Unit Weight	a	g	f	e	d	c	B	A
PLO22	.00010722	34.9	27.7	22.0	19.6	15.6	12.3	11.0	8.7
PLO24	.00012760	41.6	33.0	26.2	23.3	18.5	14.7	13.1	10.4
PLO26	.00014975	48.8	38.7	30.7	27.4	21.7	17.2	15.4	12.2

## Plain Steel - Soldered Twist

Item#	Unit Weight	g'	f'	e'	d'	c'	b	a	g
KPLO09	.00001794	18.6	14.7	13.1	10.4	8.3	7.4	5.8	4.6
KPLO10	.00002215	22.9	18.2	16.2	12.9	10.2	9.1	7.2	5.7
KPLO11	.00002680	27.7	22.0	19.6	15.6	12.3	11.0	8.7	6.9
KPLO12	.00003190	33.0	26.2	23.3	18.5	14.7	13.1	10.4	8.2
KPLO13	.00003744	38.7	30.7	27.4	21.7	17.2	15.4	12.2	9.7
Item#	Unit Weight	d'	c'	b	a	g	f	e	d
KPLO14	.00004342	25.2	20.0	17.8	14.1	11.2	8.9	7.9	6.3
KPLO16	.00005671	32.9	26.1	23.3	18.5	14.7	11.6	10.4	8.2
KPLO17	.00006402	37.2	29.5	26.3	20.9	16.6	13.1	11.7	9.3
KPLO20	.00008861	51.5	40.8	36.4	28.9	22.9	18.2	16.2	12.9

## Plain Steel - Double Ball End

Item#	Unit Weight	g'	f'	e'	d'	c'	b	a	g
SPL009	.00001794	18.6	14.7	13.1	10.4	8.3	7.4	5.8	4.6
SPL010	.00002215	22.9	18.2	16.2	12.9	10.2	9.1	7.2	5.7
SPL011	.00002680	27.7	22.0	19.6	15.6	12.3	11.0	8.7	6.9
SPL013	.00003744	38.7	30.7	27.4	21.7	17.2	15.4	12.2	9.7
Item#	Unit Weight	d'	c'	b	a	g	f	e	d
SPL016	.00005671	32.9	26.1	23.3	18.5	14.7	11.6	10.4	8.2
SPL017	.00006402	37.2	29.5	26.3	20.9	16.6	13.1	11.7	9.3

## XL - Nickelplated Steel Round Wound

Item#	Unit Weight	b	a	g	f	e	d	c	B
NW017	.00005524	-	18.0	14.3	11.3	10.1	8.0	6.4	5.7
NW018	.00006215	25.5	20.2	16.1	12.8	11.4	9.0	7.2	6.4
NW019	.00006947	28.5	22.6	18.0	14.3	12.7	10.1	8.0	7.1
NW020	.00007495	-	24.4	19.4	15.4	13.7	10.9	8.6	7.7
NW021	.00008293	34.0	27.0	21.4	17.0	15.2	12.0	9.6	8.5
NW022	.00009184	37.7	29.9	23.7	18.8	16.8	13.3	10.6	9.4
NW024	.00010857	44.6	35.4	28.1	22.3	19.8	15.8	12.5	11.1
NW026	.00012671	-	41.3	32.8	26.0	23.2	18.4	14.6	13.0
Item#	Unit Weight	f	e	d	c	B	A	G	E
NW028	.00014666	30.1	26.8	21.3	16.9	15.1	11.9	9.5	7.5
NW030	.00017236	35.4	31.5	25.0	19.9	17.7	14.0	11.1	8.8
NW032	.00019347	39.7	35.4	28.1	22.3	19.9	15.8	12.5	9.9
NW034	.00021590	44.3	39.5	31.3	24.9	22.2	17.6	14.0	11.1
NW036	.00023964	49.2	43.8	34.8	27.6	24.6	19.5	15.5	12.3
NW038	.00026471	54.3	48.4	38.4	30.5	27.2	21.6	17.1	13.6
Item#	Unit Weight	c	B	A	G	E	D	C	C
NW039	.00027932	32.2	28.7	22.8	18.1	14.3	12.8	10.1	8.0
NW042	.00032279	37.2	33.1	26.3	20.9	16.6	14.8	11.7	9.3
NW044	.00035182	40.5	36.1	28.7	22.7	18.0	16.1	12.8	10.1
NW046	.00038216	44.0	39.2	31.1	24.7	19.6	17.5	13.9	11.0
NW048	.00041382	47.7	42.5	33.7	26.8	21.2	18.9	15.0	11.9
NW049	.00043014	49.5	44.2	35.0	27.8	22.1	19.7	15.6	12.4
NW052	.00048109	55.4	49.4	39.2	31.1	24.7	22.0	17.4	13.9
Item#	Unit Weight	A	G	E	D	C	B'	A'	
NW054	.00053838	43.9	34.8	27.6	24.6	19.5	15.5	13.8	11.0
NW056	.00057598	46.9	37.2	29.5	26.3	20.9	16.6	14.8	11.7
NW059	.00064191	52.3	41.5	32.9	29.3	23.3	18.5	16.4	13.1
NW060	.00066542	54.2	43.0	34.1	30.4	24.1	19.2	17.1	13.5
NW062	.00070697	57.6	45.7	36.3	32.3	25.6	20.4	18.1	14.4
NW064	.00074984	61.1	48.5	38.5	34.3	27.2	21.6	19.2	15.3
NW066	.00079889	65.1	51.6	41.0	36.5	29.0	23.0	20.5	16.3
NW068	.00084614	68.9	54.7	43.4	38.7	30.7	24.4	21.7	17.2
NW070	.00089304	72.7	57.7	45.8	40.8	32.4	25.7	22.9	18.2
NW072	.00094124	76.7	60.8	48.3	43.0	34.1	27.1	24.1	19.2
NW074	.00098869	80.5	63.9	50.7	45.2	35.9	28.5	25.3	20.1
NW080	.0115011	93.7	74.4	59.0	52.6	41.7	33.1	29.5	23.4

## XL - Nickelplated Steel Round Wound Steinberger

Item#	Unit Weight	b	a	g	f	e	d	c	B
SNW024	.00010857	44.6	35.4	28.1	22.3	19.8	15.8	12.5	11.1
SNW026	.00012671	-	41.3	32.8	26.0	23.2	18.4	14.6	13.0
Item#	Unit Weight	f	e	d	c	B	A	G	E
SNW032	.00019347	39.7	35.4	28.1	22.3	19.9	15.8	12.5	9.9
SNW036	.00023964	49.2	43.8	34.8	27.6	24.6	19.5	15.5	12.3
Item#	Unit Weight	c	B	A	G	E	D	C	
SNW042	.00032279	37.2	33.1	26.3	20.9	16.6	14.8	11.7	9.3
SNW046	.00038216	44.0	39.2	31.1	24.7	19.6	17.5	13.9	11.0

## XLS - Stainless Steel Round Wound

Item#	Unit Weight	b	a	g	f	e	d	c	B
XSG018	.00006588	27.0	21.5	17.0	13.5	12.0	9.6	7.6	6.8
XSG020	.00007919	-	25.8	20.5	16.2	14.5	11.5	9.1	8.1
XSG021	.00008774	-	28.6	22.7	18.0	16.0	12.7	10.1	9.0
XSG022	.00009731	39.9	31.7	25.2	20.0	17.8	14.1	11.2	10.0
XSG024	.00011501	-	37.5	29.7	23.6	21.0	16.7	13.2	11.8
XSG026	.00013419	-	43.7	34.7	27.5	24.5	19.5	15.5	13.8

## XLS - Stainless Steel Round Wound

Item#	Unit Weight	f	e	d	c	B	A	G	F
XSG028	.00015493	31.8	28.3	22.5	17.8	15.9	12.6	10.0	7.9
XSG030	.00018203	37.4	33.3	26.4	21.0	18.7	14.8	11.8	9.3
XSG032	.00020398	41.9	37.3	29.6	23.5	20.9	16.6	13.2	10.5
XSG034	.00022729	46.6	41.6	33.0	26.2	23.3	18.5	14.7	11.7
XSG036	.00025198	51.7	46.1	36.6	29.0	25.9	20.5	16.3	12.9
XSG038	.00027804	-	50.8	40.3	32.0	28.5	22.6	18.0	14.3
Item#	Unit Weight	c	B	A	G	F	E	D	C
XSG040	.00031044	35.8	31.9	25.3	20.1	15.9	14.2	11.3	8.9
XSG042	.00033924	39.1	34.8	27.6	21.9	17.4	15.5	12.3	9.8
XSG046	.00040096	46.2	41.2	32.7	25.9	20.6	18.3	14.5	11.5
XSG048	.00043387	50.0	44.5	35.3	28.0	22.3	19.8	15.7	12.5
XSG050	.00046816	53.9	48.1	38.1	30.3	24.0	21.4	17.0	13.5
XSG052	.00050382	58.0	51.7	41.0	32.6	25.8	23.0	18.3	14.5
Item#	Unit Weight	A	G	F	E	D	C	B'	A'
XSG054	.00056388	45.9	36.5	28.9	25.8	20.4	16.2	14.4	11.5
XSG056	.00060297	49.1	39.0	30.9	27.6	21.9	17.4	15.5	12.3
XSG070	.00092592	75.4	59.9	47.5	42.3	33.6	26.7	23.7	18.9

## Half Round - Stainless Steel Half Round

Item#	Unit Weight	a	g	f	e	d	c	B	A
HRG022	.00011271	36.7	29.1	23.1	20.6	16.3	13.0	11.6	9.2
HRG024	.00012857	41.9	33.2	26.4	23.5	18.7	14.8	13.2	10.5
HRG026	.00014750	-	38.1	30.3	27.0	21.4	17.0	15.1	12.0
Item#	Unit Weight	f	e	d	c	B	A	G	F
HRG030	.00018970	38.9	34.7	27.5	21.8	19.5	15.5	12.3	9.7
HRG032	.00021100	43.3	38.6	30.6	24.3	21.7	17.2	13.6	10.8
HRG036	.00025650	52.6	46.9	37.2	29.5	26.3	20.9	16.6	13.2
Item#	Unit Weight	c	B	A	G	F	E	D	C
HRG039	.00029700	34.2	30.5	24.2	19.2	15.2	13.6	10.8	8.6
HRG042	.00033400	38.5	34.3	27.2	21.6	17.1	15.3	12.1	9.6
HRG046	.00039810	45.8	40.9	32.4	25.7	20.4	18.2	14.4	11.5
HRG052	.00049500	57.0	50.8	40.3	32.0	25.4	22.6	18.0	14.3
HRG056	.00056700	65.3	58.2	46.2	36.7	29.1	25.9	20.6	16.3

## Chromes - Stainless Steel Flat Wound

Item#	Unit Weight	b	a	g	f	e	d	c	B
CG020	.00007812	32.1	25.4	20.2	16.0	14.3	11.3	9.0	8.0
CG022	.00009784	-	31.9	25.3	20.1	17.9	14.2	11.3	10.0
CG024	.00011601	-	37.8	30.0	23.8	21.2	16.8	13.4	11.9
CG026	.00013574	-	44.2	35.1	27.9	24.8	19.7	15.6	13.9
Item#	Unit Weight	g	f	e	d	c	B	A	G
CG028	.00014683	38.0	30.1	26.8	21.3	16.9	15.1	12.0	9.5
CG030	.00016958	43.9	34.8	31.0	24.6	19.5	17.4	13.8	11.0
CG032	.00019233	49.7	39.5	35.2	27.9	22.1	19.7	15.7	12.4
CG035	.00024197	62.6	49.7	44.2	35.1	27.9	24.8	19.7	15.6
Item#	Unit Weight	d	c	B	A	G	F	E	D
CG038	.00026520	38.5	30.5	27.2	21.6	17.1	13.6	12.1	9.6
CG040	.00031676	46.0	36.5	32.5	25.8	20.5	16.3	14.5	11.5
CG042	.00034377	49.9	39.6	35.3	28.0	22.2	17.6	15.7	12.5
CG045	.00040393	58.6	46.5	41.5	32.9	26.1	20.7	18.5	14.6
Item#	Unit Weight	A	G	F	E	D	C	B'	A'
CG048	.00043541	35.5	28.1	22.3	19.9	15.8	12.5	11.2	8.9
CG050	.00047042	38.3	30.4	24.1	21.5	17.1	13.5	12.1	9.6
CG052	.00049667	40.5	32.1	25.5	22.7	18.0	14.3	12.7	10.1
CG056	.00059075	48.1	38.2	30.3	27.0	21.4	17.0	15.1	12.0
CG065	.00089364	72.8	57.8	45.8	40.8	32.4	25.7	22.9	18.2

## pedal steel guitar

### XLS - Stainless Steel Round Wound Pedal Steel

Item#	Unit Weight	g#	g	f#	f	e	d#	d	c#
SPS024	.00011501	30.2	26.9	24.0	21.3	19.0	17.0	15.1	13.4
SPS026	.00013419	35.2	31.4	28.0	24.9	22.2	19.8	17.6	15.7
SPS030	.00018203	47.8	42.6	37.9	33.8	30.1	26.8	23.9	21.3
Item#	Unit Weight	e	d#	d	c#	c	B	A#	A
SPS034	.00022729	37.6	33.5	29.8	26.6	23.7	21.1	18.8	16.7
SPS036	.00025198	41.7	37.1	33.1	29.5	26.2	23.4	20.8	18.6
SPS038	.00027804	46.0	41.0	36.5	32.5	29.0	25.8	23.0	20.5
Item#	Unit Weight	B	A#	A	G#	G	F#	F	E
SPS042	.00033924	31.5	28.0	25.0	22.3	19.8	17.7	15.7	14.0
SPS054	.00056388	52.4	46.6	41.5	37.0	33.0	29.4	26.2	23.3
Item#	Unit Weight	G	F#	F	E	D#	D	C#	C
SPS070	.00092592	54.1	48.2	43.0	38.3	34.1	30.4	27.1	24.1

## acoustic guitar

### Phosphor Bronze - Round Wound (EXP Coated and Uncoated)

Item#	Unit Weight	b	a	g	f	e	d	c	B
PB020	.00008106	-	26.4	21.0	16.6	14.8	11.8	9.3	8.3
PB021	.00008944	-	29.1	23.1	18.4	16.4	13.0	10.3	9.2
PB022	.00009876	40.5	32.2	25.5	20.3	18.1	14.3	11.4	10.1
PB023	.00010801	44.3	35.2	27.9	22.2	19.7	15.7	12.4	11.1
PB024	.00011682	-	38.1	30.2	24.0	21.4	16.9	13.5	12.0
PB025	.00012686	-	41.3	32.8	26.0	23.2	18.4	14.6	13.0
PB026	.00013640	-	44.4	35.3	28.0	24.9	19.8	15.7	14.0
PB027	.00014834	-	-	38.4	30.4	27.1	21.5	17.1	15.2
Item#	Unit Weight	f	e	d	c	B	A	G	F
PB029	.00017381	35.7	31.8	25.2	20.0	17.8	14.2	11.2	8.9
PB030	.00018660	38.3	34.1	27.1	21.5	19.2	15.2	12.1	9.6
PB032	.00021018	43.1	38.4	30.5	24.2	21.6	17.1	13.6	10.8
PB034	.00023887	-	43.7	34.7	27.5	24.5	19.5	15.4	12.3
PB035	.00025365	52.1	46.4	36.8	29.2	26.0	20.7	16.4	13.0
PB036	.00026830	55.1	49.0	38.9	30.9	27.5	21.9	17.3	13.8
Item#	Unit Weight	c	B	A	G	F	E	D	C
PB039	.00031125	35.8	32.0	25.4	20.1	16.0	14.2	11.3	9.0
PB042	.00036722	42.3	37.7	29.9	23.7	18.8	16.8	13.3	10.6
PB045	.00041751	48.1	42.9	34.0	27.0	21.4	19.1	15.1	12.0
Item#	Unit Weight	A	G	F	E	D	C	B'	A'
PB047	.00045289	36.9	29.3	23.2	20.7	16.4	13.0	11.6	9.2
PB049	.00049151	40.0	31.8	25.2	22.5	17.8	14.2	12.6	10.0
PB052	.00055223	45.0	35.7	28.3	25.2	20.0	15.9	14.2	11.2
PB053	.00056962	46.4	36.8	29.2	26.0	20.7	16.4	14.6	11.6
PB056D	.00063477	51.7	41.0	32.6	29.0	23.0	18.3	16.3	12.9
PB059	.00070535	57.5	45.6	36.2	32.2	25.6	20.3	18.1	14.4
PB060	.00073039	59.5	47.2	37.5	33.4	26.5	21.0	18.7	14.9
PB062	.00077682	63.3	50.2	39.9	35.5	28.2	22.4	19.9	15.8
PB064	.00082780	67.4	53.5	42.5	37.8	30.0	23.8	21.2	16.9
PB066	.00087718	71.4	56.7	45.0	40.1	31.8	25.3	22.5	17.9
PB070	.00096833	78.9	62.6	49.7	44.3	35.1	27.9	24.8	19.7

## Flat Tops - Phosphor Bronze Polished

Item#	Unit Weight	a	g	f	e	d	c	B	A
FT023	.00012568	40.9	32.5	25.8	23.0	18.2	14.5	12.9	10.2
FT024	.00013651	44.5	35.3	28.0	25.0	19.8	15.7	14.0	11.1
FT026	.00015894	-	41.1	32.6	29.1	23.1	18.3	16.3	12.9
FT028	.00017209	56.1	44.5	35.3	31.5	25.0	19.8	17.7	14.0
Item#	Unit Weight	f	e	d	c	B	A	G	F
FT030	.00019785	40.6	36.2	28.7	22.8	20.3	16.1	12.8	10.1
FT032	.00023852	48.9	43.6	34.6	27.5	24.5	19.4	15.4	12.2
FT035	.00027781	-	50.8	40.3	32.0	28.5	22.6	18.0	14.3
FT036	.00029273	60.1	53.5	42.5	33.7	30.1	23.8	18.9	15.0
Item#	Unit Weight	c	B	A	G	F	E	D	C
FT039	.00032904	37.9	33.8	26.8	21.3	16.9	15.0	11.9	9.5
FT042	.00036219	41.7	37.2	29.5	23.4	18.6	16.6	13.1	10.4
FT044	.00041047	47.3	42.1	33.4	26.5	21.1	18.8	14.9	11.8
FT045	.00042603	49.1	43.7	34.7	27.5	21.9	19.5	15.5	12.3
Item#	Unit Weight	A	G	F	E	D	C	B'	A'
FT047	.00046166	37.6	29.8	23.7	21.1	16.7	13.3	11.8	9.4
FT053	.00055793	45.4	36.1	28.6	25.5	20.2	16.1	14.3	11.4
FT056	.00064108	52.2	41.4	32.9	29.3	23.2	18.5	16.4	13.1

## 80-20'S- 80/20 Brass Round Wound

Item#	Unit Weight	b	a	g	f	e	d	c	B
BW020	.00007862	-	25.6	20.3	16.1	14.4	11.4	9.1	8.1
BW021	.00008684	-	28.3	22.5	17.8	15.9	12.6	10.0	8.9
BW022	.00009600	39.4	31.3	24.8	19.7	17.6	13.9	11.1	9.9
BW023	.00010509	43.1	34.2	27.2	21.6	19.2	15.2	12.1	10.8
BW024	.00011353	-	37.0	29.4	23.3	20.8	16.5	13.1	11.7
BW025	.00012339	-	40.2	31.9	25.3	22.6	17.9	14.2	12.7
BW026	.00013253	-	43.2	34.3	27.2	24.2	19.2	15.3	13.6
BW027	.00014397	-	46.9	37.2	29.5	26.3	20.9	16.6	14.8
Item#	Unit Weight	f	e	d	c	B	A	G	F
BW029	.00016838	34.6	30.8	24.4	19.4	17.3	13.7	10.9	8.6
BW030	.00018092	37.1	33.1	26.2	20.8	18.6	14.7	11.7	9.3
BW032	.00020352	41.8	37.2	29.5	23.4	20.9	16.6	13.2	10.4
BW034	.00022752	46.7	41.6	33.0	26.2	23.4	18.5	14.7	11.7
BW035	.00024006	49.3	43.9	34.8	27.6	24.6	19.6	15.5	12.3
BW036	.00025417	52.2	46.5	36.9	29.3	26.1	20.7	16.4	13.0
Item#	Unit Weight	c	B	A	G	F	E	D	C
BW039	.00030063	34.6	30.9	24.5	19.4	15.4	13.7	10.9	8.7
BW042	.00034808	40.1	35.7	28.4	22.5	17.9	15.9	12.6	10.0
BW045	.00040245	46.3	41.3	32.8	26.0	20.6	18.4	14.6	11.6
Item#	Unit Weight	A	G	F	E	D	C	B'	A'
BW047	.00043634	35.5	28.2	22.4	19.9	15.8	12.6	11.2	8.9
BW049	.00047368	38.6	30.6	24.3	21.6	17.2	13.6	12.1	9.6
BW052	.00053224	43.4	34.4	27.3	24.3	19.3	15.3	13.6	10.8
BW053	.00054852	44.7	35.5	28.1	25.1	19.9	15.8	14.1	11.2
BW056	.00061132	49.8	39.5	31.4	27.9	22.2	17.6	15.7	12.4
BW059	.00068005	55.4	44.0	34.9	31.1	24.7	19.6	17.4	13.8

## Great American Bronze - 85/15 Brass Round Wound

Item#	Unit Weight	b	a	g	f	e	d	c	B
ZW022	.00009802	40.2	31.9	25.3	20.1	17.9	14.2	11.3	10.1
ZW024	.00011594	-	37.8	30.0	23.8	21.2	16.8	13.4	11.9
ZW025	.00012592	-	41.0	32.6	25.8	23.0	18.3	14.5	12.9
ZW026	.00013536	-	44.1	35.0	27.8	24.7	19.6	15.6	13.9
Item#	Unit Weight	f	e	d	c	B	A	G	F
ZW030	.00018507	38.0	33.8	26.8	21.3	19.0	15.1	12.0	9.5
ZW032	.00020839	42.8	38.1	30.2	24.0	21.4	17.0	13.5	10.7
ZW034	.00023316	47.8	42.6	33.8	26.9	23.9	19.0	15.1	12.0
ZW035	.00024610	50.5	45.0	35.7	28.3	25.3	20.0	15.9	12.6
ZW036	.00026045	53.4	47.6	37.8	30.0	26.7	21.2	16.8	13.4
Item#	Unit Weight	c	B	A	G	F	E	D	C
ZW040	.00032631	37.6	33.5	26.6	21.1	16.7	14.9	11.8	9.4
ZW042	.00035735	41.2	36.7	29.1	23.1	18.3	16.3	13.0	10.3
ZW044	.00038985	44.9	40.0	31.8	25.2	20.0	17.8	14.1	11.2
ZW045	.00040665	46.8	41.7	33.1	26.3	20.9	18.6	14.7	11.7
ZW046	.00042565	49.0	43.7	34.7	27.5	21.8	19.5	15.4	12.3
Item#	Unit Weight	A	G	F	E	D	C	B'	A'
ZW050	.00050824	41.4	32.9	26.1	23.2	18.4	14.6	13.0	10.3
ZW052	.00054686	44.5	35.4	28.1	25.0	19.8	15.7	14.0	11.1
ZW054	.00058694	47.8	37.9	30.1	26.8	21.3	16.9	15.0	12.0
ZW056	.00062847	51.2	40.6	32.2	28.7	22.8	18.1	16.1	12.8

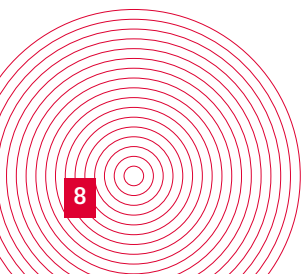
## classical guitar

### Pro•Arté - Laser Select Clear Nylon (EXP Coated and Uncoated)

Item#	Unit Weight	f	e	d	c	b	a	g	f
J4301	.00002024	16.6	14.8	11.8	9.3	8.3	6.6	5.2	4.2
J4302	.00002729	22.4	20.0	15.8	12.6	11.2	8.9	7.1	5.6
J4303	.00004525	37.1	33.1	26.3	20.8	18.6	14.7	11.7	9.3
J4401/EXP	.00002243	18.4	16.4	13.0	10.3	9.2	7.3	5.8	4.6
J4402/EXP	.00003046	25.0	22.3	17.7	14.0	12.5	9.9	7.9	6.3
J4403/EXP	.00004989	40.9	36.5	29.0	23.0	20.5	16.3	12.9	10.2
J4501/EXP	.00002092	17.2	15.3	12.1	9.6	8.6	6.8	5.4	4.3
J4502/EXP	.00002827	23.2	20.7	16.4	13.0	11.6	9.2	7.3	5.8
J4503/EXP	.00004679	38.4	34.2	27.2	21.6	19.2	15.2	12.1	9.6
J4601/EXP	.00002161	17.7	15.8	12.5	10.0	8.9	7.0	5.6	4.4
J4602/EXP	.00002924	24.0	21.4	17.0	13.5	12.0	9.5	7.6	6.0
J4603/EXP	.00004795	39.4	35.1	27.8	22.1	19.7	15.6	12.4	9.8
J4701	.00002092	17.2	15.3	12.1	9.6	8.6	6.8	5.4	4.3
J4702	.00002827	23.2	20.7	16.4	13.0	11.6	9.2	7.3	5.8
J4703	.00004679	38.4	34.2	27.2	21.6	19.2	15.2	12.1	9.6
J4801	.00002161	17.7	15.8	12.5	10.0	8.9	7.0	5.6	4.4
J4802	.00002924	24.0	21.4	17.0	13.5	12.0	9.5	7.6	6.0
J4803	.00004795	39.4	35.1	27.8	22.1	19.7	15.6	12.4	9.8
J5101	.00002161	17.7	15.8	12.5	10.0	8.9	7.0	5.6	4.4
J5102	.00002924	24.0	21.4	17.0	13.5	12.0	9.5	7.6	6.0
J5103	.00004795	39.4	35.1	27.8	22.1	19.7	15.6	12.4	9.8

### Pro•Arté - Laser Select Black Nylon

J4901	.00002092	17.2	15.3	12.1	9.6	8.6	6.8	5.4	4.3
J4902	.00002827	23.2	20.7	16.4	13.0	11.6	9.2	7.3	5.8
J4903	.00004679	38.4	34.2	27.2	21.6	19.2	15.2	12.1	9.6
J5001	.00002161	17.7	15.8	12.5	10.0	8.9	7.0	5.6	4.4
J5002	.00002924	24.0	21.4	17.0	13.5	12.0	9.5	7.6	6.0
J5003	.00004795	39.4	35.1	27.8	22.1	19.7	15.6	12.4	9.8



### Pro-Arté - Silverplated Wound

Item#	Unit Weight	d	c	B	A	G	F	E	D
J4304	.00010203	14.8	11.7	10.5	8.3	6.6	5.2	4.7	3.7
J4305	.00015347	-	17.7	15.8	12.5	9.9	7.9	7.0	5.6
J4306	.00028881	-	-	-	23.5	18.7	14.8	13.2	10.5
J4404	.00011237	16.3	12.9	11.5	9.2	7.3	5.8	5.1	4.1
J4405	.00019521	-	-	20.0	15.9	12.6	10.0	8.9	7.1
J4406	.00034351	-	-	-	-	-	17.6	15.7	12.5
J4504	.00010754	15.6	12.4	11.0	8.8	7.0	5.5	4.9	3.9
J4505	.00018416	-	-	18.9	15.0	11.9	9.4	8.4	6.7
J4506	.00030632	-	-	-	-	19.8	15.7	14.0	11.1
J4604	.00011237	16.3	12.9	11.5	9.2	7.3	5.8	5.1	4.1
J4605	.00019521	-	-	20.0	15.9	12.6	10.0	8.9	7.1
J4606	.00031726	-	-	-	-	20.5	16.3	14.5	11.5
J4904	.00010754	15.6	12.4	11.0	8.8	7.0	5.5	4.9	3.9
J4905	.00018416	-	-	18.9	15.0	11.9	9.4	8.4	6.7
J4906	.00030632	-	-	-	-	19.8	15.7	14.0	11.1
J5004	.00011237	16.3	12.9	11.5	9.2	7.3	5.8	5.1	4.1
J5005	.00019521	-	-	20.0	15.9	12.6	10.0	8.9	7.1
J5006	.00031726	-	-	-	-	20.5	16.3	14.5	11.5

### Pro-Arté - Flat Silverplated Copper Wound

J5104	.00013029	18.9	15.0	13.4	10.6	8.4	6.7	6.0	4.7
J5105	.00020135	-	-	20.7	16.4	13.0	10.3	9.2	7.3
J5106	.00035008	-	-	-	-	-	18.0	16.0	12.7

### Pro-Arté - 80/20 Brass Wound

J4704	.00010616	15.4	12.2	10.9	8.6	6.9	5.4	4.9	3.8
J4705	.00017311	-	19.9	17.8	14.1	11.2	8.9	7.9	6.3
J4706	.00029100	-	-	-	-	18.8	14.9	13.3	10.6
J4804	.00011237	16.3	12.9	11.5	9.2	7.3	5.8	5.1	4.1
J4805	.00018171	-	-	18.7	14.8	11.7	9.3	8.3	6.6
J4806	.00030632	-	-	-	-	19.8	15.7	14.0	11.1

### Pro-Arté Composite - Trebles

Item#	Unit Weight	f'	e'	d'	c'	b	a	g	f
J4403C	.00005298	43.5	38.7	30.8	24.4	21.7	17.3	13.7	10.9
J4503C	.00004795	39.4	35.1	27.8	22.1	19.7	15.6	12.4	9.8
J4603C	.00005066	41.6	37.0	29.4	23.3	20.8	16.5	13.1	10.4

### Pro-Arté Composite - Silverplated Copper Wound

Item#	Unit Weight	d	c	B	A	G	F	E	D
J4404C	.00011581	16.8	13.3	11.9	9.4	7.5	5.9	5.3	4.2
J4405C	.00020381	-	23.5	20.9	16.6	13.2	10.5	9.3	7.4
J4406C	.00036758	-	-	-	-	23.8	18.9	16.8	13.3
J4504C	.00009858	14.3	11.4	10.1	8.0	6.4	5.1	4.5	3.6
J4505C	.00017925	-	20.6	18.4	14.6	11.6	9.2	8.2	6.5
J4506C	.00033257	-	-	-	-	21.5	17.1	15.2	12.1
J4604C	.00011030	16.0	12.7	11.3	9.0	7.1	5.7	5.0	4.0
J4605C	.00020381	-	23.5	20.9	16.6	13.2	10.5	9.3	7.4
J4606C	.00035226	-	-	-	-	22.8	18.1	16.1	12.8

### Pro-Arté Composite - Silverplated Copper Wound & Lightly Polished

J4504LP	.00009582	13.9	11.0	9.8	7.8	6.2	4.9	4.4	3.5
J4505LP	.00017066	-	19.7	17.5	13.9	11.0	8.8	7.8	6.2
J4506LP	.00031288	-	-	-	-	20.2	16.1	14.3	11.3
J4604LP	.00011168	16.2	12.9	11.5	9.1	7.2	5.7	5.1	4.1
J4605LP	.00019890	-	22.9	20.4	16.2	12.9	10.2	9.1	7.2
J4606LP	.00033914	-	-	-	-	21.9	17.4	15.5	12.3

### D'Addario Classic - Rectified Clear Nylon

Item#	Unit Weight	f'	e'	d'	c'	b	a	g	f
J2801	.00002065	16.9	15.1	12.0	9.5	8.5	6.7	5.3	4.2
J2802	.00002900	23.8	21.2	16.8	13.4	11.9	9.4	7.5	6.0
J2803	.00004602	37.8	33.7	26.7	21.2	18.9	15.0	11.9	9.4
J2901	.00001928	15.8	14.1	11.2	8.9	7.9	6.3	5.0	4.0
J2902	.00002803	23.0	20.5	16.3	12.9	11.5	9.1	7.2	5.8
J2903	.00004486	36.8	32.8	26.0	20.7	18.4	14.6	11.6	9.2
J3001	.00002065	16.9	15.1	12.0	9.5	8.5	6.7	5.3	4.2
J3002	.00002900	23.8	21.2	16.8	13.4	11.9	9.4	7.5	6.0
J3003	.00004602	37.8	33.7	26.7	21.2	18.9	15.0	11.9	9.4
J3101	.00002284	18.7	16.7	13.3	10.5	9.4	7.4	5.9	4.7
J3102	.00003022	24.8	22.1	17.5	13.9	12.4	9.8	7.8	6.2
J3103	.00004989	40.9	36.5	29.0	23.0	20.5	16.3	12.9	10.2

### D'Addario Classic - Flat Sterling Silver Wound

Item#	Unit Weight	d	c	B	A	G	F	E	D
J2804	.00011030	16.0	12.7	11.3	9.0	7.1	5.7	5.0	4.0
J2805	.00021363	-	-	-	17.4	13.8	11.0	9.8	7.7
J2806	.00031726	-	-	-	-	20.5	16.3	14.5	11.5

### D'Addario Classic - Silverplated Copper Wound

J2904	.00010203	14.8	11.7	10.5	8.3	6.6	5.2	4.7	3.7
J2905	.00015347	-	17.7	15.8	12.5	9.9	7.9	7.0	5.6
J2906	.00028881	-	-	-	-	18.7	14.8	13.2	10.5
J3004	.00010616	15.4	12.2	10.9	8.6	6.9	5.4	4.9	3.8
J3005	.00018416	-	-	18.9	15.0	11.9	9.4	8.4	6.7
J3006	.00030194	-	-	-	-	19.5	15.5	13.8	11.0
J3104	.00011512	16.7	13.3	11.8	9.4	7.4	5.9	5.3	4.2
J3105	.00019153	-	-	19.7	15.6	12.4	9.8	8.8	6.9
J3106	.00031726	-	-	-	-	20.5	16.3	14.5	11.5

### Rectified Clear Nylon

Item#	Unit Weight	g'	f'	e'	d'	c'	b	a	g
NYL018	.00000916	9.5	7.5	6.7	5.3	4.2	3.8	3.0	2.4
NYL019	.00001020	10.6	8.4	7.5	5.9	4.7	4.2	3.3	2.6
NYL020	.00001130	11.7	9.3	8.3	6.6	5.2	4.6	3.7	2.9
NYL021	.00001246	12.9	10.2	9.1	7.2	5.7	5.1	4.1	3.2
NYL022	.00001368	14.1	11.2	10.0	7.9	6.3	5.6	4.5	3.5
NYL024	.00001628	16.8	13.4	11.9	9.5	7.5	6.7	5.3	4.2
NYL027	.00002060	21.3	16.9	15.1	12.0	9.5	8.5	6.7	5.3
NYL028	.00002216	22.9	18.2	16.2	12.9	10.2	9.1	7.2	5.7
NYL029	.00002377	24.6	19.5	17.4	13.8	10.9	9.8	7.7	6.1
NYL030	.00002543	26.3	20.9	18.6	14.8	11.7	10.4	8.3	6.6
NYL031	.00002716	28.1	22.3	19.9	15.8	12.5	11.1	8.8	7.0
NYL032	.00002894	29.9	23.8	21.2	16.8	13.3	11.9	9.4	7.5
Item#	Unit Weight	e'	d'	c'	b	a	g	f	e
NYL033	.00003078	22.5	17.9	14.2	12.6	10.0	8.0	6.3	5.6
NYL034	.00003267	23.9	19.0	15.0	13.4	10.6	8.4	6.7	6.0
NYL038	.00004081	29.8	23.7	18.8	16.7	13.3	10.6	8.4	7.5
NYL039	.00004298	31.4	25.0	19.8	17.6	14.0	11.1	8.8	7.9
NYL040	.00004522	33.1	26.3	20.8	18.6	14.7	11.7	9.3	8.3
NYL041	.00004751	34.7	27.6	21.9	19.5	15.5	12.3	9.7	8.7



## Silverplated Copper Wound on Nylon

Item#	Unit Weight	g	f	e	d	c	B	A	G
NYLO19W	.00005341	-	11.0	9.8	7.7	6.2	5.5	4.4	3.5
NYLO20W	.00005341	-	11.0	9.8	7.7	6.2	5.5	4.4	3.5
NYLO22W	.00006498	-	-	11.9	9.4	7.5	6.7	5.3	4.2
NYLO24W	.00007408	-	15.2	13.5	10.7	8.5	7.6	6.0	4.8
NYLO25W	.00007023	18.2	14.4	12.8	10.2	8.1	7.2	5.7	4.5
NYLO26W	.00009438	-	-	17.3	13.7	10.9	9.7	7.7	6.1
NYLO28W	.00010511	-	21.6	19.2	15.2	12.1	10.8	8.6	6.8
NYLO29W	.00011667	-	-	21.3	16.9	13.4	12.0	9.5	7.5
NYLO30W	.00012419	-	-	22.7	18.0	14.3	12.8	10.1	8.0
NYLO31W	.00012821	-	26.3	23.4	18.6	14.8	13.2	10.4	8.3
Item#	Unit Weight	d	c	B	A	G	F	E	D
NYLO33W	.00017913	-	20.6	18.4	14.6	11.6	9.2	8.2	6.5
NYLO34W	.00019270	-	-	19.8	15.7	12.5	9.9	8.8	7.0
NYLO35W	.00020667	-	-	-	16.8	13.4	10.6	9.4	7.5
NYLO36W	.00022105	-	-	-	18.0	14.3	11.3	10.1	8.0
Item#	Unit Weight	A	G	F	E	D	C	B	A
NYLO40W	.00028260	-	18.3	14.5	12.9	10.2	8.1	7.2	5.8
NYLO41W	.00028319	23.1	18.3	14.5	12.9	10.3	8.2	7.3	5.8
NYLO42W	.00030466	24.8	19.7	15.6	13.9	11.0	8.8	7.8	6.2
NYLO43W	.00033302	-	-	17.1	15.2	12.1	9.6	8.5	6.8
NYLO45W	.00036470	-	-	18.7	16.7	13.2	10.5	9.3	7.4
NYLO48W	.00041400	-	-	21.2	18.9	15.0	11.9	10.6	8.4
NYLO50W	.00045369	-	-	23.3	20.7	16.5	13.1	11.6	9.2
NYLO52W	.00049500	-	-	25.4	22.6	18.0	14.3	12.7	10.1
NYLO54W	.00053793	-	-	-	24.6	19.5	15.5	13.8	11.0
NYLO56W	.00059624	-	-	-	-	21.6	17.2	15.3	12.1

## FOLK GUITAR

### Black Nylon - Ball End

Item#	Unit Weight	f	e	d	c	b	a	g	f
BEB028	.00002161	17.7	15.8	12.5	10.0	8.9	7.0	5.6	4.4
BEB032	.00002778	22.8	20.3	16.1	12.8	11.4	9.1	7.2	5.7
BEB040	.00004873	40.0	35.6	28.3	22.4	20.0	15.9	12.6	10.0

### Clear Nylon - Ball End

Item#	Unit Weight	f	e	d	c	b	a	g	f
BEC028	.00002133	17.5	15.6	12.4	9.8	8.8	7.0	5.5	4.4
BEC032	.00002754	22.6	20.1	16.0	12.7	11.3	9.0	7.1	5.7
BEC040	.00004447	36.5	32.5	25.8	20.5	18.2	14.5	11.5	9.1

### 80/20 Brass Wound on Nylon - Ball End

Item#	Unit Weight	e	d	c	B	A	G	F	E
BEB031W	.00011650	21.3	16.9	13.4	12.0	9.5	7.5	6.0	5.3
BEB037W	.00018785	-	-	21.6	19.3	15.3	12.1	9.6	8.6
BEB045W	.00030850	-	-	-	-	25.1	19.9	15.8	14.1

### Silverplated Copper Wound on Nylon - Ball End

Item#	Unit Weight	e	d	c	B	A	G	F	E
BES031W	.00012271	22.4	17.8	14.1	12.6	10.0	7.9	6.3	5.6
BES037W	.00020258	-	-	23.3	20.8	16.5	13.1	10.4	9.3
BES045W	.00033257	-	-	-	-	-	21.5	17.1	15.2

## ELECTRIC BASS GUITAR

### XL - Nickelplated Round Wound Guitar/Bass

Item#	Unit Weight	f	e	d	c	B	A	G	F
NWB024	.00009959	28.3	25.2	20.0	15.9	14.2	11.2	8.9	7.1
NWB034	.00019915	-	50.4	40.0	31.7	28.3	22.5	17.8	14.1
NWB044	.00033751	-	-	67.8	53.8	48.0	38.0	30.2	24.0
Item#	Unit Weight	E	D	C	B	A	G	F	E
NWB056	.00053791	34.0	27.0	21.4	19.1	15.2	12.0	9.6	8.5
NWB072 & -F6	.00092253	58.4	46.3	36.8	32.7	26.0	20.6	16.4	14.6
NWB084 & -F6	.00126465	80.0	63.5	50.4	44.9	35.6	28.3	22.5	20.0

### XL - Nickelplated Round Wound

#### Long Scale

Item#	Unit Weight	b	a	g	f	e	d	c	B
XLB018P	.00007265	53.0	42.1	33.4	26.5	23.6	18.7	14.9	13.3
XLB020P	.00009093	66.3	52.7	41.8	33.2	29.6	23.4	18.6	16.6
XLB028W	.00015433	-	-	-	-	-	39.8	31.6	28.2
Item#	Unit Weight	c	B	A	G	F	E	D	C
XLB042	.00032252	66.0	58.9	46.7	37.1	29.4	26.2	20.8	16.5
XLB052	.00051322	-	-	-	59.0	46.8	41.7	33.1	26.3
Item#	Unit Weight	d	c	B	A	G	F	E	D
XLB032	.00019000	49.0	38.9	34.7	27.5	21.8	17.3	15.4	12.2
XLB035	.00022362	57.7	45.8	40.8	32.4	25.7	20.4	18.2	14.4
XLB040	.00029322	-	-	53.5	42.5	33.7	26.7	23.8	18.9
XLB045	.00037240	-	-	68.0	53.9	42.8	34.0	30.3	24.0
XLB050	.00046463	-	-	84.8	67.3	53.4	42.4	37.8	30.0
Item#	Unit Weight	E	E	D	C	B	A	G	F
XLB055	.00054816	50.0	44.5	35.3	28.1	25.0	19.8	15.7	12.5
XLB060	.00066540	60.7	54.1	42.9	34.1	30.3	24.1	19.1	15.2
XLB065	.00079569	72.6	64.7	51.3	40.7	36.2	28.8	22.9	18.2
XLB070	.00093218	85.0	75.7	60.1	47.7	42.5	33.7	26.8	21.3
XLB075	.00104973	95.7	85.3	67.7	53.7	47.8	38.0	30.2	24.0
XLB080	.00116023	105.8	94.3	74.8	59.4	52.9	42.0	33.3	26.5
XLB085	.00133702	121.9	108.6	86.2	68.4	60.9	48.4	38.4	30.6
Item#	Unit Weight	A	G	F	E	D	C	B	A
XLB090	.00150277	54.4	43.2	34.3	30.5	24.2	19.2	17.2	13.6
XLB095	.00169349	61.3	48.7	38.7	34.4	27.3	21.7	19.4	15.3
XLB100	.00179687	65.0	51.6	41.1	36.5	29.0	23.0	20.5	16.3
XLB105	.00198395	71.8	57.0	45.3	40.3	32.0	25.4	22.7	18.0
XLB110	.00227440	82.3	65.3	52.0	46.2	36.7	29.1	26.0	20.6
XLB120	.00250280	90.6	71.9	57.2	50.8	40.3	32.0	28.6	22.7
XLB125	.00274810	99.5	79.0	62.8	55.8	44.3	35.2	31.4	24.9
XLB130	.00301941	109.3	86.8	69.0	61.3	48.7	38.6	34.5	27.3
XLB135	.00315944	114.4	90.8	72.2	64.2	50.9	40.4	36.1	28.6
XLB145	.00363204	131.5	104.4	83.0	73.8	58.5	46.5	41.5	32.9
XLB120T	.00250280	90.6	71.9	57.2	50.8	40.3	32.0	28.6	22.7
XLB125T	.00274810	99.5	79.0	62.8	55.8	44.3	35.2	31.4	24.9
XLB130T	.00301941	109.3	86.8	69.0	61.3	48.7	38.6	34.5	27.3
XLB135T	.00315944	114.4	90.8	72.2	64.2	50.9	40.4	36.1	28.6
XLB145T	.00363204	131.5	104.4	83.0	73.8	58.5	46.5	41.5	32.9

#### Short Scale

Item#	Unit Weight	B	A	G	F	E	D	C	B
XB045S	.00037240	52.9	42.0	33.3	26.4	23.6	18.7	14.8	13.2
XB050S	.00049956	71.0	56.3	44.7	35.5	31.6	25.1	19.9	17.7
XB065S	.00079569	-	89.7	71.2	56.5	50.3	39.9	31.7	28.2
XB070S	.00106585	-	-	95.4	75.7	67.4	53.5	42.5	37.8

**XL - Nickelplated Round Wound (cont.)**

Item#	Unit Weight	C	B'	A'	G'	F'	E'	D'	C'
XB080S	.00116023	46.2	41.2	32.7	26.0	20.6	18.3	14.6	11.6
XB085S	.00145122	57.8	51.5	40.9	32.5	25.8	23.0	18.2	14.5
XB100S	.00179687	71.6	63.7	50.6	40.2	32.0	28.4	22.5	17.9
XB105S	.00214990	85.7	76.3	60.6	48.1	38.3	34.0	27.0	21.4

**Medium Scale**

Item#	Unit Weight	B	A	G	E	E	D	C	B'
XB040M	.00029322	47.4	37.6	29.9	23.7	21.1	16.7	13.3	11.8
XB045M	.00037240	60.2	47.8	37.9	30.1	26.8	21.3	16.9	15.0
XB050M	.00046463	75.1	59.6	47.3	37.5	33.4	26.5	21.1	18.8
XB060M	.00066713	-	85.6	67.9	53.9	48.0	38.1	30.2	26.9
XB065M	.00079569	-	-	81.0	64.3	57.3	45.4	36.1	32.1
XB070M	.00093218	-	-	94.9	75.3	67.1	53.2	42.3	37.6

Item#	Unit Weight	C	B'	A'	G'	F'	E'	D'	C'
XB075M	.00105407	47.8	42.5	33.8	26.8	21.3	19.0	15.0	11.9
XB080M	.00116023	52.6	46.8	37.2	29.5	23.5	20.9	16.6	13.2
XB085M	.00127548	57.8	51.5	40.9	32.5	25.8	23.0	18.2	14.5
XB095M	.00167838	76.1	67.7	53.8	42.7	34.0	30.2	24.0	19.0
XB100M	.00179687	81.5	72.5	57.6	45.7	36.4	32.3	25.7	20.4
XB105M	.00198395	90.0	80.1	63.6	50.5	40.2	35.7	28.3	22.5

**Superlong Scale**

Item#	Unit Weight	B	A	G	E	E	D	C	B'
XB040SL	.00029322	-	47.6	37.8	30.0	26.7	21.2	16.8	15.0
XB045SL	.00037240	-	60.5	48.0	38.1	33.9	26.9	21.4	19.0
XB050SL	.00046463	-	75.4	59.9	47.5	42.3	33.6	26.7	23.7
XB060SL	.00066540	-	-	85.7	68.0	60.6	48.1	38.2	34.0
XB065SL	.00079569	-	-	-	81.4	72.5	57.5	45.7	40.6
XB070SL	.00093218	-	-	-	95.3	84.9	67.4	53.5	47.6

Item#	Unit Weight	C	B'	A'	G'	F'	E'	D'	C'
XB075SL	.00104973	60.2	53.6	42.6	33.8	26.9	23.9	19.0	15.1
XB080SL	.00116023	66.6	59.3	47.1	37.4	29.7	26.4	21.0	16.6
XB085SL	.00133702	76.7	68.3	54.3	43.1	34.3	30.4	24.2	19.2
XB090SL	.00150177	86.2	76.7	60.9	48.4	38.5	34.2	27.1	21.5
XB095SL	.00169349	97.2	86.5	68.7	54.6	43.4	38.6	30.6	24.3
XB100SL	.00179687	103.1	91.8	72.9	57.9	46.0	40.9	32.5	25.8
XB105SL	.00198395	113.8	101.3	80.5	63.9	50.8	45.2	35.9	28.5
XB110SL	.00227461	130.5	116.2	92.3	73.3	58.3	51.8	41.1	32.6

Item#	Unit Weight	A'	G'	F'	E'	D'	C'	B''	A''
XB125SL	.00274810	111.5	88.5	70.4	62.6	49.7	39.4	35.2	27.9
XB130SL	.00301941	122.5	97.3	77.4	68.8	54.6	43.3	38.7	30.6
XB145SL	.00363204	147.4	117.0	93.1	82.7	65.6	52.1	46.5	36.9
XB125TSL	.00274810	111.5	88.5	70.4	62.6	49.7	39.4	35.2	27.9
XB130TSL	.00301941	122.5	97.3	77.4	68.8	54.6	43.3	38.7	30.6
XB145TSL	.00363204	147.4	117.0	93.1	82.7	65.6	52.1	46.5	36.9

**XL - Nickelplated Round Wound Steinberger**

**Long Scale**

Item#	Unit Weight	B	A	G	F	E	D	C	B'
SXL045	.00037240	68.0	53.9	42.8	34.0	30.3	24.0	19.1	17.0
SXL050	.00046463	84.8	67.3	53.4	42.4	37.8	30.0	23.8	21.2
SXL065	.00079569	-	-	-	72.6	64.7	51.3	40.7	36.2
SXL070	.00093218	-	-	-	85.0	75.7	60.1	47.7	42.5
SXL080	.00116023	59.4	52.9	42.0	33.3	26.5	23.6	18.7	14.8
SXL085	.00133702	68.4	60.9	48.4	38.4	30.6	27.2	21.6	17.1
SXL100	.00179687	92.0	81.9	65.0	51.6	41.1	36.5	29.0	23.0
SXL105	.00198395	101.5	90.4	71.8	57.0	45.3	40.3	32.0	25.4

**XL - Nickelplated Round Wound Steinberger (cont.)**

Item#	Unit Weight	A'	G'	F'	E'	D'	C'	B''	A''
SXL130	.00301941	109.3	86.8	69.0	61.3	48.7	38.6	34.5	27.3

**Half Round - Pure Nickel Half Round**

**Long Scale**

Item#	Unit Weight	d	c	B	A	G	F	E	D
NHR030	.00019977	51.5	40.9	36.5	28.9	23.0	18.2	16.2	12.9
NHR040	.00031672	-	64.8	57.8	45.9	36.4	28.9	25.7	20.4
NHR045	.00039328	-	80.5	71.8	56.9	45.2	35.9	32.0	25.4
NHR050	.00046898	-	96.0	85.6	67.9	53.9	42.8	38.1	30.2

Item#	Unit Weight	F	E	D	C	B'	A'	G'	F'
NHR055	.00058122	53.0	47.2	37.5	29.7	26.5	21.0	16.7	13.3
NHR060	.00070573	64.4	57.3	45.5	36.1	32.2	25.5	20.3	16.1
NHR065	.00080500	73.4	65.4	51.9	41.2	36.7	29.1	23.1	18.4
NHR070	.00096476	88.0	78.4	62.2	49.4	44.0	34.9	27.7	22.0
NHR075	.00103455	94.4	84.1	66.7	53.0	47.1	37.5	29.7	23.6
NHR080	.00118785	108.3	96.5	76.6	60.8	54.1	43.0	34.1	27.1
NHR085	.00138122	126.0	112.2	89.1	70.7	62.9	50.0	39.7	31.6

Item#	Unit Weight	A'	G'	F'	E'	D'	C'	B''	A''
NHR090	.00140885	51.0	40.5	32.2	28.6	22.7	18.0	16.1	12.8
NHR095	.00166888	60.4	48.0	38.1	33.9	26.9	21.4	19.1	15.1
NHR100	.00185103	67.0	53.2	42.3	37.6	29.8	23.7	21.2	16.8
NHR105	.00205287	74.3	59.0	46.9	41.7	33.1	26.3	23.5	18.6
NHR110	.00220548	79.8	63.4	50.4	44.8	35.5	28.2	25.2	20.0
NHR130	.00301941	109.3	86.8	69.0	61.3	48.7	38.6	34.5	27.3

**Short Scale**

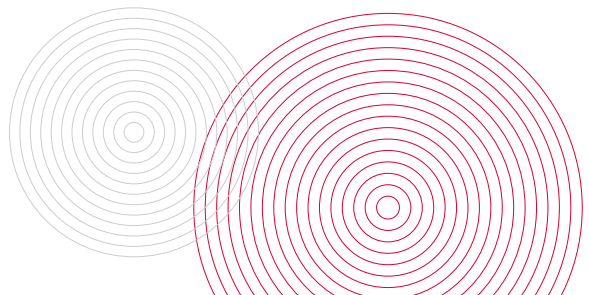
Item#	Unit Weight	B	A	G	F	E	D	C	B'
NHR045S	.00039328	55.9	44.3	35.2	27.9	24.9	19.7	15.7	13.9
NHR065S	.00080500	-	90.7	72.0	57.2	50.9	40.4	32.1	28.6
NHR080S	.00118785	47.3	42.1	33.5	26.6	21.1	18.8	14.9	11.8
NHR100S	.00185103	73.8	65.7	52.2	41.4	32.9	29.3	23.2	18.4

**Medium Scale**

Item#	Unit Weight	B	A	G	F	E	D	C	B'
NHR045M	.00039328	63.6	50.4	40.0	31.8	28.3	22.5	17.8	15.9
NHR065M	.00080500	-	-	82.0	65.0	57.9	46.0	36.5	32.5
NHR080M	.00118785	53.9	47.9	38.1	30.2	24.0	21.4	17.0	13.5
NHR100M	.00185103	83.9	74.7	59.4	47.1	37.5	33.3	26.4	21.0

**Superlong Scale**

Item#	Unit Weight	B	A	G	F	E	D	C	B'
NHR045SL	.00039328	80.5	63.8	50.7	40.2	35.8	28.4	22.6	20.1
NHR065SL	.00080500	-	-	-	82.3	73.3	58.2	46.2	41.1
NHR080SL	.00118785	68.2	60.7	48.2	38.3	30.4	27.1	21.5	17.0
NHR100SL	.00185103	106.2	94.5	75.1	59.6	47.4	42.2	33.4	26.6
NHR130SL	.00301941	122.5	97.3	77.4	68.8	54.6	43.3	38.7	30.6



## Chromes - Stainless Steel Flat Wound

### Long Scale

Item#	Unit Weight	B	A	G	F	E	D	C	B'
CB040	.00032716	59.7	47.4	37.6	29.8	26.6	21.1	16.7	14.9
CB045	.00039763	72.6	57.6	45.7	36.3	32.3	25.6	20.4	18.1
CB050	.00047855	87.3	69.3	55.0	43.6	38.9	30.9	24.5	21.8
CB055	.00056769	103.6	82.2	65.2	51.8	46.1	36.6	29.1	25.9
CB060	.00070108	-	101.5	80.6	63.9	57.0	45.2	35.9	31.9
CB065	.00080655	-	-	92.7	73.6	65.5	52.0	41.3	36.7
CB070	.00093374	-	-	107.3	85.2	75.9	60.2	47.8	42.5
Item#	Unit Weight	C	B'	A'	G'	F'	E'	D'	C'
CB075	.00100553	51.5	45.8	36.4	28.9	23.0	20.4	16.2	12.9
CB080	.00120719	61.8	55.0	43.7	34.7	27.6	24.5	19.5	15.4
CB085	.00138675	71.0	63.2	50.2	39.8	31.7	28.2	22.4	17.7
CB090	.00148896	76.2	67.8	53.9	42.8	34.0	30.2	24.0	19.1
CB095	.00173288	88.7	78.9	62.7	49.8	39.6	35.2	27.9	22.2
CB100	.00189041	96.8	86.1	68.4	54.3	43.2	38.4	30.5	24.2
CB105	.00204302	104.6	93.1	74.0	58.7	46.7	41.5	32.9	26.1
CB110	.00226455	115.9	103.2	82.0	65.1	51.8	46.0	36.5	29.0
Item#	Unit Weight	A'	G'	F'	E'	D'	C'	B''	A''
CB132	.00314193	113.7	90.3	71.8	63.8	50.6	40.2	35.9	28.4

### Superlong Scale

Item#	Unit Weight	B	A	G	F	E	D	C	B'
CB040SL	.00032716	66.9	53.1	42.2	33.5	29.8	23.6	18.8	16.7
CB045SL	.00039763	81.4	64.6	51.2	40.7	36.2	28.7	22.8	20.3
CB060SL	.00070108	-	113.8	90.3	71.7	63.9	50.7	40.2	35.8
CB065SL	.00080655	-	-	103.9	82.5	73.5	58.3	46.3	41.2
Item#	Unit Weight	C	B'	A'	G'	F'	E'	D'	C'
CB075SL	.00100553	57.7	51.4	40.8	32.4	25.8	22.9	18.2	14.4
CB080SL	.00120719	69.3	61.7	49.0	38.9	30.9	27.5	21.8	17.3
CB095SL	.00173288	99.4	88.5	70.3	55.8	44.4	39.5	31.3	24.9
CB100SL	.00189041	108.5	96.6	76.7	60.9	48.4	43.1	34.2	27.1
Item#	Unit Weight	A'	G'	F'	E'	D'	C'	B''	A''
CB132SL	.00314193	127.5	101.2	80.5	71.6	56.8	45.1	40.2	31.9

## ProSteels - ProSteel Round Wound

### Long Scale

Item#	Unit Weight	d	c	B	A	G	F	E	D
PSB032	.00020465	52.8	41.9	37.4	29.6	23.5	18.7	16.6	13.2
PSB040	.00029409	-	-	53.7	42.6	33.8	26.8	23.9	19.0
PSB045	.00036457	-	-	66.5	52.8	41.9	33.2	29.6	23.5
PSB050	.00042635	-	87.3	77.8	61.7	49.0	38.9	34.6	27.5
PSB055	.00058296	-	-	-	84.4	67.0	53.2	47.4	37.6
Item#	Unit Weight	E	E	D	C	B'	A'	G'	F'
PSB060	.00067781	61.8	55.1	43.7	34.7	30.9	24.5	19.5	15.5
PSB065	.00073365	66.9	59.6	47.3	37.6	33.4	26.6	21.1	16.8
PSB070	.00087014	79.4	70.7	56.1	44.5	39.6	31.5	25.0	19.9
PSB075	.00095857	87.4	77.9	61.8	49.1	43.7	34.7	27.5	21.9
PSB080	.00111879	102.0	90.9	72.1	57.3	51.0	40.5	32.1	25.6
PSB085	.00124034	113.1	100.8	80.0	63.5	56.5	44.9	35.6	28.3
Item#	Unit Weight	A'	G'	F'	E'	D'	C'	B''	A''
PSB090	.00151382	54.8	43.5	34.6	30.8	24.4	19.4	17.3	13.7
PSB095	.00156550	56.7	45.0	35.8	31.8	25.2	20.0	17.9	14.2

## ProSteels - ProSteel Round Wound (Cont.)

Item#	Unit Weight	A'	G'	F'	E'	D'	C'	B''	A''
PSB100	.00169349	61.3	48.7	38.7	34.4	27.3	21.7	19.4	15.3
PSB105	.00183626	66.5	52.8	42.0	37.3	29.6	23.5	21.0	16.6
PSB110	.00218579	79.1	62.8	50.0	44.4	35.2	28.0	25.0	19.8
PSB125	.00263432	95.4	75.7	60.2	53.5	42.5	33.7	30.1	23.8
PSB130	.00277435	100.4	79.7	63.4	56.4	44.7	35.5	31.7	25.1
PSB145	.00327321	118.5	94.0	74.8	66.5	52.8	41.9	37.4	29.6

### Short Scale

Item#	Unit Weight	B	A	G	F	E	D	C	B'
PSB045S	.00036457	51.8	41.1	32.6	25.9	23.1	18.3	14.5	12.9
PSB065S	.00073365	-	82.7	65.6	52.1	46.4	36.8	29.2	26.0
Item#	Unit Weight	C	B'	A'	G'	F'	E'	D'	C'
PSB080S	.00111879	44.6	39.7	31.5	25.0	19.9	17.7	14.0	11.1
PSB100S	.00169349	67.5	60.1	47.7	37.9	30.1	26.8	21.3	16.9

### Medium Scale

Item#	Unit Weight	B	A	G	F	E	D	C	B'
PSB045M	.00036457	58.9	46.8	37.1	29.5	26.2	20.8	16.5	14.7
PSB065M	.00073365	-	-	74.7	59.3	52.8	41.9	33.3	29.6
Item#	Unit Weight	C	B'	A'	G'	F'	E'	D'	C'
PSB080M	.00111879	50.7	45.1	35.9	28.5	22.6	20.1	16.0	12.7
PSB100M	.00169349	76.8	68.3	54.3	43.1	34.3	30.5	24.2	19.2

### Superlong Scale

Item#	Unit Weight	d	c	B	A	G	F	E	D
PSB032SL	.00020465	-	47.0	41.9	33.2	26.4	20.9	18.6	14.8
PSB040SL	.00029409	-	-	-	47.7	37.9	30.1	26.8	21.3
PSB045SL	.00036457	-	-	-	59.2	47.0	37.3	33.2	26.4
PSB050SL	.00042635	-	-	87.2	69.2	54.9	43.6	38.8	30.8
Item#	Unit Weight	E	E	D	C	B'	A'	G'	F'
PSB060SL	.00067781	69.3	61.7	49.0	38.9	34.6	27.5	21.8	17.4
PSB065SL	.00073365	75.0	66.8	53.0	42.1	37.5	29.8	23.6	18.8
PSB070SL	.00087014	89.0	79.3	62.9	49.9	44.4	35.3	28.0	22.3
PSB075SL	.00095857	98.0	87.3	69.3	55.0	49.0	38.9	30.9	24.6
PSB080SL	.00111879	-	101.9	80.9	64.2	57.1	45.4	36.0	28.7
PSB085SL	.00124034	126.8	113.0	89.7	71.2	63.3	50.3	40.0	31.8
Item#	Unit Weight	A'	G'	F'	E'	D'	C'	B''	A''
PSB090SL	.00151382	61.4	48.8	38.8	34.5	27.4	21.7	19.4	15.4
PSB095SL	.00156550	63.5	50.4	40.1	35.7	28.3	22.5	20.1	15.9
PSB100SL	.00169349	68.7	54.6	43.4	38.6	30.6	24.3	21.7	17.2
PSB105SL	.00183626	74.5	59.1	47.0	41.8	33.2	26.3	23.5	18.6
PSB110SL	.00218579	88.7	70.4	56.0	49.8	39.5	31.4	28.0	22.2
PSB130SL	.00277435	112.6	89.4	71.1	63.2	50.1	39.8	35.5	28.1

## Acoustic Bass guitar

### Phosphor Bronze - Round Wound

#### Long Scale

Item#	Unit Weight	B	A	G	F	E	D	C	B'
PBB045	.00041330	-	59.8	47.5	37.7	33.6	26.6	21.2	18.8
PBB065	.00086394	-	-	-	78.8	70.2	55.7	44.2	39.4
Item#	Unit Weight	C	B'	A'	G'	F'	E'	D'	C'
PBB080	.00130940	67.0	59.7	47.4	37.6	29.9	26.6	21.1	16.8
PBB100	.00197902	101.3	90.2	71.6	56.9	45.2	40.2	31.9	25.3
Item#	Unit Weight	A'	G'	F'	E'	D'	C'	B''	A''
PBB130	.00324696	117.5	93.3	74.2	66.0	52.3	41.5	37.1	29.4

## Mandolin family strings

### Mandolin

Item#	Unit Weight	f''	e''	d''	c''	b'	a'	g'	f'
J6201	.00002215	21.5	19.2	15.2	12.1	10.8	8.5	6.8	5.4
J6202	.00004342	42.2	37.6	29.8	23.7	21.1	16.8	13.3	10.6
Item#	Unit Weight	f'	e'	d'	c'	b	a	g	f
J6203	.00011024	26.8	23.9	19.0	15.0	13.4	10.6	8.4	6.7
J6204	.00022308	54.2	48.3	38.3	30.4	27.1	21.5	17.1	13.6
Item#	Unit Weight	f''	e''	d''	c''	b'	a'	g'	f'
J6701	.00002680	26.1	23.2	18.4	14.6	13.0	10.3	8.2	6.5
J6702	.00004342	42.2	37.6	29.8	23.7	21.1	16.8	13.3	10.6
Item#	Unit Weight	f'	e'	d'	c'	b	a	g	f
J6703	.00011462	27.9	24.8	19.7	15.6	13.9	11.1	8.8	7.0
J6704	.00027459	-	59.4	47.2	37.4	33.4	26.5	21.0	16.7

## Mandolin family strings (cont.)

Item#	Unit Weight	f''	e''	d''	c''	b'	a'	g'	f'
J7401/EXP	.00002680	26.1	23.2	18.4	14.6	13.0	10.3	8.2	6.5
J7402/EXP	.00004984	48.5	43.2	34.3	27.2	24.2	19.2	15.3	12.1
Item#	Unit Weight	f'	e'	d'	c'	b	a	g	f
J7403/EXP	.00013550	32.9	29.3	23.3	18.5	16.5	13.1	10.4	8.2
J7404/EXP	.00032850	-	-	56.5	44.8	39.9	31.7	25.1	20.0
Item#	Unit Weight	f''	e''	d''	c''	b'	a'	g'	f'
J7501/EXP	.00002930	28.5	25.4	20.1	16.0	14.2	11.3	9.0	7.1
J7502/EXP	.00005671	55.1	49.1	39.0	30.9	27.6	21.9	17.4	13.8
Item#	Unit Weight	f'	e'	d'	c'	b	a	g	f
J7503/EXP	.00013550	32.9	29.3	23.3	18.5	16.5	13.1	10.4	8.2
J7504/EXP	.00034500	-	-	59.3	47.1	41.9	33.3	26.4	21.0

### Mandolin - Flat Tops

Item#	Unit Weight	f''	e''	d''	c''	b'	a'	g'	f'
FT7401	.00002680	26.1	23.2	18.4	14.6	13.0	10.3	8.2	6.5
FT7402	.00005313	-	-	-	-	25.8	20.5	16.3	12.9
Item#	Unit Weight	f'	e'	d'	c'	b	a	g	f
FT7403	.00015881	38.6	34.4	27.3	21.7	19.3	15.3	12.2	9.6
FT7404	.00032915	-	-	-	44.9	40.0	31.7	25.2	20.0

### Mandola

Item#	Unit Weight	b'	a'	g'	f'	e'	d'	c'	b
J7601	.00004984	31.7	25.2	20.0	15.9	14.1	11.2	8.9	7.9
J7602	.00012640	-	-	-	40.2	35.8	28.4	22.6	20.1
Item#	Unit Weight	a	g	f	e	d	c	B	A
J7603	.00025365	32.0	25.4	20.2	18.0	14.3	11.3	10.1	8.0
J7604	.00055000	69.4	55.1	43.7	39.0	30.9	24.5	21.9	17.4

### Mandola - Flat Tops

Item#	Unit Weight	b'	a'	g'	f'	e'	d'	c'	b
FT7601	.00005999	38.2	30.3	24.0	19.1	17.0	13.5	10.7	9.5
FT7602	.00013642	-	-	-	43.4	38.7	30.7	24.4	21.7
Item#	Unit Weight	a	g	f	e	d	c	B	A
FT7603	.00027838	35.2	27.9	22.1	19.7	15.7	12.4	11.1	8.8
FT7604	.00055787	70.4	55.9	44.4	39.5	31.4	24.9	22.2	17.6

### Mandocello

Item#	Unit Weight	b	a	g	f	e	d	c	B
J7801	.00011528	-	36.1	28.7	22.7	20.3	16.1	12.8	11.4
J7802	.00028330	-	-	-	-	-	39.5	31.4	28.0
Item#	Unit Weight	A	G	F	E	D	C	B'	A'
J7803	.00056166	44.0	34.9	27.7	24.7	19.6	15.5	13.8	11.0
J7804	.00121779	95.3	75.7	60.0	53.5	42.4	33.7	30.0	23.8

### Mandobass

Item#	Unit Weight	B	A	G	F	E	D	C	B'
J7901	.00046015	128.2	101.7	80.7	64.0	57.1	45.3	35.9	32.0
J7902	.00071558	-	158.1	125.5	99.6	88.7	70.4	55.9	49.7
Item#	Unit Weight	C	B'	A'	G'	F'	E'	D'	C'
J7903	.00159126	124.3	110.6	87.9	69.8	55.5	49.3	39.1	31.1
J7904	.00302935	236.6	210.6	167.3	132.8	105.6	93.9	74.5	59.2

# Banjo & Loop End String Tensions

## Ball End - Plain Steel

Item#	Unit Weight	g'	f'	e'	d'	c'	b	a	g
J6901B	.00001794	20.0	15.9	14.2	11.3	8.9	8.0	6.3	5.0
J6902B	.00002680	29.9	23.8	21.2	16.8	13.3	11.9	9.4	7.5
Item#	Unit Weight	b	a	g	f	e	d	c	B
J6903B	.00003744	16.6	13.2	10.5	8.3	7.4	5.9	4.7	4.2
J6904B	.00007830	-	27.6	21.9	17.4	15.5	12.3	9.7	8.7
Item#	Unit Weight	c''	b'	a'	g'	f'	e'	d'	c'
J6905B	.00001794	19.6	17.5	13.9	11.0	8.7	7.8	6.2	4.9

## Loop End - Plain Steel

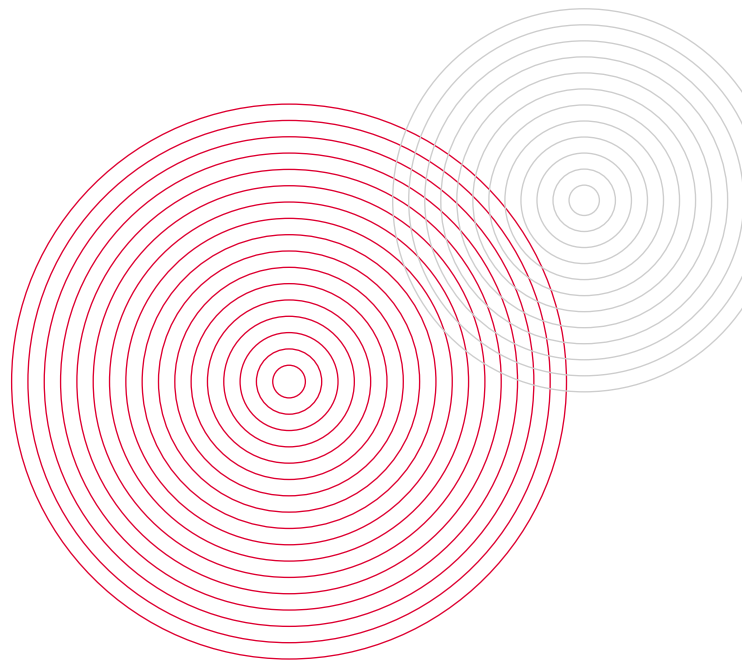
Item#	Unit Weight	a'	g'	f'	e'	d'	c'	b	a
LE008	.00001418	20.0	15.8	12.6	11.2	8.9	7.1	6.3	5.0
LE009	.00001794	-	20.0	15.9	14.2	11.3	8.9	8.0	6.3
LE010	.00002215	-	24.7	19.6	17.5	13.9	11.0	9.8	7.8
LE011	.00002680	-	29.9	23.8	21.2	16.8	13.3	11.9	9.4
LE012	.00003190	-	35.6	28.3	25.2	20.0	15.9	14.1	11.2
Item#	Unit Weight	f'	e'	d'	c'	b	a	g	f
LE013	.00003744	33.2	29.6	23.5	18.6	16.6	13.2	10.5	8.3
LE014	.00004342	38.5	34.3	27.2	21.6	19.2	15.3	12.1	9.6
LE015	.00004984	44.2	39.4	31.3	24.8	22.1	17.5	13.9	11.0
LE016	.00005671	50.3	44.8	35.6	28.2	25.1	20.0	15.8	12.6
LE017	.00006402	56.8	50.6	40.1	31.9	28.4	22.5	17.9	14.2
LE018	.00007177	63.6	56.7	45.0	35.7	31.8	25.3	20.0	15.9

## Loop End - Nickelplated Steel Round Wound

Item#	Unit Weight	c'	b	a	g	f	e	d	c
LE018W	.00006003	-	26.6	21.1	16.8	13.3	11.9	9.4	7.5
LE020W	.00007282	-	-	25.6	20.3	16.1	14.4	11.4	9.1
LE022W	.00008879	-	39.3	31.2	24.8	19.7	17.5	13.9	11.0
LE023W	.00009739	-	43.2	34.3	27.2	21.6	19.2	15.3	12.1
LE024W	.00010857	-	-	38.2	30.3	24.1	21.4	17.0	13.5
Item#	Unit Weight	g	f	e	d	c	B	A	G
LE026W	.00012316	34.4	27.3	24.3	19.3	15.3	13.7	10.8	8.6
LE028W	.00014311	40.0	31.7	28.3	22.4	17.8	15.9	12.6	10.0
LE030W	.00016792	46.9	37.2	33.2	26.3	20.9	18.6	14.8	11.7
LE032W	.00018902	52.8	41.9	37.3	29.6	23.5	21.0	16.6	13.2
LE034W	.00021145	-	46.9	41.7	33.1	26.3	23.4	18.6	14.8
LE036W	.00023520	-	52.1	46.4	36.8	29.3	26.1	20.7	16.4
LE038W	.00026026	-	-	51.4	40.8	32.4	28.9	22.9	18.2
LE040W	.00028933	-	64.1	57.1	45.3	36.0	32.1	25.5	20.2
LE042W	.00031703	-	70.3	62.6	49.7	39.4	35.2	27.9	22.1
Item#	Unit Weight	d	c	B	A	G	F	E	D
LE044W	.00034606	54.2	43.0	38.4	30.4	24.2	19.2	17.1	13.6
LE046W	.00037640	59.0	46.8	41.7	33.1	26.3	20.9	18.6	14.7
LE048W	.00040806	63.9	50.8	45.2	35.9	28.5	22.6	20.1	16.0
LE049W	.00042438	66.5	52.8	47.1	37.3	29.6	23.5	20.9	16.6
LE052W	.00047533	-	59.1	52.7	41.8	33.2	26.3	23.5	18.6
LE054W	.00053073	83.1	66.0	58.8	46.7	37.1	29.4	26.2	20.8
LE056W	.00056832	-	70.7	63.0	50.0	39.7	31.5	28.1	22.3
LE059W	.00063211	99.0	78.6	70.1	55.6	44.1	35.0	31.2	24.8

## Loop End - Phosphor Bronze Round Wound

Item#	Unit Weight	b	a	g	f	e	d	c	B
LE018PB	.00006835	-	-	19.1	15.1	13.5	10.7	8.5	7.6
LE020PB	.00007894	-	27.8	22.0	17.5	15.6	12.4	9.8	8.8
LE022PB	.00009571	-	33.7	26.7	21.2	18.9	15.0	11.9	10.6
LE023PB	.00010471	-	36.8	29.2	23.2	20.7	16.4	13.0	11.6
LE024PB	.00011352	-	39.9	31.7	25.2	22.4	17.8	14.1	12.6
Item#	Unit Weight	f	e	d	c	B	A	G	F
LE026PB	.00013285	29.4	26.2	20.8	16.5	14.7	11.7	9.3	7.4
LE028PB	.00015514	34.4	30.6	24.3	19.3	17.2	13.6	10.8	8.6
LE030PB	.00018215	40.4	36.0	28.5	22.7	20.2	16.0	12.7	10.1
LE032PB	.00020573	45.6	40.6	32.2	25.6	22.8	18.1	14.4	11.4
LE034PB	.00023532	-	46.5	36.9	29.3	26.1	20.7	16.4	13.0
LE036PB	.00026350	58.4	52.0	41.3	32.8	29.2	23.2	18.4	14.6
LE038PB	.00029110	-	-	45.6	36.2	32.3	25.6	20.3	16.1
LE040PB	.00032463	-	64.1	50.9	40.4	36.0	28.6	22.7	18.0
LE042PB	.00036248	-	-	56.8	45.1	40.2	31.9	25.3	20.1
Item#	Unit Weight	d	c	B	A	G	F	E	D
LE045PB	.00041278	64.7	51.3	45.8	36.3	28.8	22.9	20.4	16.2
LE047PB	.00044815	-	55.7	49.7	39.4	31.3	24.8	22.1	17.6
LE049PB	.00048575	-	60.4	53.9	42.7	33.9	26.9	24.0	19.0
LE052PB	.00054457	85.3	67.7	60.4	47.9	38.0	30.2	26.9	21.3
LE053PB	.00056386	-	70.1	62.5	49.6	39.4	31.2	27.8	22.1
LE056PB	.00062711	-	78.0	69.5	55.2	43.8	34.7	31.0	24.6
LE059PB	.00069554	109.0	86.5	77.1	61.2	48.6	38.5	34.3	27.2





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