The background of the cover features several pieces of orthodontic wire. At the top left, a wire is bent into a loop. Below it, a coiled spring wire is shown. In the middle, two long, thin wires are curved into arcs. At the bottom, a small, rectangular wire component with a loop is visible. The background is a gradient of blue with subtle, curved lines.

Orthodontic Product Catalog

Quality

Service

Innovation

Support

UltimateWireforms,inc.
Forming the Future

Trust

For over 25 years, it has been our pleasure to earn and keep the trust of our customers. With integrity and a consistent focus on Quality, Innovation, Service, and Support, Ultimate Wireforms meets the needs of the finest orthodontic companies in the world. We look forward to providing you with exceptional products and services for the next 25 years and beyond.



Quality You can trust our Quality. Ultimate Wireforms manufactures within an ISO 13485 certified Quality System. Starting with high quality materials, thorough design and development goes into every product we sell to ensure you consistently high quality parts. Our quality extends beyond our parts; we strive to provide the best service and support along with our products.



Service You can trust our Service. Knowledgeable, efficient Customer Service Reps are only the tip of the iceberg when it comes to our service, though that certainly helps! Ultimate's service extends from product information before the sale, through design of propriety products, and on through assistance with customized packaging. In our view, the product is not just the device; we believe the product is the entire offering. How may we serve you?

Innovation You can trust our Innovation. Our engineers have access to a well-equipped in-house lab, as well as outside test laboratories, in their development of new products. Close collaboration between sales and engineering brings about creative, yet solid solutions, to orthodontic industry needs. Ultimate Wireforms strives to provide orthodontic devices and packaging solutions that will set you above and apart from the competition. That's our goal. Look inside to see what's new.

Support You can trust our Support. We build relationships with our customers, taking the time to know you and your needs, and work with you to help you to succeed. We are glad to provide technical data and marketing information to help you to make the sale. Our management team works together to develop products and support materials for your solid product offering. You can trust us to fully back our products before and after the sale.

Our quality extends beyond our parts, with superior service and support.

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Ultimate Wireforms, Inc. is a subsidiary of The Ultimate Companies, Inc. and serves as the manufacturing and sales/marketing arm of quality orthodontic products. Our wholly-owned and operated manufacturing facility in Brasil, Ultimate Do Brasil, Ltda., provides efficient production of labor-intensive products for sale through Ultimate Wireforms. Research, development, and engineering support are provided by our in-house engineering department. Working closely together, we are pleased to offer Quality, Innovation, Support, and Service.

Material Overview

Choosing the Best Materials for the Application

Cobre™ Copper Nickel Titanium Wire

Approximately 6% Cu, by weight.

The *better* Copper NiTi wire. The addition of Copper to the Nickel Titanium alloy provides for easy ligation, true thermal performance, superior ductility, and near-constant forces throughout treatment.

Cobre Copper Nickel Titanium is a three-series offering, providing forces across multiple stages of treatment; *Cobre C1* with higher forces, *Cobre C2* with middle forces, and *Cobre C3* exhibiting the lowest forces. All with controlled transformation properties.

- Near-constant tooth-moving forces as well as controlled progression of forces.
- Excellent ductility; little deformation after repeated cycles.
- Narrowed hysteresis. Great in-hand feel.

Nickel Titanium Wire

(NiTi -approximately 55% Ni and 45% Ti):

Ideal for alignment and leveling in early to mid-stages of treatment. All NiTi wires exhibit a unique 'Superelastic' behavior.

Superelastic behavior provides:

- Light to moderate, consistent forces.
- Responsiveness to chilling.
- Near consistent force over a long activation period.
- Greater patient comfort over stainless steel wires.
- High flexibility. Excellent resiliency, resulting in high resistance to permanent set.
- Leveling, torque, and rotation can be addressed simultaneously early in treatment.

In addition, Nickel Titanium wire may also demonstrate a heat-activated '**Shape Memory**' effect produced through a tightly controlled manufacturing process.

Ultra Therm®, Ultra Therm Plus, and Gradient-3® wires are shape memory, heat-activated wires.

Shape memory properties exhibited by heat-activated, or thermal, Nickel Titanium wires:

- Superb flexibility at room temperature, allowing for even easier ligation. Soft in the hand.
- Very responsive to chilling.
- Gentle forces are initiated by intraoral heat and remain consistent throughout treatment.
- Noticeably more comfortable for the patient due to low forces.
- Allows for patient to control discomfort with cold water rinses.

Black-Ti® Nickel Titanium Wire

(NiTi -approximately 55% Ni and 45% Ti):

Ultimate Wireforms developed this ultra smooth, hard black surface nickel titanium wire; engineered specifically for **reduced friction and efficient tooth movement.**

- **30% less friction** than traditional Nickel Titanium wire provides improved sliding mechanics.
- Our highest force Superelastic NiTi wire.
- Hard surface is an integral part of the wire, not a coating.
- Color nearly indistinguishable from other wires when in the mouth.
- Very resilient.

Give your customers what they are looking for!

Highest Quality Materials from US Producers

Efficient Tooth Movement

Patient Comfort

Ease of Use

***β*III-CNA® Wire**

*β*III-CNA® wire provides **the solution** to current **mid-stage treatment** limitations. **Greater elasticity than stainless steel. Better formability than Nickel Titanium.** This is the **perfect replacement for stainless steel.** As well, with **stiffness between NiTi and stainless steel** it is ideal for use right **through finishing.**

Better Than Stainless Steel

- 2X the elastic tooth-moving distance.
- More activation per wire.
- Better patient comfort.
- Ni-Free (79Ti, 11Mo, 6Zr, 4Sn).

A Great Partner to Follow NiTi

- Stiffness perfect for mid- and late stages of treatment.
- Significantly greater bend ductility.
- Easily accepts 1st and 2nd order bends.

Stainless Steel Solid (Bright) Wire

Our archwires are manufactured from medical grade 304V Stainless Steel material (70% Fe, 19% Cr, 9% Ni, 1.5% Mn, 0.5% Si). These archwires can be used throughout treatment but are best suited for **mid- to late stages of treatment.**

- Superior surface finish.
- Higher force and limited resiliency as compared with *β*III-CNA® wire.
- Forces drop quickly; best suited as a finishing wire.
- Easy to bend.
- Greater patient discomfort when used in early treatment stages.

Stainless Steel Solid Goldtone Wire

A precise heat treatment of solid stainless steel wire produces slightly higher force levels.

- Approximately 5% greater tensile strength than Stainless Steel Solid Bright wires.
- Subtle, golden finish.
- Same characteristics listed above for Stainless Steel Solid wire.

Stainless Steel Multi-strand (Bright) Wire

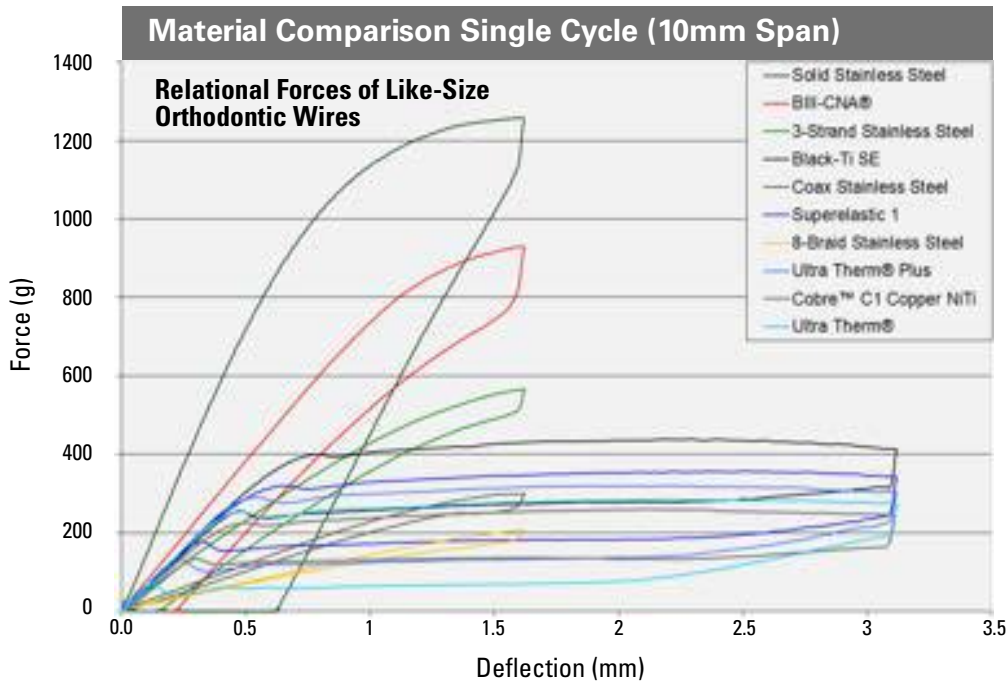
Ultimate's three types of multi-strand archwires made of medical grade Type 302SS (71% Fe, 18% Cr, 9% Ni, 1% Mn, 0.5% Si) are well suited for **early stages of treatment as well as the finishing stage of detailing and retention.** Lower forces and better resiliency than Stainless Steel Solid wire.

- **3-strand (twisted) wire** provides moderate forces and limited flexibility.
- **3-strand flat retainer wire** bonds to lingual for semi- and permanent retention.
- **Coax (6-strand) wire** provides lighter to moderate forces and slightly better resiliency than 3-strand.
- **8-Braid wire** provides the lightest forces of the multi-strand stainless steel wires, with relatively good resiliency.

Forming the future with wires to meet your customers' specific treatment plans!

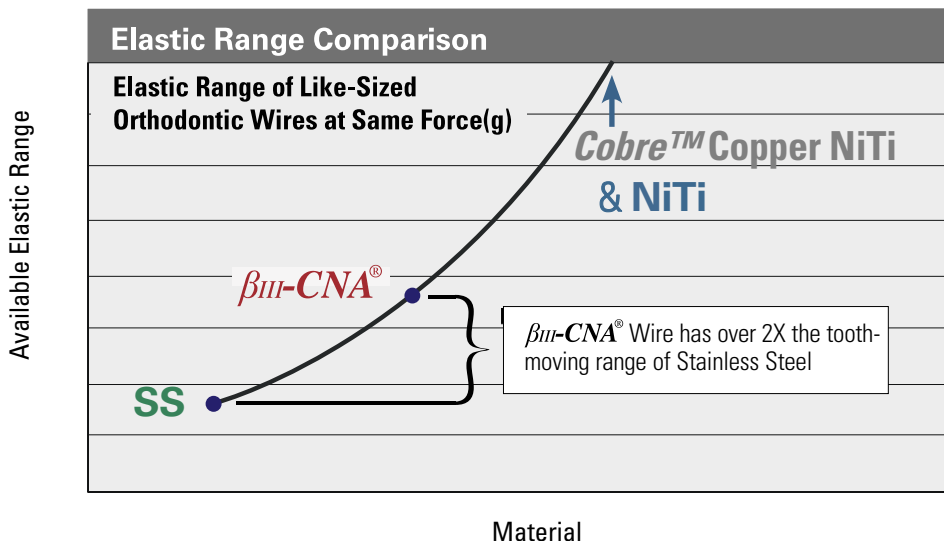
Material Comparison

The following graph provides a quick reference of comparative forces for Ultimate Wireforms' wire offerings. Testing was performed on wire sizes of comparable cross-sectional size so that the relation of forces can be seen. For specific material and wire size data, please see force charts in the Technical Data section of the catalog.



- The 3-series **Cobre[™] Copper Nickel Titanium** wires exhibit incredible ductility, low stress hysteresis, and near-constant, low forces over a long activation range.
- The **Nickel Titanium** 'family' of wires provide near-constant light to moderate forces over a long activation range.
- Comparably sized **stainless steel** wire exhibits the highest ligating and tooth-moving forces, with a very short activation range.
- β III-CNA[®] wires' moderate stiffness, excellent formability, and extended activation range make them the 'wire of choice' for mid- to late stage treatment.

The useful range equates to the length of time the wire is active in tooth-moving. The elastic range is measured with test methods used in determining the stiffness values required for ISO 15841. The stiffer the material, the shorter its elastic range will be at any load level.



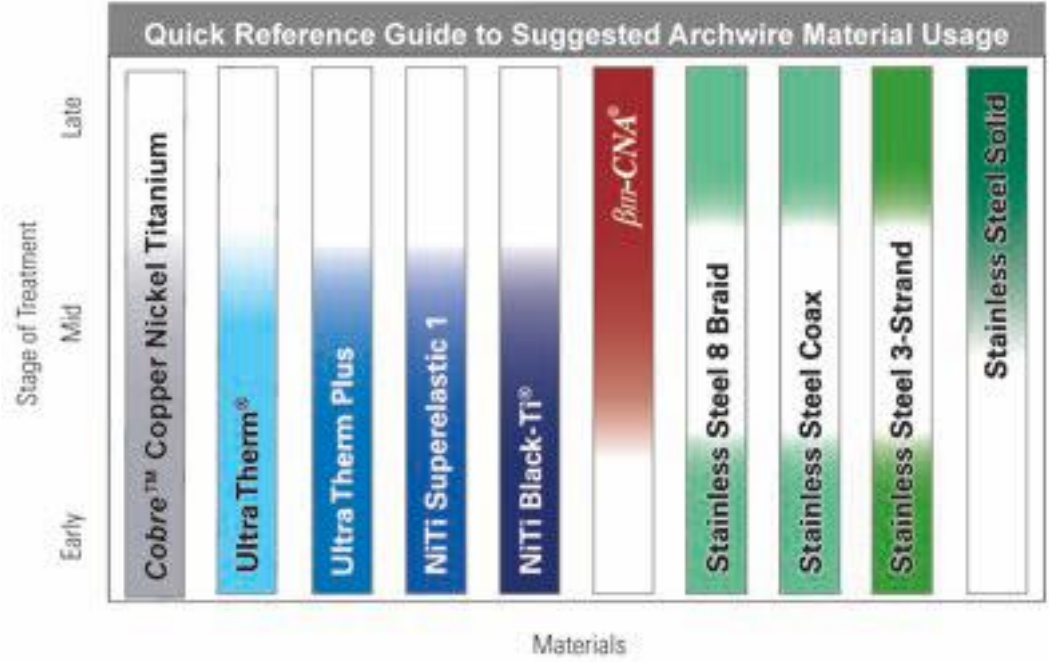
Stainless steel has a very short elastic range due to its high stiffness. By comparison, β III-CNA[®] wires exhibit more than twice the elastic range at similar tooth forces thus, allowing for **twice the tooth movement as stainless steel** at comparable force levels. This makes β III-CNA[®] wires a smart replacement for stainless steel in mid- and late treatment. Due to their comparably low force and very long elastic range, **Cobre Copper NiTi** and binary **NiTi** remain the popular choice for aligning and leveling.

Ultimate Wireforms offers archwires in a variety of materials to address early to late stages of treatment most efficiently. The quality controlled, dependable characteristics of our premium archwires allow your doctors to treat each case with confidence.

Expect the best!

Ultimate Wireforms offers the high quality wires you want for:

- Ease of Use
- Patient Comfort
- Efficient Tooth Movement!



Colored areas indicate suggested stages of treatment for each material.



Wires

Archwires

Lengths

Spools

*Cobre*TM Copper Nickel Titanium

Nickel Titanium

βIII-CNA[®]

Stainless Steel

Orthodontic Wire Basics

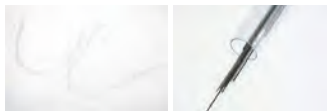
Efficient forces, increased patient comfort, and ease of treatment.

We recognize that choosing the proper wire takes knowledge, training, and experience. Ultimate is here to help you find just what you are looking for with easy-to-read product offering pages and a Technical Data section full of technical information you might need to make the sale.

Characteristics of Wire to consider in making your selection

Nickel Titanium Wire

Superelastic 1




High flexibility and resiliency!

Arch Forms NAT2, GLOBL, STD, OPTMA™, and INT.
Superelastic Nickel Titanium wire is also available in 7 in. lengths and 15 in. spools.


Forces Superelastic 1.

Wire Sizes	Round:	.012	.014	.016	.018	.020
	(.013 available in NAT2, GLOBL, and OPTMA.)					
	Square:	.016 x .016	.018 x .018	.020 x .020		
	Rectangle:	.014 x .025	.016 x .022	.016 x .025	.017 x .025	.018 x .025
		.019 x .025	.021 x .025			


Pre-Stopped Available with crimpable tube stops



Centermark The Dimple® or Etch Centermark.



Custom Packaging available. See Custom Packaging section.



Force graphs of Superelastic 1 wires may be found in the Technical Data section.

Material

The primary aspect of an orthodontic wire is the material. Ultimate offers a variety of materials so that the proper force can be utilized at each stage of treatment. A Material Overview, which provides details of attributes and suggested use, is located in the preceding section.

Look for Material at the top of the product offering page! Pages are color coded, by material, to help in your selection.

Arch Form

Ultimate produces over 50 different forms! See our Arch Form Pull-out for the most popular arch form offerings.

Forces

Keeping the focus on efficient forces, patient comfort, and ease of treatment has led Ultimate to the development of several new forces within the basic material groups.

Wire Sizes

Looking for a light wire for aligning or a rectangle wire to fill a slot for more torque? Here's where you will find what's available.

A metric conversion chart is available in the Technical Data section.

Custom Packaging

Extend your quality wire offering with custom packaging. Build your brand and your image with single pack wires, custom cartons, envelopes, and/or labels. See the Custom Packaging section for details.

Product Highlights

Here's where you find the good stuff!

- Brand Names
- Product Features
- Product Benefits

Pre-Stopped Archwires

Most Nickel Titanium archwires are available pre-loaded with two lightly crimped tube stops. These provide the clinician with easy placement of stops along the archwire to control wire movement.

Centermark

The patented Dimple® Centermark is an efficient, economical way to prevent Nickel Titanium archwire slipping. The vertical protrusion helps prevent the archwire from sliding through the bracket or out of the buccal tube. This feature also eliminates cinching behind the buccal tubes.

A permanent Etch centermark is available on most archwires. Triple and single etch marks designate upper or lower jaw.



Arch Form Chart

Cobre™ Copper Nickel Titanium
Nickel Titanium
βIII-CNA®
Stainless Steel

Ultimate has the materials and the arch forms you want

With over 1.5 million parts in inventory on a daily basis, Ultimate can turn your order around quickly. The arch forms on the following pages are our most popular and are in stock awaiting your order. We do, however, make over 50 different forms, so, should you want an arch form not on the chart, please contact our helpful Customer Service Representatives for assistance. Through the use of a customized software system that links product needs from the raw material all the way through manufacturing, inventory, packaging, and shipping, we have what you need and can get it to you fast!

Ultimate's in-house engineering department allows us to be responsive to your needs. Have an idea for a new archwire? Speak with one of our engineers in R&D to discuss a custom arch form for you! Our depth of design, development, and manufacturing experience in orthodontic materials makes your job easier!

Give us a call!

Forming the
future with
wires to
meet your
customers'
specific
treatment
plans!

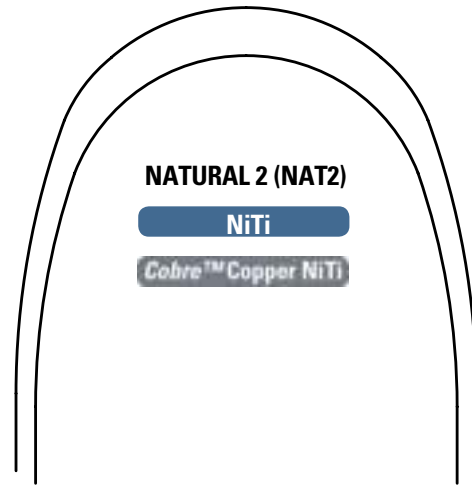
Ultimate Wireforms' Most Popular Arch Forms

Don't see what you are looking for?

Just ask!

Ultimate produces over 50 different arch forms!

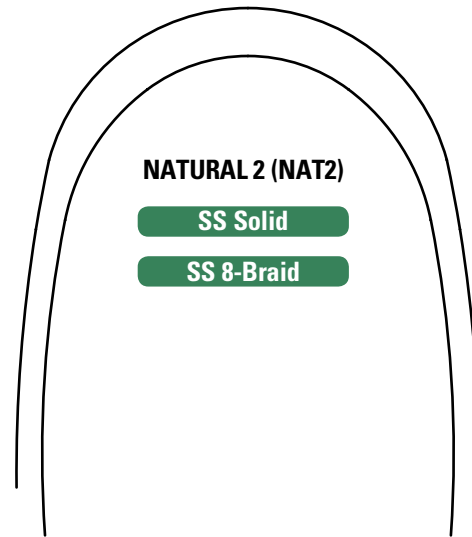
Our customer service representatives will be glad to send you line drawings of other arch forms or connect you with our engineers for development of your custom shape.



NATURAL 2 (NAT2)

NiTi

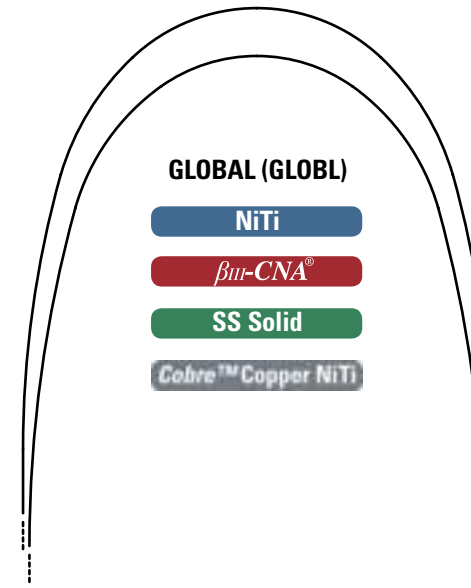
Cobre™ Copper NiTi



NATURAL 2 (NAT2)

SS Solid

SS 8-Braid



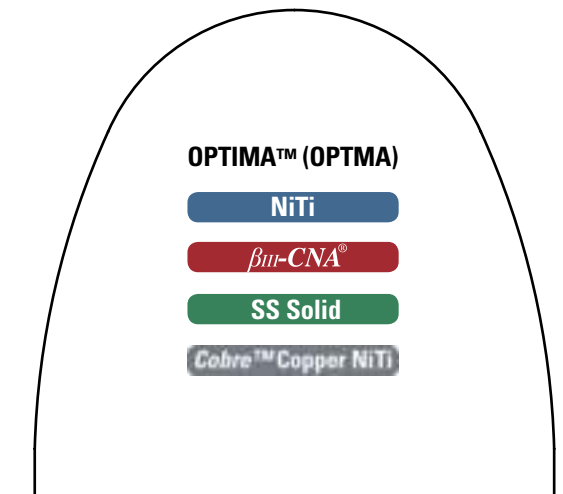
GLOBAL (GLOBL)

NiTi

βIII-CNA®

SS Solid

Cobre™ Copper NiTi



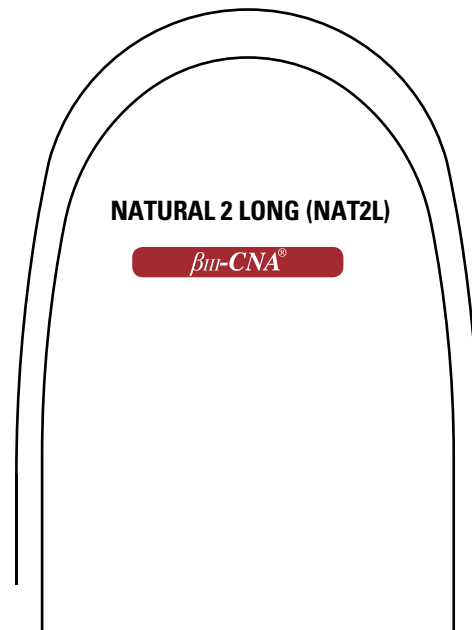
OPTIMA™ (OPTMA)

NiTi

βIII-CNA®

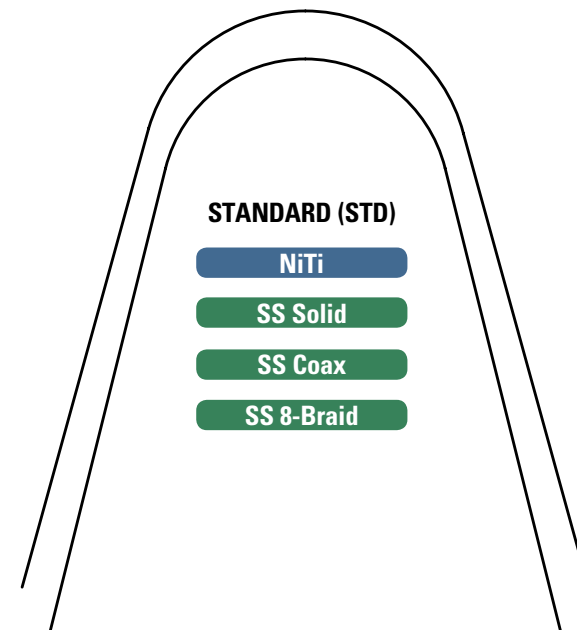
SS Solid

Cobre™ Copper NiTi



NATURAL 2 LONG (NAT2L)

βIII-CNA®



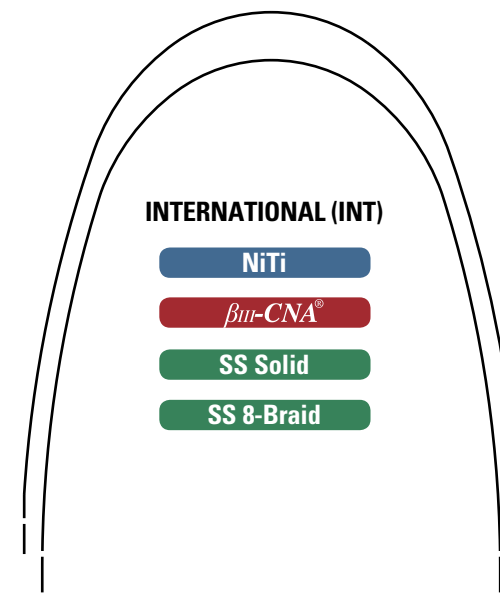
STANDARD (STD)

NiTi

SS Solid

SS Coax

SS 8-Braid



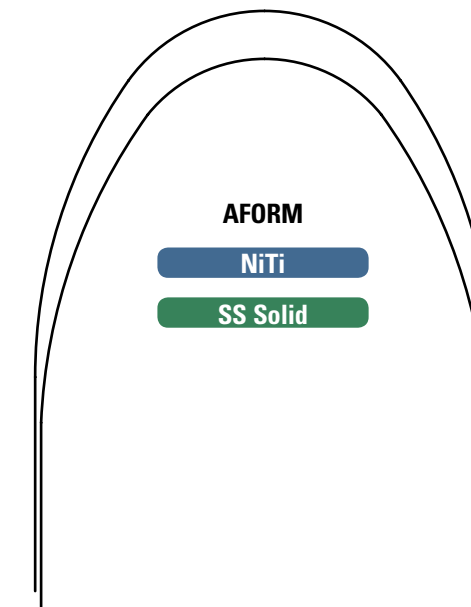
INTERNATIONAL (INT)

NiTi

βIII-CNA®

SS Solid

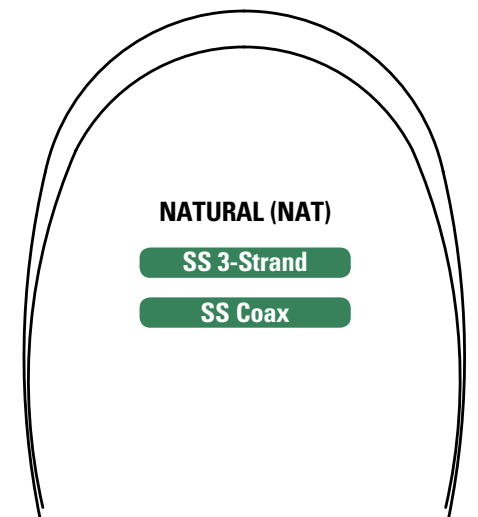
SS 8-Braid



AFORM

NiTi

SS Solid



NATURAL (NAT)

SS 3-Strand

SS Coax

Materials

Archwires are available in materials indicated within each form. Product pages are similarly color-coded, by material, for ease of reference.

Arch Forms

Line drawings indicate nominal arch forms.

- Where Upper (Maxillary) and Lower (Mandibular) arch forms differ, Lower arch is drawn within Upper arch form.
- Dotted lines indicate extended leg length of Stainless Steel and *βIII-CNA* arch forms where length is longer than NiTi arch form leg length.

Lengths and Spooled Wire

- Nickel Titanium wire is available in 7 inch lengths.
- Stainless Steel and *βIII-CNA* wire are available in 14 inch lengths.
- Stainless Steel 3-Strand and Coax wire are available for purchase in 30 foot spools.

Pre-stopped Archwire



- **Pre-stopped Archwires:** Cobre™ Copper Nickel Titanium and most other Nickel Titanium archwires are available pre-loaded with two lightly crimped tube stops. These provide the clinician with easy placement of stops along the archwire to control wire movement.

Centermarks



- **The Dimple® Centermark** is available on our Nickel Titanium archwires. This vertical protrusion, which is placed at the centerline of the wire, helps prevent the archwire from sliding through the bracket or out of the buccal tube. This feature also eliminates cinching behind the buccal tubes. The Dimple is still an efficient, economical way to prevent archwire slipping.



- **Permanent Etch:** Etch markings denote centerline of Stainless Steel and *βIII-CNA* archwires. It is also available on Nickel Titanium archwires. Three (3) lines denote upper arch, single line denotes lower arch.

Form your future with these options for your *Cobre™ Copper NiTi and Nickel Titanium wires!*

Custom Packaging

Set yourself apart from the competition with custom packaging!

Choose from a variety of custom packaging options to meet your needs and budget. Pick the one that serves you best in promoting your brand.

From Single pack archwires, in custom, 4-color process cartons...

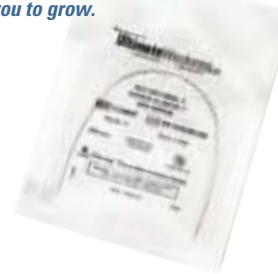
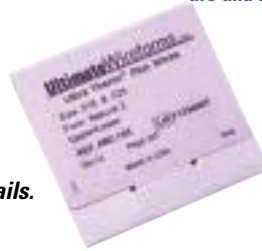
To black print on colored envelopes...

To 4-color process print labels...

Build your NiTi business with our help!
See the Custom Packaging section for the possibilities or call Customer Service for full details.



We can meet you where you are and help you to grow.



Pre-Stopped Archwires



Two crimpable tube stops are pre-loaded and lightly crimped on archwires to provide the clinician with easy positioning along the arch. With only a light crimp, the tube stops are secured in place.

- Tube stops help to control wire movement along the arch.
- Convenient alternative to cinching.
- Two bright, fully annealed 304SS 2mm long stops pre-crimped per archwire.
- Small tubes (ID of .019") are pre-installed on round* wires.
- Large tubes (ID of .031") are pre-installed on square* and rectangle* wires.

Pre-installed tube stops!

Material Available in all *Cobre* Copper NiTi and NiTi arches

Wire Sizes*

Round: .012 through .018

Square: to a maximum of .020 x .020

Rectangle: .014 x .025 through .019 x .025

Pre-Stopped Archwire offering is indicated by:



Custom Packaging available. See Custom Packaging section.

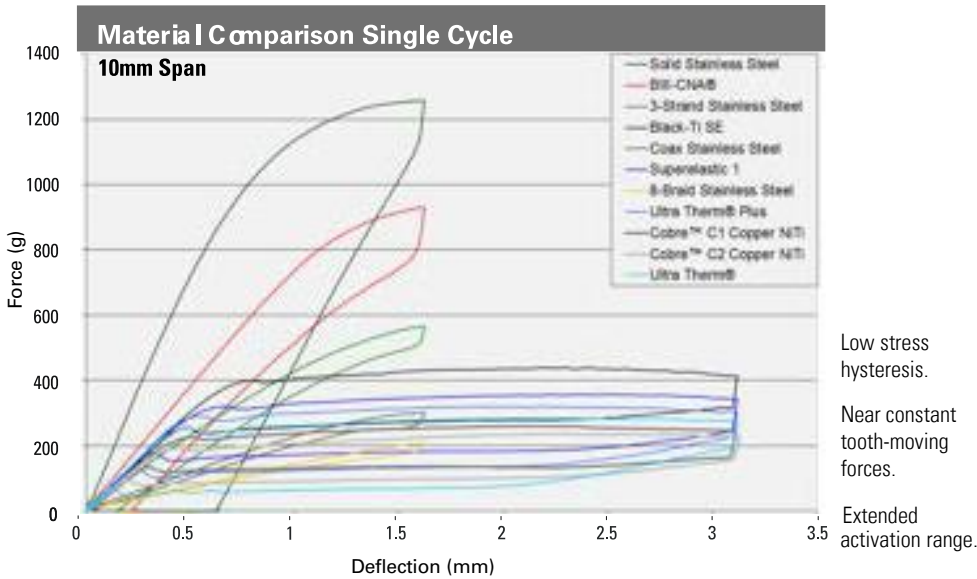


Cobre™ Copper Nickel Titanium Wire

The *better* Copper NiTi wire.

The addition of Copper to the Nickel Titanium alloy creates a material that exhibits lower hysteresis and more constant force throughout treatment.

Our **three-series Cobre Copper Nickel Titanium** wire provides expected in-the-hand bend performance; gentle, consistent, and efficient tooth-movement; and controlled transformation temperatures.



Cobre Copper NiTi is made from our own Copper NiTi alloy with the same nominal chemical composition as the original competitive wire. It provides **marked control over tooth-moving loads** within each lot, from lot-to-lot, and in relation to wire size progression.

Cobre Copper Nickel Titanium archwires are available in three series, each with distinctly different load characteristics.

Cobre C1: Our higher force levels.

Cobre C2: Our middle force levels.

Cobre C3: Our lower force levels.

Ultimate's engineers designed our **Cobre Copper Nickel Titanium** archwires to provide consistent results everytime! It's simply the *better* Copper NiTi wire!

Contents

Cobre C1 (higher force) Archwires

Cobre C2 (medium force) Archwires

Cobre C3 (lowest force) Archwires

⚠ WARNING:
Nickel Titanium products contain nickel.

Wire Dimensions are in inches unless otherwise noted.

Metric conversions may be found in the Reference section.

Cobre™ Copper Nickel Titanium



Our engineers set out to develop a *better* Copper NiTi and the results are impressive! **Cobre Copper Nickel Titanium archwires**, through **controlled unloading (tooth-moving) forces**, provide the clinician with consistent results. Our three-series **Cobre Copper NiTi** exhibits near-constant forces that are appropriate at nearly every stage of treatment.

The addition of Copper to the Nickel Titanium alloy **narrows the hysteresis**, or difference between exhibited loading and unloading forces for the 'expected' feel of wire. **Easy to ligate and great cyclical ductility.**

Cobre Copper Nickel Titanium wires are available in three series, each with distinct load characteristics.

Cobre C1 Our highest force levels.

Cobre C2 Our middle force levels.

Cobre C3 Our lower force levels.

- **Marked control over tooth-moving loads** within each lot, from lot-to-lot, and in relation to wire size progression
- Improved ductility while maintaining forces
- Provides controlled, expected feel in doctors' hands
- Offers a smooth progression of transformation temperature from wire to wire series (C1 → C2 → C3)

Cobre Copper NiTi Wire Transformation Temperature

C	C	C
23-28°C	28-33°C	33-38°C

- Similar smooth surface finish as other CuNiTi wires on the market and Ultimate's binary NiTi wire.

Marked control over tooth-moving loads! Improved ductility!

Arch Forms NAT2, GLOBL, and OPTMA™ (C1 and C2 only).

Forces C1 (higher), C2 (medium), and C3 (lower). All low tooth-moving forces.

C1 archwires					
Wire Sizes	Round:	.013	.014	.016	.018
	Rectangle:	.014 x .025	.016 x .022	.016 x .025	.017 x .025 .018 x .025 .019 x .025

C2 archwires					
Wire Sizes	Round:	.016	.018		
	Square:	.017 x .017	.020 x .020		
	Rectangle:	.016 x .022	.017 x .025	.018 x .025	.019 x .025 .021 x .025

C3 archwires				
Wire Sizes	Rectangle:	.016 x .022	.017 x .025	.019 x .025 .021 x .025

Pre-Stopped Available with crimpable tube stops.



Centermark The Dimple® or Etch Centermark.



Custom Packaging available. See Custom Packaging section.



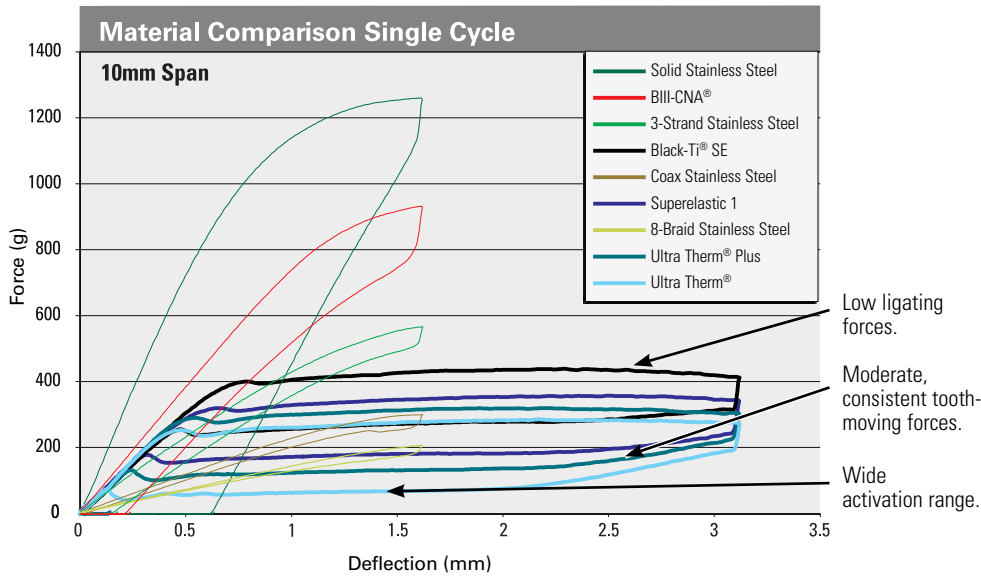
Force graphs of **Cobre™ Copper NiTi** wires may be found in the **Technical Data** section.

Nickel Titanium Wire

The **Ultimate** wire for early and mid-stage treatment.

Superelastic and **Shape Memory** characteristics provide greater patient comfort, easier ligation, and longer activation time.

Moderate forces and a longer activation range allow Nickel Titanium rectangle wire to be used earlier in treatment and to move teeth over a longer period of time.



Through tight control on raw material and our production processes, we are able to offer a variety of consistent tooth-moving forces ranging from moderate (Superelastic) to light (Heat-activated/Thermal). Heat-activated wires are soft and pliable at room temperature, allowing the doctor to easily ligate each patient while still obtaining the proper forces during treatment.

Nickel Titanium Forces (from Moderate to Light)

Black-Ti Superelastic (SE)

Superelastic 1 (SE1)

Ultra Therm Plus: Heat-activated

Ultra Therm: Heat-activated

Gradient-3: Heat-activated multi-force archwire with three forces designed into the wire; the lightest force at the anterior region, slightly higher force in the cuspid region, and highest force in the posterior region.

With Nickel Titanium’s added resiliency, there may be a tendency to over-stress the wire during ligation. To assist your customers in knowing just how far they can bend our NiTi wires, we have created a guide for their reference. The **Nickel Titanium Maximum Bend Angle Guide** can be found in the **Technical Data** section of the catalog.

Contents

Pre-Stopped Archwires

Black-Ti® Superelastic (SE)
Archwires

Superelastic 1 Archwires, Lengths,
and Spools

Ultra Therm® Plus Archwires

Ultra Therm® Archwires
and Lengths

Gradient-3® Archwires

Reverse Curve of Spee Archwires
Superelastic & Ultra Therm

Torqued Arches

CTA® Arches

Utility Arches

⚠ WARNING:

Nickel Titanium products contain nickel.

Wire Dimensions are in inches unless otherwise noted.

Metric conversions may be found in the Reference section.

Black-Ti®



Lower friction equates to faster results! No question about it, Ultimate's **Black-Ti** Nickel Titanium wire produces **30% less friction** between bracket and wire than traditional Nickel Titanium wire! The ultra smooth, hard black surface allows your customers to get to the finishing stage sooner by providing better sliding mechanics in early and mid-stage treatment. The shiny surface is nearly indistinguishable from regular NiTi in the mouth.

Black-Ti Nickel Titanium wire is the choice for your doctors' superelastic needs. Not only does the surface allow teeth to move faster but **Black-Ti** is our highest force Nickel Titanium offering.

- Reduces sliding friction by 30%.
- Our highest force NiTi wire offering.
- Excellent resiliency.
- The ultra smooth, hard surface is an integral part of the NiTi wire. No coating to chip or flake.
- Similar in appearance to regular NiTi wires when in the mouth.
- More economical than other friction-reducing archwires on the market.

30% Less Friction!

Arch Forms	NAT2, GLOBL, INT, OPTMA™, AFORM.					
Forces	SE (Superelastic).					
Wire Sizes	Round:	.012	.014	.016	.018	.020
	Square:	.016 x .016				
	Rectangle:	.014 x .025	.016 x .022	.016 x .025	.017 x .025	.018 x .025
		.019 x .025	.021 x .025			

Centermark All **Black-Ti** Archwires are centermarked with the Dimple® Centermark.

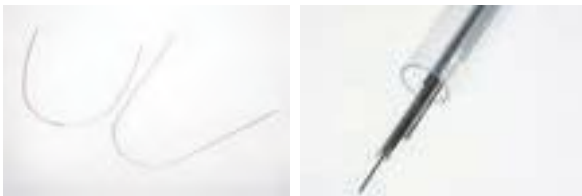


Custom Packaging available. See Custom Packaging section.



Force graphs of Black-Ti wires may be found in the Technical Data section.

Superelastic 1



Along with low-friction Black-Ti® wire, **Superelastic 1 (SE1)** wire rounds out Ultimate's austenitic Nickel Titanium wire line. The **moderate, consistent forces** exhibited by **SE1** wire provide a great avenue for early to mid-stage treatment. It provides slightly less force than our Black-Ti wire, and is fully austenitic at room temperature. Due to its high flexibility and resiliency, Ultimate's **Superelastic 1** wire recovers beautifully from bends and deformation of angles up to 45°, and even up to 75° in some cases!

- Moderate, consistent force over a long activation period.
- Greater patient comfort than with stainless steel wires.
- Excellent resiliency.
- Highly flexible.
- Responsive to chilling.
- A_f of 45-60° F (7.2-15.6°C).
- Square and Rectangle wires offer ability to simultaneously level and add torque and rotation earlier in treatment. More efficient than treatment with stainless steel.

High flexibility and resiliency!

Arch Forms	NAT2, GLOBL, STD, OPTMA™, and INT.					
	Superelastic Nickel Titanium wire is also available in 7 in. lengths and 15 in. spools.					
Forces	Superelastic 1.					
Wire Sizes	Round:	.012	.014	.016	.018	.020
		(.013 available in NAT2, GLOBL, and OPTMA.)				
	Square:	.016 x .016	.018 x .018	.020 x .020		
	Rectangle:	.014 x .025	.016 x .022	.016 x .025	.017 x .025	.018 x .025
		.019 x .025	.021 x .025			

Pre-Stopped Available with crimpable tube stops.



Centermark The Dimple® or Etch Centermark.



Custom Packaging available. See Custom Packaging section.



Force graphs of Superelastic 1 wires may be found in the Technical Data section.

Ultra Therm® Plus



Ultra Therm Plus is our specially developed heat-activated Nickel Titanium wire with consistent A_f performance and moderate forces. The ligating and tooth-moving forces of **Ultra Therm Plus** fall between our moderate force Superelastic 1 and light force Ultra Therm wires. This is an easy wire to work with plus the optimal forces deliver great results!

- Forces fall directly between Superelastic 1 and Ultra Therm wires, providing optimal midrange load characteristics.
- Very consistent A_f of 65-75°F (18.3-23.9°C). Every production lot of Ultra Therm Plus is water bath tested to verify the A_f .
- Ultra Therm Plus wire is slightly thermal at room temperature for easy ligation.
- Responsive to chilling.
- Excellent resiliency.

Moderate force, heat-activated wire!

Arch Forms	NAT2, GLOBL, INT, and OPTMA™.					
Forces	Ultra Therm Plus.					
Wire Sizes	Round:	.012	.014	.016	.018	.020
		(0.012 and 0.020 OPTMA not available.)				
	Square:	.016 x .016	.018 x .018	.020 x .020		
	Rectangle:	.014 x .025	.016 x .022	.016 x .025	.017 x .025	.018 x .025
		.019 x .025	.021 x .025			

Pre-Stopped Available with crimpable tube stops.



Centermark The Dimple® or Etch Centermark.

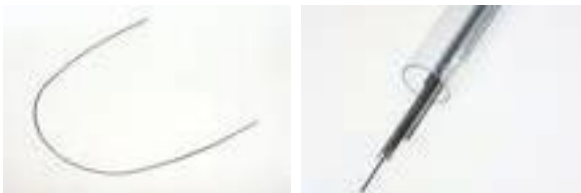


Custom Packaging available. See Custom Packaging section.



Force graphs of Ultra Therm Plus wires may be found in the Technical Data section.

Ultra Therm®



Ultra Therm is a heat-activated (thermal) wire specifically designed for consistent A_f performance and low tooth-moving forces. Ultra Therm wire provides outstanding resiliency and exhibits true thermal performance. Soft at room temperature and in the doctor's hand, **Ultra Therm** allows for easy ligation. Outstanding shape integrity.

- Specially designed wire for consistent A_f performance.
- Every production lot of Ultra Therm wires is water bath tested to verify A_f of 80-90°F (26.7-32.2°C).
- Soft at room temperature; very easy to ligate.
- Great resiliency.
- Slightly lower forces than Ultra Therm Plus.
- Ideal for significant crowding cases.
- Gentle forces provide for greater patient comfort.
- Very responsive to chilling.
- Square and Rectangle wire sizes provide low, consistent tooth-moving forces to address torque control early in treatment.

Lowest forces, heat-activated.

Arch Forms	NAT2, GLOBL, INT, OPTMA™.					
	Ultra Therm Nickel Titanium wire is also available in 7 inch lengths in select wire sizes.					
Forces	Ultra Therm.					
Wire Sizes	Round:	.012	.014	.016	.018	.020
		(0.012 and 0.020 OPTMA not available.)				
	Square:	.016 x .016	.018 x .018	.020 x .020		
	Rectangle:	.014 x .025	.016 x .022	.016 x .025	.017 x .025	.018 x .025
		.019 x .025	.021 x .025			

Pre-Stopped Available with crimpable tube stops.



Centermark The Dimple® or Etch Centermark.



Custom Packaging available. See Custom Packaging section.



Force graphs of Ultra Therm wires may be found in the Technical Data section.

Gradient-3®



Ultimate's R&D Department has developed the 'ultimate' wire for optimal performance and patient comfort. **Gradient-3** archwires are produced under strict manufacturing controls to provide **three distinct heat-activated (thermal) forces through the arch**, while maintaining superior shape integrity!

- **Three heat-activated, biological forces designed for effective tooth movement within specified regions.**

Graphs depicting the forces of the **anterior, bicuspid, and posterior regions**, for each wire size, may be found in the Technical Data Section.

- **Thermal throughout the arch.**

Median A_f temperatures range from 85°F/ 29.4°C for the anterior region to 66°F/18.9°C for the posterior region. The median A_f temperature for the bicuspid region falls between these values, approximately 76°F/24.4°C.

- **Superior shape integrity.**

Three heat-activated forces in one wire!

Arch Form	NAT2, GLOBL				
Forces	Three heat-activated forces, specially designed to apply appropriate force for anterior, bicuspid, and molar regions.				
Wire Sizes	Round:	.016	.018		
	Square:	.016 x .016	.018 x .018	.020 x .020	
	Rectangle:	.016 x .022	.017 x .025	.018 x .025	.019 x .025 .021 x .025

Pre-Stopped Available with crimpable tube stops.



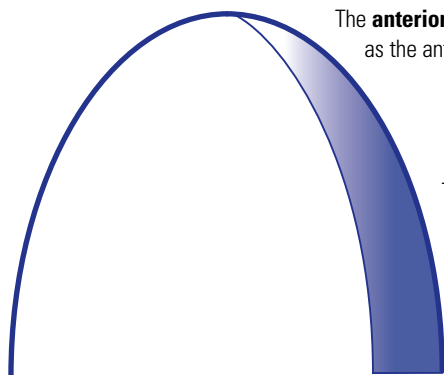
Centermark The Dimple® or Etch Centermark.



Custom Packaging available. See Custom Packaging section.



Force graphs of Gradient-3 wires may be found in the Technical Data section.



The **anterior region** has the **lowest heat-activated force**, as the anterior teeth have the lightest roots.

The **bicuspid region** has a **slightly greater heat-activated force** to move the larger rooted bicuspids.

The **posterior region** has the **greatest heat-activated force** of the archwire for moving the strong-rooted molars.

Reverse Curve of Spee

Ultimate offers five **Reverse Curve of Spee (RCS)** archwire shapes to meet your correction of curve of spee needs. All are carefully finished to ensure that the wire slides easily through the bracket slot and applies continuous force for ideal movement. **RCS** can be used for bite correction or, with springs and elastomers, for retraction.

Available in both Superelastic 2 and heat-activated Ultra Therm® forces.

Superelastic 2 RCS wires provide light to moderate, constant forces. These wires are flexible and exhibit excellent resiliency.

Ultra Therm RCS are shape-memory, heat-activated wires which are soft at room temperature for easy ligation and become fully active in the mouth. The gentle forces remain consistent throughout placement and are noticeably more comfortable for the patient. The superb flexibility reduces the chance of debonding brackets.

- **Bite opening or closing.**
- **Initial leveling and aligning.**
- **Arch consolidation and expansion.**
- **Deep and open bite correction.**
- **Retraction of flared, protruding incisors.**

Arch Forms **RCS1, 3, 4, 5, and 6**

Forces	Superelastic 2 (SE2)					
	Ultra Therm (Not available in RCS4)					
Wire Sizes	Round:	.012 (SE2 only)	.014	.016	.018	.020
	Square:	.016 x .016	.018 x .018	.020 x .020		
	Rectangle:	.016 x .022	.016 x .025	.017 x .025	.018 x .025	.019 x .025
		.021 x .025				

Centermark The Dimple® or Etch Centermark.



Custom Packaging available. See Custom Packaging section.



RCS1

RCS1 is our most popular Reverse Curve of Spee archwire. The moderate radius exerts ideal force for correction of severe curve of spee cases. This shape offers a deeper 'rocking chair' radius than our RCS3 archwire.



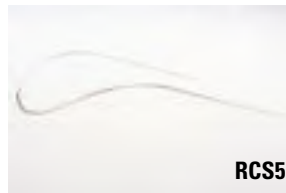
RCS3

RCS3 provides a 'shallower' radius than our RCS1 archwire and, thus, provides a lighter force. It is easier to ligate and provides gentler, more comfortable tooth movement.



RCS4

RCS4 has a much tighter arch form and 'toed-in' molar section, providing the capability of molar rotation and re-alignment. This is our most aggressive tooth-moving RCS due to the tight radius.



RCS5

RCS5, our specialty arch, with its sweeping, straight legs provides multiple solutions. RCS5 is the answer for tilting back molars for anchorage purposes. It easily puts curve of spee on the upper arch and can be used to torque the molars buccally. Intrusion or extrusion of anterior teeth can also be accomplished. When flipped, it can be used to expand the lower arch. This is truly a multi-function arch!



RCS6

RCS6 is a blend of RCS1 and RCS4; an arch with slightly shallower 'rocking chair' radius than the RCS1, but not as narrow as the RCS4. The RCS6 arch is perfect for bite opening and closing, leveling and aligning, and deep and open bite correction. This shape is popular in Europe and Asia.

Torqued Arches



Nickel Titanium Torqued Arches are full-sized NiTi archwires with the anterior section pre-torqued to 20°. These specialized, preformed wires allow for the addition of torque into the anterior region while maintaining non-torque in the posterior regions.

- Provides 20° anterior torque.
- Three anterior torque segment widths available.
- Early introduction of torque in upper centrals and laterals.
- Provides uprighting torque in the lower anterior segment.
- Labial or lingual torque forces available by reversing wire orientation.
- Ideal for passive, self-ligating bracket systems.
- Nickel Titanium provides lower forces compared to Stainless Steel alternatives, as well as shape memory benefits of better resiliency and longer activation range.

No time-consuming chairside bending!
Precision anterior torque formed into the arch.

Arch Form NAT2

Force Superelastic 1

Anterior Segments & Associated Centermark:
 28mm (Lower), Single-Line Etch Centermark
 34mm (Upper), 2-Line Etch Centermark
 38mm (Upper), 3-Line Etch Centermark

Wire Sizes .016 x .022 .017 x .025 .018 x .025 .019 x .025 .021 x .025
 .016 x .025 available in 34 and 38 only

Etch line on arch leg provides reference of torque during placement.

Custom Packaging available. See Custom Packaging section.



Connecticut Intrusion Arches (CTA®) - Nickel Titanium



Ultimate's CTA (Connecticut Intrusion Arches) is a great tool for providing absolute intrusion of anterior teeth, molar tipback, incisor flaring, leveling of anterior occlusal cants, and more! CTA are available in either Nickel Titanium or nickel-free β III-CNA®, in both maxillary and mandibular forms.

Force can be adjusted by increasing or decreasing the bend at the posterior leg of the arch.

- Provides moderate, continuous forces over large activation range.
- Superelastic qualities.
- For adult or mixed dentition.
- Can be followed by β III-CNA CTA treatment, particularly in adults.

Provides absolute intrusion!

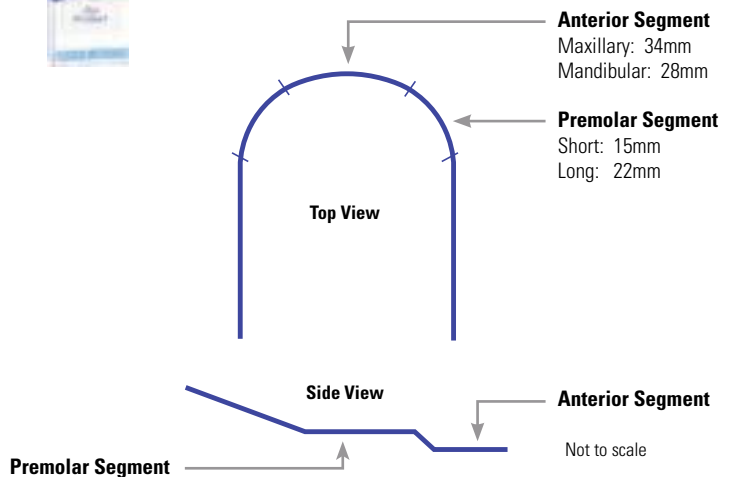
Material Nickel Titanium
 See also β III-CNA® CTA®.

Arch Form CTA form is specially designed for maximum efficiency.

Anterior Segment Lengths:
34mm: Maxillary
28mm: Mandibular
Premolar Segment Lengths:
Short: 15mm
Long: 22mm

Wire Sizes .016 x .022 .017 x .025

Custom Packaging available. See Custom Packaging section.



Utility Arches



Multi-purpose archwire provides focused treatment of anterior or posterior segments. Our **NiTi Utility Arch** is made of five high quality parts; a precision NiTi anterior segment with preformed step, adjusting tubes made of 316L stainless steel, and .016" x .016" preformed legs of 304V stainless steel. Our NiTi anterior version provides comfortable, moderate tooth-moving forces. (Also available in a Type 304SS anterior segment version.)

- Perfect for leveling of the arch.
- Uprighting of the molars can be achieved with ease.
- Can provide lower incisor intrusion.
- Variety of precision anterior segment lengths.
- Adjustable tube/leg for customized canine/premolar distance.

Multi-purpose archwire!

Material Nickel Titanium anterior segment with stainless steel tubes and legs.
(See also Stainless Steel Utility Arches)

Arch Form **Utility Arch Shape is specially designed for maximum efficiency.**
The anterior segment is similar to the anterior of our NAT2 arch form.

Anterior Segment Lengths

Lower:	24mm	28mm	
Upper:	34mm	38mm	42mm

Wire Sizes **Round** .016 .018

Square .016 x .016

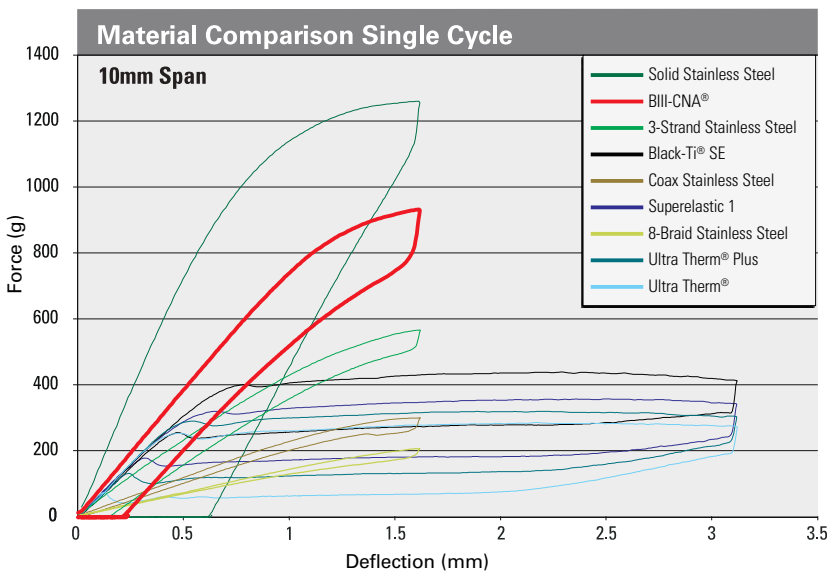
Utility Arches do not carry a centermark.

β III-CNA® Wire

Twice the elastic movement of stainless steel! Formability that rivals stainless steel!

Get twice the tooth-moving distance than stainless steel wire at the same level of force, with a β III-CNA® archwire.

Its greater elasticity (vs. stainless steel), greater ductility (vs. NiTi), and moderate tooth-moving forces (vs. stainless steel) make it a great wire to follow NiTi treatment. Longer activation time and better patient comfort in a Nickel-free wire. Time to replace your stainless steel wires for **a proven performer for mid-through finishing stages!**



Easy placement of bends and loops at chairside saves time! β III-CNA wire bendability makes it the **perfect wire for custom tipping, aligning, space closure, rotation, and tooth movement.** The resiliency and moderate tooth-moving force of β III-CNA makes it a great wire for mid- to late stages of treatment.

Working directly with our vendors to draw and roll our own β III-CNA wire to our tight quality specifications ensures that every archwire you purchase has **consistently great formability and accurate activation range.**

Along with preformed arches and specialized archwires, we offer a wide variety of β III-CNA **14 inch lengths.** Large, round wire lengths are ideal as retainer wire in the **fabrication of retention appliances and transpalatal/palatal arches.** The formability and resiliency of the rectangle and small, round lengths allow **for custom fabrication of molar distalizing appliances, spring arches, sectional arches, and other devices where intricate loops and bends are needed.**



Contents

β III-CNA Archwires and Lengths

β III-CNA CTA® Arches

β III-CNA Looped Arches

An Arch Form Chart is located at the beginning of the Wire section.

Wire Dimensions are in inches unless otherwise noted.

Metric conversions may be found in the Reference section.

Solid



βIII-CNA® wire is becoming **the wire of choice for mid-through finishing stages of treatment**. This **nickel-free wire** offers **twice the elastic movement of stainless steel, while maintaining like formability**. With lower bend force levels than stainless steel, it provides more comfort for the patient as well as ease of use by the clinician. Its formability is ideal for chairside placement of loops and bends for space closure, tipping, or focused tooth movement. Lengths are perfect for fabrication of auxiliaries arches, retainer and palatal appliances, as well as devices requiring intricate bends or loops.

- A far more efficient wire than stainless steel, with twice the tooth-moving distance at the same force level!
- More patient friendly: Bend Force values between NiTi and SS.
- Excellent cold-forming properties – comparable with SS.
- Ni-free! Eliminates nickel-sensitivity concerns during later stage use of larger wires and longer time periods.

Nickel-free and excellent formability.

Arch Forms NAT2L, GLOBL, INT, and OPTMA™.

βIII-CNA® wire is also available in 14 inch lengths for custom fabrication applications.

Archwire

Sizes	Round:	.016	.018			
	Square:	.016 x .016	.018 x .018			
	Rectangle:	.016 x .022	.017 x .025	.018 x .025	.019 x .025	.021 x .025
OPTMA available only in		.016 x .022	.016 x .025	.017 x .025	.018 x .025	.019 x .025

Length

Wire Sizes All of the above wire sizes, as well as .027, .032, .036

Centermark Permanent Etch Centermark.



Custom Packaging available. See Custom Packaging section.



Force graphs of βIII-CNA® wires may be found in the Technical Data section.

Connecticut Intrusion Arches (CTA®) - βIII-CNA®



Ultimate's CTA (Connecticut Intrusion Arches) is a great tool for providing absolute intrusion of anterior teeth, molar tipback, incisor flaring, leveling of anterior occlusal cants, and more! CTA are available in either Nickel Titanium or nickel-free βIII-CNA, in both maxillary and mandibular forms.

Force can be adjusted by increasing or decreasing the bend at the posterior leg of the arch.

βIII-CNA CTA

- **Nickel-free βIII-CNA wire.**
- Recommended for use in adult patients.
- Ideal for following NiTi CTA treatment.
- Ideal for extraction patients treated with sliding mechanics; the wire can be used for intraoral anchorage.

Provides absolute intrusion!

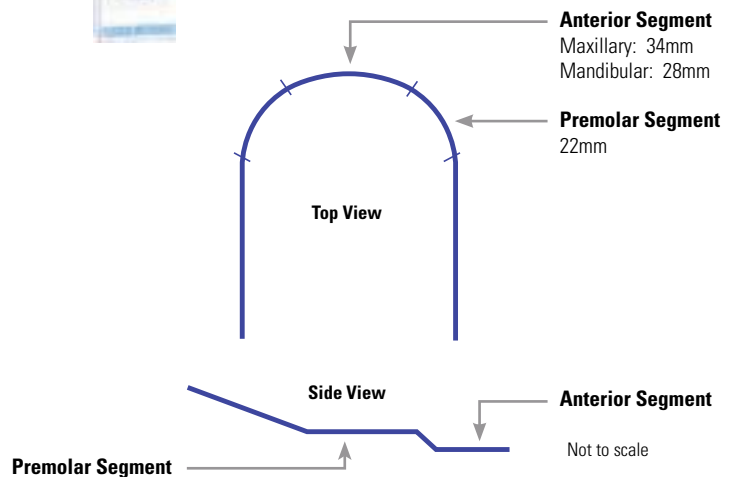
Material βIII-CNA®
See also NiTi CTA®

Arch Form CTA form is specially designed for maximum efficiency.

Anterior Segment Lengths:
34mm: Maxillary
28mm: Mandibular
Premolar Segment Lengths:
Long: 22mm

Wire Sizes .016 x .022 .017 x .025

Custom Packaging available. See Custom Packaging section.



βIII-CNA® Looped Arches



Mushroom Looped 2-Loop Archwires

βIII-CNA Looped Arches, with preformed Mushroom Loops, are constructed of our nickel-free Beta Titanium alloy to provide consistent, gentle forces throughout treatment.

βIII-CNA Looped Arches provide significant benefits over stainless steel looped archwires.

Product Features

- Nickel-free Beta Titanium.
- Bendable.
- Smooth, polished surface.
- Less force.
- Larger activation range.
- Gradual force decay.

Treatment Benefits

- Space closure.
- Provides anterior intrusion/retraction.
- Allows torque or root movement of incisors.
- Control of root position of posterior teeth.
- Pre-formed loops and consistent force reduce chair time.
- Archwire segments can be activated independently.

Nickel-free and Preformed! Large activation range.

Arch Form NAT2 Upper and Lower (proportional with the anterior loop spacing), with 2 Anterior Loops
 24-30mm Lower arch form
 32-56mm Upper arch form

Wire Sizes .016 x .022 .017 x .025 .019 x .025

Anterior Loop Spacing (measured from center of loops)

Mushroom Looped: 24mm – 42mm, in 2mm increments, & 46mm, 52mm, and 56mm



Mushroom Looped 2-Loop Archwires

Unique design provides these benefits over traditional T-Looped archwires:

- Better activation.
- More consistent force.
- More comfort for patient.
- Tissue friendly.
- Proportionally-shaped loops for upper and lower archwires.

Custom Packaging

Set yourself apart from the competition with custom packaging!

Choose from a variety of custom packaging options to meet your needs and budget. Pick the one that serves you best in promoting your brand.

From Single pack archwires, in custom, 4-color process cartons...

To black print on colored envelopes...

To 4-color process print labels...



We can meet you where you are and help you to grow.



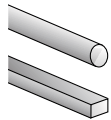
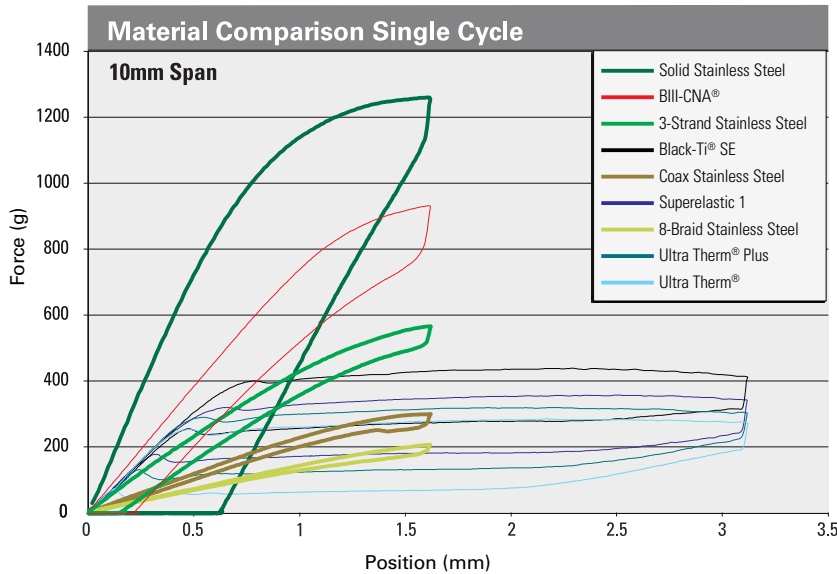
Build your βIII-CNA® business with our help!

See the Custom Packaging section for the possibilities or call Customer Service for full details.

Stainless Steel Wire

Ultimate's Stainless Steel wire products, manufactured of medical grade stainless materials, have **smooth surfaces, accurate forms, and consistent forces to provide reduced friction and precise torque control.**

Stainless Steel wire offerings have evolved from the original solid to include various strand options which provide more flexibility and lighter forces.



Solid Wire

Round, Square, and Rectangular archwires are formed from high quality, high-luster Type 304VSS wire. Tight controls ensure consistent shape and flatness. High tensile strength and high modulus of elasticity. Straight lab lengths produced from high quality Type 302SS.



3-Strand Flat Lingual Retainer Wire

Thin, flat, fully-annealed wire formed from 3-strand Type 302SS wire. Bonds easily to retain tooth position.



3-Strand

Three twisted strands of fine, round Type 302SS that form a single wire to provide light forces, good flexibility, and resiliency.



Coax (6 Strand)

Five strands of very fine Type 302SS wrapped around a single core wire. Light ligating and tooth-moving forces.



8-Braid

Eight equal-sized Type 302SS braided into a tight matrix and rolled to the popular rectangular sizes to provide gentle tooth-moving forces for finishing stages. In general, these offer the lightest force of the Stainless Steel wires. Resists fraying when cut.

Proper wire characteristics are key in achieving treatment goals. Ultimate takes pride in offering high quality, high-luster archwires with consistent forces. Refer to the **Technical Data** section for **Force Graphs and Bending Forces** of Ultimate's Stainless Steel wires.

Contents

- Solid Stainless Steel** Archwires and Lengths
- 3-Strand Lingual Retainer** Lengths
- 3-Strand** Archwires, Lengths, and Spools
- Coax (6-Strand)** Archwires, Lengths, and Spools
- 8-Braid** Archwires and Lengths
- Looped Arches**
- Utility Arches**

WARNING:
Stainless Steel products contain nickel.

An Arch Form Chart is located at the beginning of the Wire section.

Wire Dimensions are in inches unless otherwise noted.

Metric conversions may be found in the Reference Section.

Set yourself apart from the competition with custom packaging!

Package all of your wire products in custom packaging to project your business image as rooted and strong. Choose from a variety of custom packaging options to meet your needs and budget. Pick the one that serves you best in promoting your brand.

From Single pack archwires, in custom, 4-color process cartons...

To black print on colored envelopes...

To 4-color process print labels...

We can meet you where you are and help you to grow.



Don't stop with just custom archwire packaging! Your whole product line can benefit from an image boost. Stainless steel lengths and spools can be custom labeled with your logo and colors, too. See the Custom Packaging section for the possibilities or call Customer Service for full details.

Solid



Ultimate's Solid Stainless Steel archwires are produced of high quality medical grade Type 304VSS material with highly polished surfaces to provide reduced friction between bracket and arch. Their high forces are well-suited for stabilizing positioned teeth during mid- to late stages of treatment. Rectangular wires offer precise torque control for these same stages.

Solid Stainless Steel Lengths (14") produced of high quality Type 302SS material have a smooth finish and are available in a wide range of wire sizes for custom appliance fabrication.

- Superior smooth, bright finish.
- Precise shape and flatness of arches is ensured through tight production control.
- Best suited as finishing wire, as forces drop quickly as teeth move.
- Easy bend placement.
- Good corrosion resistance.

Force graphs of Stainless Steel wires may be found in the Technical Data section.

Ultra-smooth surface and high forces

Arch Forms NAT2, GLOBL, STD, INT, AFORM, and OPTMA.
Solid Stainless Steel wire is also available in 14 inch lengths for custom-forming appliances.

Forces See Technical Data section for force graphs and bending forces of our Bright Stainless Steel wires.
Slightly higher tensile strength and load is available with our Gold-tone wires.

Archwire Wire Sizes		Round:	.012	.014	.016	.018	.020
Square:		.016 x .016	.017 x .017	.018 x .018	.020 x .020		
Rectangle:		.016 x .022	.016 x .025	.017 x .022	.017 x .025	.018 x .022	.018 x .025
Length (14") Wire Sizes		Round:	.012	.014	.016	.018	.020
			.022	.024	.025	.026	.028
			.030	.032	.036	.040	.045
				.051	.056	.060	
Square:		.016 x .016	.017 x .017	.018 x .018	.019 x .019	.020 x .020	
Rectangle:		.016 x .022	.017 x .022	.017 x .025	.018 x .022		
		.018 x .025	.019 x .025	.021 x .025			

Centermark Permanent Etch marking.



Custom Packaging available. See Custom Packaging section.



3-Strand Flat Lingual Retainer



A bonded, flat wire for permanent or semi-permanent retention of tooth position. Bonded to the lingual surface, this is unobtrusive, aesthetic, and requires little patient cooperation.

- Fully annealed 302SS 3-strand wire; allows intricate formation.
- Comparable bend ductility to 8-braid retainer wire on the market.

3-Strand Flat Lingual Retainer

Thin, flat 3-Strand Stainless Steel wire.

Wire Sizes .010 x .028 in 6 inch lengths

Sold in packs of ten per tube.

3-Strand



Ultimate's 3-Strand wires are made of three equal-sized medical grade Type 302SS wires twisted into a single, fine wire to provide moderate tooth-moving forces. Three-Strand Stainless Steel archwires are best-suited for initial alignment and the finishing stage of treatment.

- Bright surface finish.
- Moderate force, but drops quickly as teeth move.
- Moderate resiliency; measurably better than Solid Stainless Steel wire.

Arch Forms NAT.

(3-Strand Stainless Steel wire is also available in 14 inch lengths
Round 3-Strand Stainless Steel wire is available in 30 foot spools.)

Forces See Technical Data section for force graphs.

Wire Sizes Round: .0155 .0175 .0195 .0215

Square: .016 x .016

Rectangle: .016 x .022 .017 x .025 .018 x .025 .019 x .025

Centermark Permanent Etch marking.



Custom Packaging available. See Custom Packaging section.



Force graphs of 3-Strand Stainless Steel wires may be found in the Technical Data section.

Coax (6-Strand)



Coax wire is made of five equal-size wires wrapped around a single, same-size core wire. Manufactured of high quality medical grade Type 302SS. Offers low to moderate forces and relatively good resiliency. Appropriate for use in early or late treatment stages.

- Bright finish.
- Low to moderate forces.
- Good for initial alignment.
- Relatively good resiliency.
- Short activation time, as forces drop quickly as teeth move.

Arch Forms STD and NAT.

(Coax Stainless Steel wire is also available in 14 inch lengths and 30 foot spools.)

Force See Technical Data section for force graphs.

Wire Sizes Round: .0155 .0175 .0195 .0215

Centermark Permanent Etch marking.



Custom Packaging available. See Custom Packaging section.



Force graphs of Coax Stainless Steel wires may be found in the Technical Data section.

8-Braid



Ultimate's 8-Braid wires are made of eight fine, equal-sized Type 302SS wires braided tightly and rolled to the most popular square and rectangle wire sizes. 8-Braid Stainless Steel archwires combine high resiliency and low tooth-moving forces. Best for early and late treatment stages.

- High resiliency.
- Easy to ligate.
- Low forces.
- Does not fray when cut.
- Great for aligning and for finishing.
- Rectangle wires can be used for added torque control.

Arch Forms NAT2, STD and INT.

(8-Braid Stainless Steel wire is also available in 14 inch lengths.)

Forces See Technical Data section for force graphs.

Wire Sizes Square: .016 x .016

Rectangle: .016 x .022 .017 x .025 .018 x .025 .019 x .025 .021 x .025

Centermark Permanent Etch marking.



Custom Packaging available. See Custom Packaging section.



Force graphs of 8-Braid Stainless Steel wires may be found in the Technical Data section.

Stainless Steel Looped Arches



Stainless Steel Keyhole Looped archwires are available in 2- and 4-loop options.

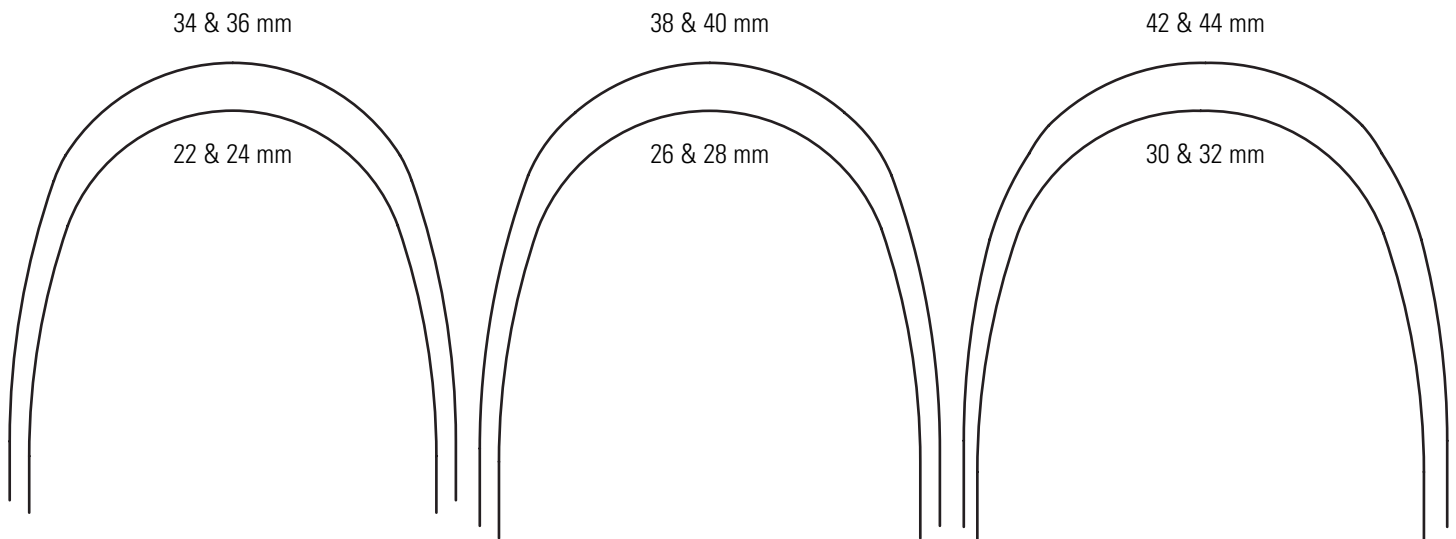
Accurate placement and consistent shape of our **Keyhole Loops** ensure your customers great results!

- Medical grade 304V Stainless Steel wire.
- Bright, smooth, flat surfaces.
- Used in sliding mechanics for extraction space closure and in non-extraction Class II cases.
- Commonly used in combination with elastics or closed coil springs.

Accurate loop placement and shape!

Arch Form	The size of the arch forms is proportional to the anterior loop spacing; see arch forms below for reference.			
Wire Sizes	2- and 4-Loop:	.016 x .022	.017 x .025	.019 x .025
	4-Loop only:	.021 x .025		
Anterior Loop Spacing for 2- and 4-Keyhole Loops (measured from center of mesial loops): 22 – 44mm, in 2mm increments				

SS Keyhole Looped Arch Forms



Anterior Loop Spacing indicated within associated Arch Form.

Utility Arches



Multi-purpose archwire, provides focused treatment of anterior or posterior segments. Our Stainless Steel **Utility Arch** is made of five high quality parts; a precision 304SS anterior segment with preformed step, adjusting tubes made of 316L Stainless Steel, and .016" x .016" preformed legs of 304V Stainless Steel.

(Also available in a NiTi anterior segment version.)

- Perfect for leveling of the arch.
- Uprighting of the molars can be achieved with ease.
- Can provide lower incisor intrusion.
- Variety of precision anterior segment lengths.
- Adjustable tube/leg for customized canine/premolar distance.

Multi-purpose archwire!

Material Stainless Steel (304V) anterior segment with stainless steel tubes and legs.
(See also Nickel Titanium Utility Arch)

Arch Form **Utility Arch Shape is specially designed for maximum efficiency.**

The anterior segment is similar to the anterior of our NAT2 arch form.

Anterior Segment Lengths

Lower:	24mm	28mm	
Upper:	34mm	38mm	42mm

Wire Sizes **Square** .016 x .016

Stainless Steel Utility Archwires do not carry a centermark.



Springs

Nickel Titanium
Stainless Steel

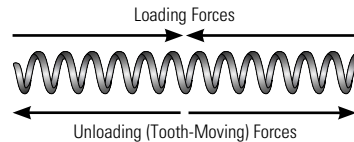
Spring into Action!

For opening, closing, and everything in-between!

Coil springs can be generally categorized into three types: Compression, Extension, and Distalizing.

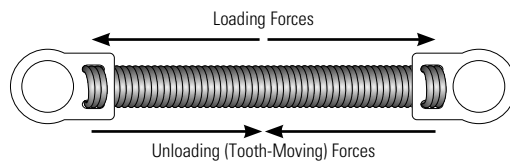
Compression

Compression, or Open Coil, springs are used to create spaces between teeth or, more simply, to move points away from one another. The coils are compressed when loaded and provide forces 'outward' to create and maintain needed space.



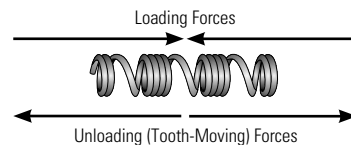
Extension

Extension, or Closed Coil, springs are used to close spaces between teeth or, more simply, to move points closer to one another. The coils are extended when loaded and provide retraction forces to close spaces. Extension springs may also be used to maintain spaces for future eruptions or prosthetics.



Distalizing

Distalizing, or Open-Closed Coil, springs are specialized springs used to distalize molars. The springs are compressed when loaded and exert forces against the molars to tip or move them in the proper direction.



Force Determining Factors: Wire size, inside diameter, and spring length.

When comparing coil springs of the same material, these three criteria determine the force of the spring.

Wire size: The greater the wire size, the higher the force.

Inside diameter (lumen): The smaller the inside diameter, the higher the force.

Spring length (e.g. number of active coils): The shorter the length (less coils), the higher the force.

.010" x .030" x 15mm

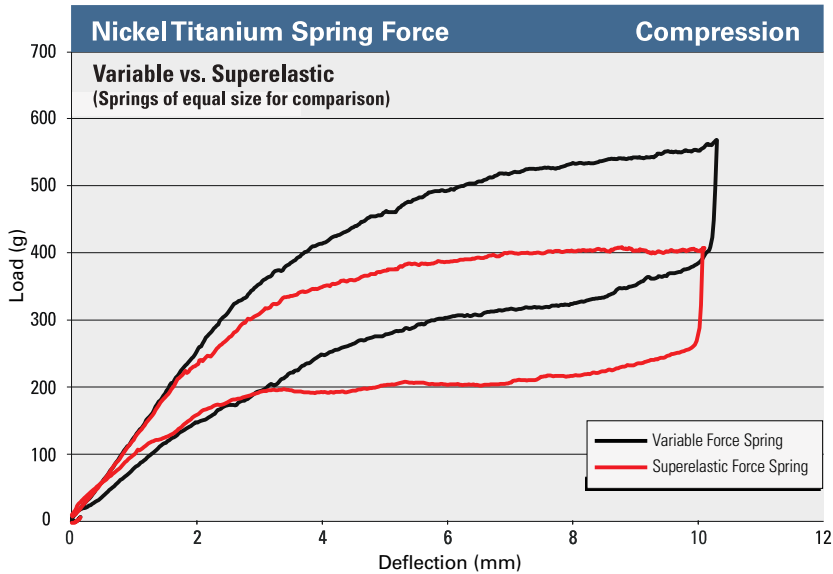
Need help to close the deal? Ultimate Wireforms' Customer Service Representatives will assist you in determining the right spring from amongst our wide variety of spring offerings.

Spring Dimensions are in inches unless otherwise noted.
Metric conversions may be found in the Reference section.

Nickel Titanium Springs

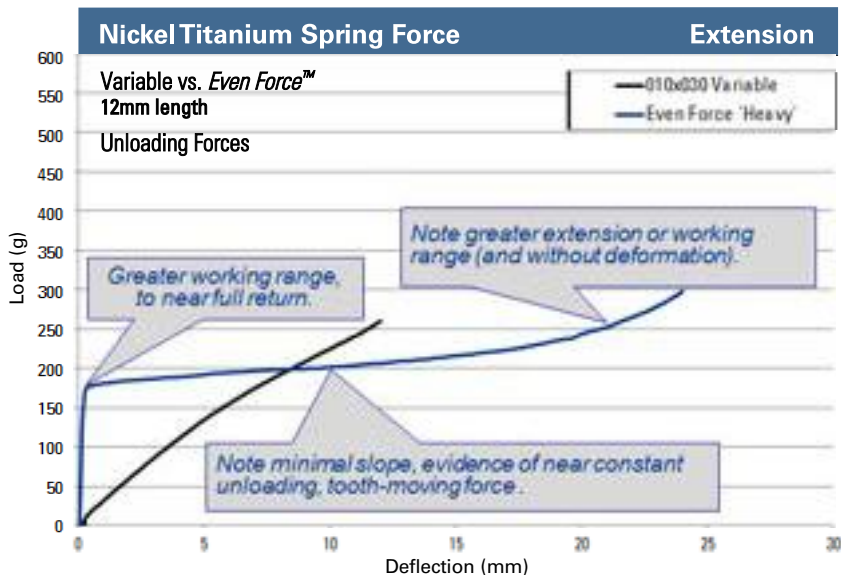
Nickel Titanium's superelastic qualities make it the perfect material for orthodontic springs. With proper usage, NiTi springs are highly resistant to permanent set and provide comfortable, predictable forces during treatment. In comparison, stainless steel springs exert high initial forces, lose force quickly after placement, and will commonly take a permanent set.

Nickel Titanium Compression springs are offered in Variable and Superelastic forces to meet the needs of specific treatment plans.



Note the gradual slope of the Variable Force Spring results versus the more level slope of the Superelastic Force Spring results. This gradual slope of the Variable Force Spring indicates the gradual increase of force exhibited during activation and gradual decrease of force as the spring returns toward its pre-activation state.

Our new *Even Force™* Extension Springs deliver near-constant force!



The near-constant return (tooth-moving) force of the *Even Force Spring* is evident in this lower graph; a remarkably consistent force throughout activation. These springs continue to 'work' until very near pre-activation state.

Even Force, Variable, and Superelastic forces are further explained on the next page.

Contents

Compression Springs

- Variable Force
- Superelastic Force

Extension Springs

- Even Force™* Springs
- Variable Force
- Superelastic Force

Distalizing Springs

Neet Separating Springs

Class II Springs

⚠ WARNING:
Nickel Titanium and Stainless Steel products contain nickel.

Spring sizes are in inches unless otherwise noted.

Metric conversions may be found in the Reference section.



Even Force™ Springs

Even Force Extension Springs provide a **near-constant tooth-moving force** throughout their activation range. Equally compelling is the resiliency of these springs.

Even Force Springs maintain this near-constant force to **3 times the extension of active coil length without deformation!**

Even Force Springs are available in five force levels with no overlap in tolerance bands.

A representative 3-Point Bend Test result of our **Even Force Spring** is indicated in **blue** on the Extension graph on the preceding page.

Variable Force Springs

Variable Force springs are designed so that the **activation force gradually increases with greater activation and, subsequently, the tooth-moving force gradually decreases as the spring returns to its nominal length.**

In the case of **Compression springs**, the activation force increases as it is compressed, and the tooth-moving force gradually decreases as the spring returns.

Likewise, in the case of **Extension springs**, the activation force increases as it is extended, and the tooth-moving force gradually decreases as the spring returns.

Representative **Variable Force Spring** 3-Point Bend Test results are indicated in **black** on the graphs on the preceding page.

Superelastic Force Springs

Superelastic Force springs provide a more constant tooth-moving force than Variable force throughout their activation range, but forces drop significantly as they near pre-activation state. Both Extension and Compression Superelastic Force springs exhibit this same characteristic; the force remains more constant throughout their applied range. Many doctors find this more constant force to be advantageous when loading springs.

Representative 3-Point Bend Test results of our **original Superelastic Force Spring** are indicated in **red** on the graph on the preceding page.

NiTi Compression



Compression, or Open Coil, springs are used to create space between teeth. Compressed during placement, the spring then exerts continuous force against the teeth as they return to original length.

NiTi compression springs are available in both Variable and Superelastic forces.

As explained within the Nickel Titanium Springs Overview page, the tooth-moving force of **variable force springs** gradually decreases over the activation range. The tooth-moving force of **superelastic force springs** remains near constant over the activation range. To accommodate your doctors' preferences, we offer a wide variety of variable and superelastic springs with force levels from light to heavy.

- Made of premium Nickel Titanium wire.
- Provide continuous forces throughout activation.
- Virtually no permanent deformation with proper usage.
- Wide range of forces available.

Continuous forces to create space!

Compression Springs 7 inch lengths (3 per tube) and 15 inch spools.

Spring Sizes

	Variable	Superelastic		
		Light	Medium	Heavy
.009 x .030	X			
.010 x .030	X			X
.010 x .036	X			
.010 x .040	X			
.010 x .045	X	X		
.011 x .030	X			
.012 x .030	X			
.012 x .040	X			
.012 x .045	X		X	
.014 x .030	X			
.014 x .036	X			
.014 x .045	X			

X Indicates available from stock.

Force graphs of Nickel Titanium Compression Springs may be found in the Technical Data section.

Helpful Hint:

- The greater the wire size, the higher the force.
- The smaller the inside diameter (lumen), the higher the force.
- The shorter the length (# of active coils), the higher the force.

NiTi Extension



Even Force™ Springs have secure key-ends with force level identification.

Extension, or Closed Coil, springs are used to maintain or close spaces. Ultimate offers extension springs in popular lengths with pre-attached Key-end™ eyelets. Our Key-ends are attached firmly to the spring and are manufactured with smooth edges and round holes for easy attachment to TADs (Temporary Anchorage Devices), hooks, or brackets to retract teeth.

Ultimate's **Even Force Springs** exhibit **near-constant unloading forces** throughout their return.

- Our premium springs are available in **9mm and 12 mm lengths**.
- Both lengths are available in **5 distinct force levels, with no overlap between tolerance bands**.
- **Near-constant force** is maintained to **3x extension of active coil length without deformation!**
- **True progression of forces** from Extra-Light (XL) through Extra-Heavy (XH).
- Secure stainless steel key-ends with **force level identification**.
- Key-end attachment hole ID: .058" (1.47mm)

Even Force™ Springs with near-constant forces!

Even Force Springs 9mm and 12mm lengths (with Key-ends)

Spring Sizes and Identification of Forces

Force Wire size (in.)	9mm	12mm	Key-end ID (# holes)
Extra-Light (XL) .007 x .038	X	X	1
Light (L) .009 x .038	X	X	2
Medium (M) .010 x .038	X	X	3
Heavy (H) .011 x .042	X	X	4
Extra-Heavy (XH) .012 x .042	X	X	5

Even Force Springs are packaged, all one size and force, in clear plastic flip-top boxes for easy dispensing. Sold in **individual spring quantity (each)**.

Custom Packaging available. See Custom Packaging section. Flip-top box labels are fully customizable with your name, product brand name, information, lot and part number.



Force graphs of **Even Force** Extension Springs may be found in the **Technical Data** section.

As well as our *Even Force Spring* line, we also offer Nickel Titanium extension springs in both **Variable** and our original **Superelastic** forces.



Variable Force Springs

6mm, 9mm, 12mm, and 15mm lengths (with attached Key-ends)
Three forces available in each length; see force graphs.

Superelastic Force Springs

9mm and 12mm lengths (with Key-ends)
Four forces available in each length; see force graphs.

- **Variable force** extension springs provide gentle tooth-moving forces that gradually decrease during retraction.
- Our **original Superelastic force** extension springs provide a flatter return slope throughout activation than **Variable force springs**, but not near as constant as **Even Force** Springs.
- Recommended activation length of **Variable** and **original Superelastic** extensions springs is only 2x original spring length. Greater extension without deformation is available with **Even Force Springs**.

Force graphs of our original Nickel Titanium Springs are available to our customers upon request.

NiTi Distalizing (Open/Closed Coil)



Distalizing Springs 7 inch lengths (3 per tube) and 15 inch spools.

Spring Sizes Superelastic Light: .009 x .036

Superelastic Medium: .010 x .036 .010 x .045

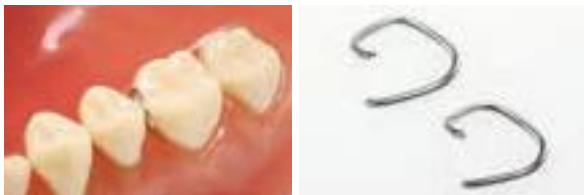
Superelastic Heavy: .011 x .036 .011 x .045

Force graphs of Nickel Titanium Distalizing Springs may be found in the Technical Data section.

Distalize molars easily with optimum patient comfort – no headgear or lip bumpers! Nickel Titanium **Distalizing Springs** are a great alternative for non-compliant patients! The gentle, constant force moves molars with ease. Available in lengths or spools to allow for customized lengths.

- Distalize molars without dependence on patient compliance.
- Nickel Titanium provides gentle, near-constant force.
- Easily slides onto any size archwire.
- Cut between the closed coils to desired length.

Neet Separating Springs



Quick, easy separation!

Neet Springs (.018) Packaged 25 per pack.

Small (bicuspid) and Large (molar)

Nickel Titanium **Neet Separating Springs** provide the optimal force to quickly create banding space. Results can be expected in as little as 24 hours! Offered in two sizes, they are sized appropriately for separating bicuspids and molars. Easy to insert and remove, your doctors will love the convenience.

- Made of high quality, polished .018 Nickel Titanium wire.
- Light, continuous forces to separate bicuspids or molars.
- Create space for banding without the use of abrasive strips or elastomeric separators.
- Easy to place and remove.

Class II Springs



Nickel Titanium Extension (Closed coil) springs with pre-attached stainless steel eyelets and ligature wire save your doctors time and inventory. No need to cut springs, handle small attachment ends, or cut & twist lig wire. These are ready to go!

Provides distal movement of maxillary anterior segment with intermaxillary ligation. Class II springs have a greater activation range than stainless steel springs, and do not require patient compliance as needed with Class II elastics.

- Easy ligation for Class II correction.
- Nickel Titanium 15mm Variable force extension spring.
- Secure stainless steel eyelets and ligature wire.
- Provides tooth-moving force over full activation range, versus the rapid loss of force of stainless steel springs.
- Great for non-compliant patients.

Pre-attached and ready to ligate!

Class II Springs (15mm plus attachments) **Packaged 10 per tube.**

Spring Sizes .007 x .020 .007 x .024 .007 x .026 .007 x .030

Force graphs of Nickel Titanium Class II Springs may be found in the Technical Data section.

SS Extension and Compression



Economical!

Stainless Steel Springs 40 inch spools.

Spring Sizes **Extension Springs:** .010 x .030

Compression Springs: .010 x .028 .010 x .030 .010 x .036

An economical offering, Stainless Steel springs provide high initial forces; however, unlike the forces of our premium Nickel Titanium springs, stainless steel forces decrease rapidly with tooth movement. Stainless Steel springs are also subject to taking a permanent set when fully compressed or expanded.

- Manufactured of 304V Stainless Steel.
- Spooled 40 inch springs allow for convenient chairside sizing.
- Extension springs are effective in maintaining space openings.
- Compression springs are most commonly used to create space.



Auxiliary Products

Hooks

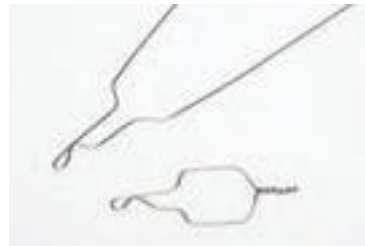
Stops

Ties



Your Customers are in Complete Control!

From time-saving application of tubes to high quality stainless steel auxiliary items like stops, hooks, and ligs, they'll have those treatments 'tied up' in no time!



⚠ WARNING: Stainless Steel products contain nickel.

SCORE® Crimpable Tube Stop Assembly

Easy handling and placement of crimpable tube stops on archwires!

SCORE Assemblies are easily gripped disposable holders pre-loaded with crimpable tube stops. The clinician easily threads the tube stop onto the wire, slides it in the precise position desired, releases the holder with a slight pivot, and crimps. Easy!

Color-coded holders are pre-loaded with either a Small or Large crimpable tube stop.

- Tube stops are fully annealed 304SS 2mm long.
Small tube ID .019".
Large tube ID .031".
- Holders are medical grade polycarbonate.
Yellow for Small.
Orange for Large.
- SCORE Assemblies are sterilizable by steam autoclave.
- Flip-top boxes allow for easy dispensing.
- Patent# US 8,376,741.

SCORE Assembly Sizes

Small:	Recommended for round .012" through .018" wire.
Large:	Recommended for
Square:	wires up to a max. of .020"x .020".
Rectangle:	wires from .014"x .025" to max. of .019"x .025".

Ten SCORE Assemblies are packaged, all one size, in clear plastic flip-top boxes. Sold in units of boxes.

Custom Packaging available. See Custom Packaging section.



Slide, Crimp, ©, Release, Easy!

**Pre-loaded; no fumbling
with small tubes.**

Easy threading onto wires.

Flexible usage of stops.



Enlarged to show detail.

Ball Hooks



Crimpable Ball Hooks are a more economical, convenient alternative to pre-posted archwires.

- Easily placed on all wire sizes from .012 to .021 x .025.
- One piece construction of 316L material. Straight is 5mm from top of base to tip of ball.
- .022 slotted base allows quick, easy placement at any position on the wire, in or out of the mouth.
- Left and Right Hooks aid in the application of elastics and extension springs.
- Straight 'hook' provides for intermaxillary fixation and elastic connection.

Offered in quantities of 10.

Crimpable Ball Hooks Left, Right, and Straight.

C-Stop™ Crimpable Stops



C-Stop Crimpable Stops firmly grip the archwire to prevent the wire from sliding beyond the adjacent bracket or buccal tube. Can reduce distal end 'pokes'. Provides for greater control of tooth movement. C-Stops may also be used as a stop against compression springs to create or maintain space.

- Crimps firmly to rectangular archwires.
- .022 slot for easy attachment.
- May be attached to ligated archwire or to wire before ligation.
- Manufactured of 316L Stainless Steel.

Offered in quantities of 10.

C-Stop Crimpable Stops One size.

Crimpable Tube Stops



Crimpable Tube Stops provide control of the archwire from sliding past the desired location. Stops can reduce emergency patient visits due to wire poking. These small tubes are convenient for use in crowded situations. Our crimpable tube stops are available in two sizes to accommodate most wire sizes.

- 2mm long of 304SS.
- Bright finish.
- Slides easily for custom positioning.
- Two size offerings.

Small: OD .032" ID .0195"

Recommended for round .012" through .018" wire.

Large: OD .042" ID .0315"

Recommended for square wire up to a max. of .020" x .020"

Recommended for rectangle wire .014" x .025" up to a max. of .019" x .025"

Offered in quantities of 25.

Crimpable Tube Stops Small and Large.



Stop Locks



Stop Locks continue to be a secure technique for archwire locking. The stop lock base is made of SS303 material, with .022 slot. It slides easily over the archwire and is held firmly by the nut, made of 316L material, with the twist of the wrench.

- .022 wire slot.
- Use to prevent archwire sliding out of buccal tube.
- Provides a stop for compression spring treatment.

Offered in quantities of 5.

Stop Locks One size: .022 wire slot.

Wrench One size.

Sometimes it is the little things that matter most. Ultimate's ball hooks, stops, and stop locks are small but powerful! They provide your customers with the **versatility of optimizing archwire configurations.**

These little parts pack a punch!

Crimpable Split Stops



Our **Crimpable Split Stops** come as a convenient strip of 10 for easy handling. The practitioner can easily remove an individual stop as needed. Made of 304 annealed Stainless Steel, these stops crimp easily but hold tight.

- Convenient.
- Dead soft for easy crimping.

Offered in quantities of 10 strips of 10 stops. Order **per strip** of 10.

Crimpable Split Stops One size.

Ligature Wires



Quick, tight tie with just a twist!

Preformed Ligature Wires ensure a quick, tight tie with just a twist!

- No loss of force, as with elastomeric ligations.
- Available in long form for custom fit to the application.
- Can be used for lacesback and appliance to appliance attachment.
- Also convenient for securing teeth to prevent unwanted rotation during TAD treatment.
- Short pre-formed ligs have pre-twisted ends which allow for even faster placement.

Sold in packs of 1000 per, with exception of .014 wire which is sold 500 per.

Also available in 1 lb. spools.

Wire Sizes	Preformed Long: Approximately 6 in. long.					
		.008	.009	.010	.011	.012
						.014
	Preformed Short: Approximately .50 in. long, with pre-twisted ends.					
			.010	packed 500 per		
	Spooled Wire (1 lb. spool):	.008	.009	.010	.011	.012
						.014

Custom Packaging available. See Custom Packaging section.



Our **Preformed Ligature and Kobayashi** products are made of annealed 304 Stainless Steel to ensure consistent shape and predictable performance. Used in place of elastic ligatures, your customers will appreciate the ease with which they can be placed over the bracket and tied.

Kobayashi Ties



Quick tying feature with a preformed hook!

Kobayashi Ties provide a quick tying feature with a preformed hook.

- Spot welded to form a secure hook.
- Allows for quick attachment of springs.
- Perfect for elastic attachment.

Sold in packs of 100 per.

Wire Sizes	Preformed Long: Approximately 6 in. long.		
		.010	.012
			.014
	Preformed Short: Approximately .75 in. long, with pre-twisted ends.		
		.012	.014

Custom Packaging available. See Custom Packaging section.



Custom Packaging

The image features a solid blue background with a subtle, faint grid pattern. At the bottom, there is a large, white, curved shape that resembles a stylized wave or a modern logo element. The text 'Custom Packaging' is centered in the upper right quadrant, rendered in a clean, white, sans-serif font.

Grow Your Business with Custom Packaging

Benefits

- Promotion of your brand. Instant recognition; make an impact!
- 'Cleaner', more aesthetic presentation than bags or applied labels.
- Products branded and ready for resale.
 - Quick order turnaround.
 - Less handling at your end.
 - Less room for errors.
 - Lot control maintenance.



We Provide

- Premium packaging services and products.
 - Experienced packaging specialists to direct the process.
 - Packaging vendor interface.
 - High quality materials.
- Pre-packaged inventory maintenance at larger quantities.
- Handling/storage of your packaging supplies.
- Affordable, flexible packaging services.
- Value and versatility.



We can meet you where you are and help you to grow.




Win Over Your Customers!

Accentuate Your Products with Affordable, Flexible, Customizable Packing.

Two Levels of Custom Packaging Services to Choose From:

Platinum - Really “outshine” your competition with our premium offerings. More color, more convenient, more benefits for you.

Silver - Your products will “earn” your doctors’ respect with these custom packaging choices. Don’t “meddle” with anything less!

	Platinum	Silver
<p>Custom Carton for Single Archwire Pouches</p> 	<ul style="list-style-type: none"> Your design of carton and artwork. 4-color process printing. Ultimate maintains your packaging supply inventory. Ultimate maintains pre-packaged stock of your products for quick turnaround. 	<ul style="list-style-type: none"> White carton. Black ink on-demand printing of product information and logo.
<p>Archwire Envelopes</p> 	<ul style="list-style-type: none"> Your design of carton and artwork. 4-color process printing. Product information printed on-demand in black ink. Label maintenance services provided. 	<ul style="list-style-type: none"> Pastel envelopes stocked and ready for use. Black ink on-demand printing of product information and logo.
<p>Custom Labels</p> 	<ul style="list-style-type: none"> White labels. On-demand color ink printing of your company name, logo, and product information. 	<ul style="list-style-type: none"> White labels. On-demand black print of company and product information.
<p>Service Benefits</p>	<ul style="list-style-type: none"> Your branding to promote your image. Quick turnaround of premium branded products. Stocking and maintenance of packaging supply inventory. 	<ul style="list-style-type: none"> On-demand print of your company brand and product information. Fast delivery with flexible order size.

Technical Data

3-Point Bend Testing

Force Chart

Wires

Bending Forces

Springs

Forming the Future with Innovation and Support



Innovation has been a key to our success and provides new opportunities for your business as well. We understand the orthodontic market and our engineers are continually working on new product offerings as well as product improvements. These new materials and products enable you to offer the best products available to your customers.

The scientists and engineers of Ultimate's in-house Research and Development Department are trained in cutting-edge technologies and are responsive to your needs, **providing both technical and design assistance.** Are you or your doctors looking for help in new product development? Ultimate's R&D group is a great resource for developing your ideas into reality. Put our expertise, from years of orthodontic product design and manufacturing experience, to use for you!

Quality has been at the forefront of Ultimate Wireforms' business since we began serving customers over 25 years ago. We thoroughly test materials and workmanship to ensure your satisfaction as well as to meet industry regulatory standards.

Ultimate's orthodontic product safety and quality are assured through:

- **ISO 13485** (Quality Standard for Medical Devices) certification.
- Compliance to Risk Management Standard **EN ISO 14971** (incorporates biocompatibility concerns).
- Compliance to the **MDD** for European Union product distribution (CE marking) of all of our orthodontic products.
- Strict adherence to the **GMP as mandated by the FDA**

Certificates are available through our website.

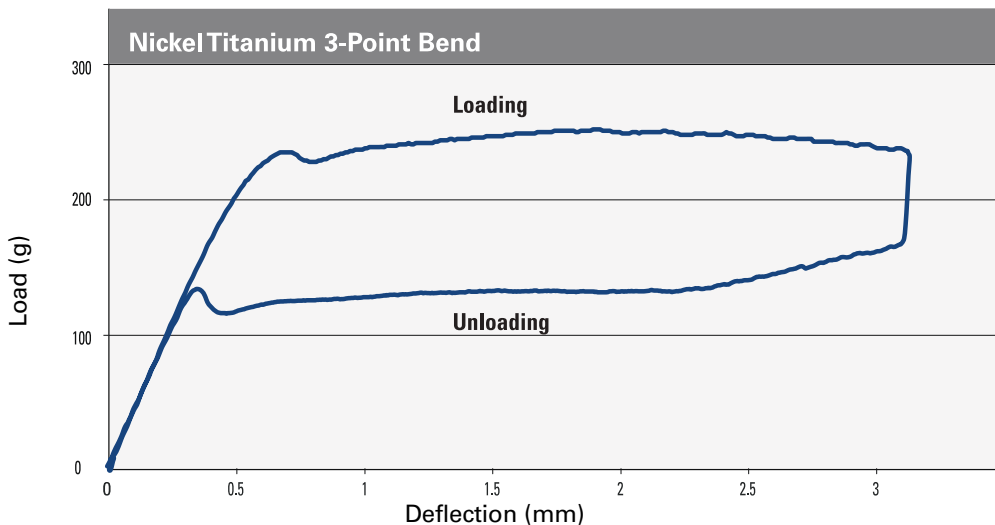


Ultimate's R&D Department ensures that you have the products you need, the quality you want, and the sound technical support that can help you to make the sale. **Trust Ultimate.**

3-Point Bend Test

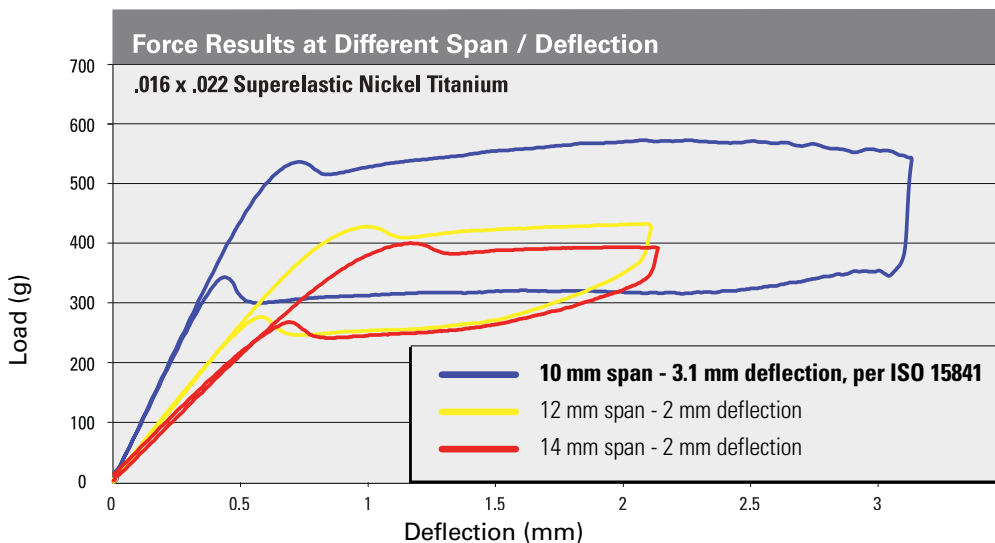
Testing Ensures High Quality

During our three-point bend test, a load cell is brought into contact with a segment of wire and deflected in accordance with the Orthodontic Wire Standard ISO 15841. Measurements are taken of the loading (ligating) and unloading (tooth-moving) forces at prescribed intervals. The resulting graph reflects these forces, as well as the permanent deformation value for the particular wire.



Representative Three-Point Bend Test graph of loading and unloading forces for a Nickel Titanium wire. The upper line being the ligating (loading) forces and lower line representing the tooth-moving (unloading) forces. The near horizontal tooth-moving force line is indicative of the low, consistent forces produced by NiTi wires during treatment. The permanent deformation point, or return point of permanent set, is near zero for Nickel Titanium wires.

Be sure to compare data based on the same variables!



Different spans or deflection produce different results.

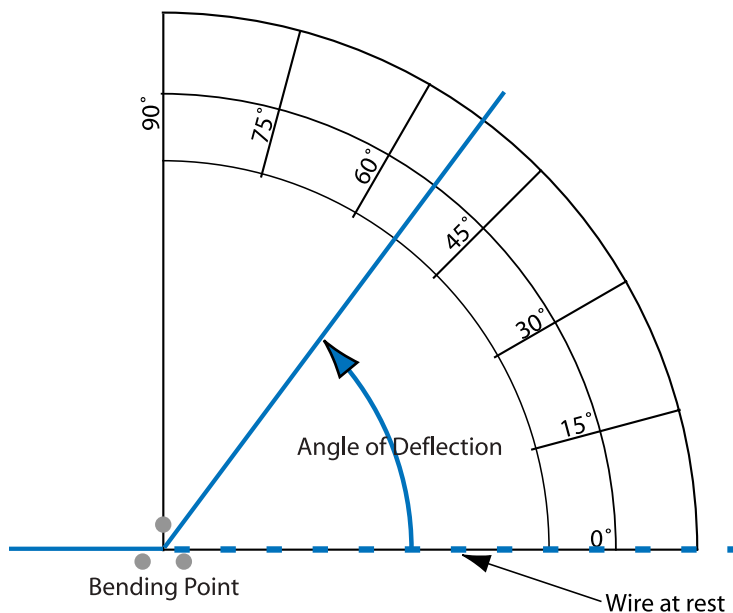
Don't be fooled by lower loads or decreased hysteresis due to testing of increased spans!

Ultimate Wireforms performs 3-Point Bend Tests using a 10mm span to a 3.1mm deflection, in accordance with ISO 15841:2006.

Nickel Titanium Maximum Bend Angles

Ultimate Wireforms will bend over backwards for you, but Nickel Titanium does have its limits!

NiTi is so resilient that it is tempting to bend it just a little more; but, how far can it go without being over-stressed and permanent deformation is introduced? The **Maximum Bend Angle Guide** was developed by Ultimate's in-house engineers to indicate the maximum bend angle that Superelastic (SE1) force NiTi archwires are capable of sustaining **without taking a permanent bend set**. Similar bend angle results can be expected for other Superelastic and Heat-activated (Thermal) wires.



We used a three prong (.020" radius) bending plier (jaws depicted as gray circles in diagram above) to replicate the bend angle of a wire exiting a bracket. The maximum bend angle was determined by measuring, on a degree wheel, the angle of deflection prior to permanent deformation.

Maximum Bend Angle Guide

75°	.012 wire
70°	.013 wire
60°	.014 and .014 x .025 wire
50°	.016 and .018 wire
45°	.020 , .016 x .016 , .016 x .022 , .016 x .025 , and .017 x .025 wire
43°	.018 x .018 , .018 x .025 , and .019 x .025 wire
40°	.021 x .025 wire

NOTE: This data is for approximate reference only. Actual bend angles will be dependent upon specifics of a particular case. Actual wire dimensions, bracket position, slot edge radii, wire span, and ligating techniques, etc. will all affect maximum bend angle.

Wire dimensions are in inches unless otherwise noted. Metric conversions may be found in the Reference section.

Reference

Metric Conversions

Round Wire							
Inch (in.)	Millimeter (mm)	Inch (in.)	Millimeter (mm)	Inch (in.)	Millimeter (mm)	Inch (in.)	Millimeter (mm)
.007	.18	.021	.53	.045	1.14	1.34	34.00
.009	.23	.0215	.55	.046	1.17	1.38	35.00
.010	.25	.022	.56	.048	1.22	1.42	36.00
.011	.28	.024	.61	.050	1.27	1.50	38.00
.012	.31	.025	.64	.051	1.30	1.58	40.00
.013	.33	.026	.66	.052	1.32	1.61	41.00
.014	.36	.028	.71	.056	1.42	1.73	44.00
.0155	.39	.030	.76	.060	1.52	1.85	47.00
.016	.41	.032	.81	.50	12.70	Inch (in.)	Centimeter (cm)
.017	.43	.034	.86	.75	19.05	7.0	17.78
.0175	.45	.036	.91	1.02	26.00	14.0	35.56
.018	.46	.038	.97	1.10	28.00	15.0	38.10
.019	.48	.040	1.02	1.14	29.00	Feet (ft.)	Meters (m)
.0195	.50	.042	1.07	1.18	30.00	30.0	9.1
.020	.51	.044	1.12	1.26	32.00		

Square Wire			
Inch (in.)	Millimeter (mm)	Inch (in.)	Millimeter (mm)
.016 x .016	.41 x .41	.018 x .018	.46 x .46
.017 x .017	.43 x .43	.020 x .020	.51 x .51

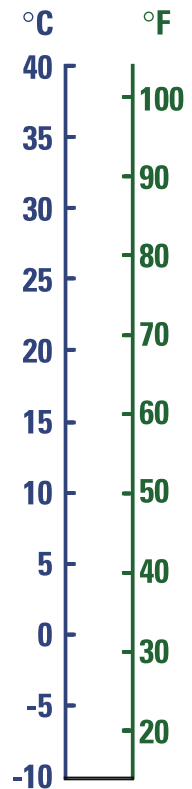
Rectangle Wire			
Inch (in.)	Millimeter (mm)	Inch (in.)	Millimeter (mm)
.0075 x .020	.19 x .51	.012 x .055	.31 x 1.40
.0075 x .024	.19 x .61	.014 x .025	.36 x .64
.0075 x .026	.19 x .66	.014 x .030	.36 x .76
.0075 x .028	.19 x .71	.014 x .036	.36 x .91
.0075 x .030	.19 x .76	.014 x .045	.36 x 1.14
.009 x .030	.23 x .76	.014 x .055	.36 x 1.40
.009 x .036	.23 x .91	.014 x .063	.36 x 1.60
.009 x .045	.23 x 1.14	.016 x .022	.41 x .56
.010 x .030	.25 x .76	.016 x .025	.41 x .64
.010 x .040	.25 x 1.02	.017 x .022	.43 x .56
.010 x .045	.25 x 1.14	.017 x .025	.43 x .64
.011 x .030	.28 x .76	.018 x .022	.46 x .56
.011 x .036	.28 x .91	.018 x .025	.46 x .64
.011 x .045	.28 x 1.14	.018 x .055	.46 x 1.40
.012 x .030	.31 x .76	.019 x .025	.48 x .64
.012 x .040	.31 x 1.02	.021 x .025	.53 x .64
.012 x .045	.31 x 1.14		

Distance Conversion Equation

Inch to millimeter: Multiply by 25.4

Millimeter to inch: Multiply by 0.0394

Temperature			
°F	°C	°F	°C
45	7.2	135	57.2
50	10.0	140	60.0
55	12.8	145	62.8
60	15.6	150	65.6
65	18.3	155	68.3
70	21.1	160	71.1
75	23.9	165	73.9
80	26.7	170	76.7
85	29.4	175	79.4
90	32.2	180	82.2
95	35.0	185	85.0
100	37.8	190	87.8
105	40.6	195	90.6
110	43.3	200	93.3
115	46.1	205	96.1
120	48.9	210	98.9
125	51.7	215	101.7
130	54.4		

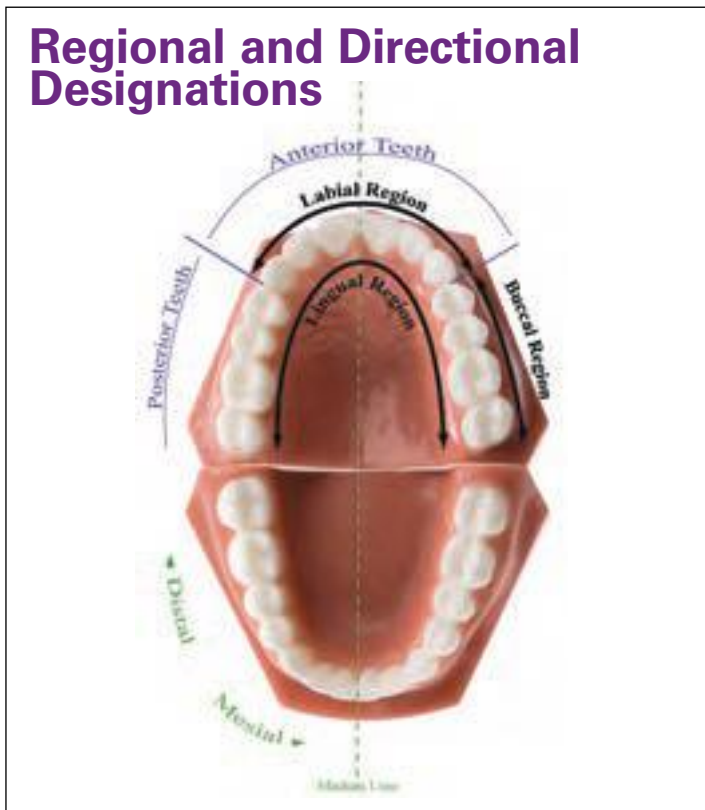
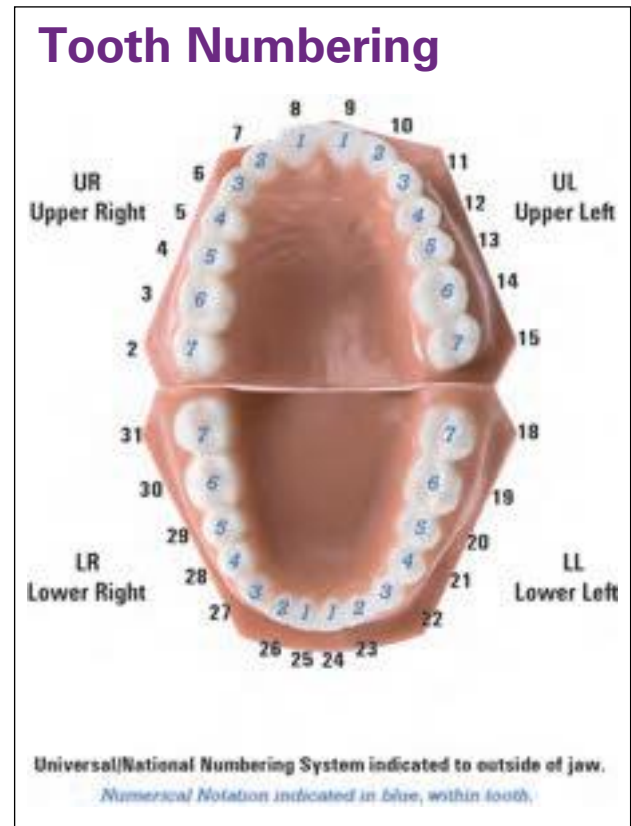
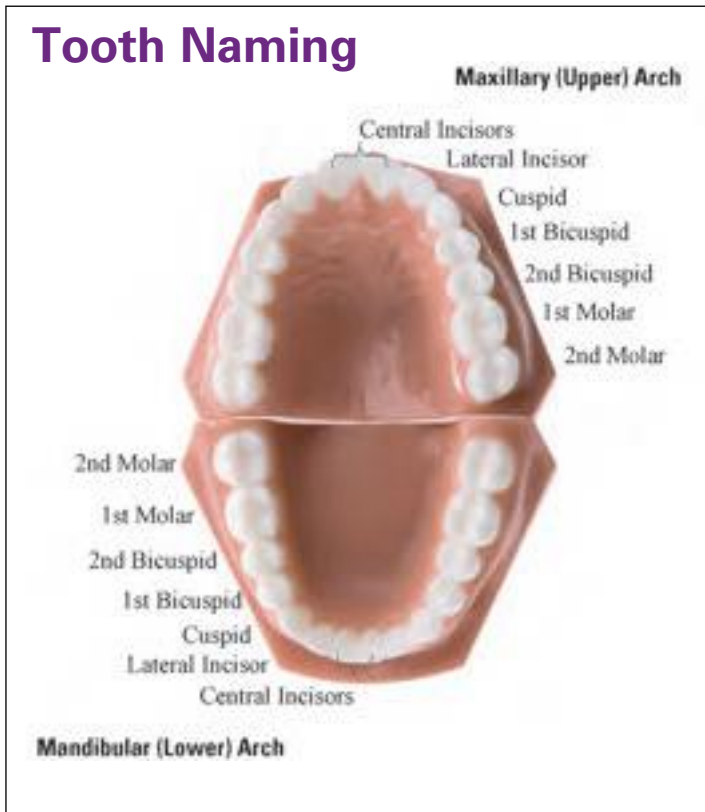


Temperature Conversion Equation

°C to °F: Multiply by 9, then divide by 5, then add 32

°F to °C: Deduct 32, then multiply by 5, then divide by 9

Intraoral References



Glossary

Activation Range	The distance a spring can be stretched, or the angle an archwire can be bent, without permanent deformation; the useful working range of a spring or archwire.
Angulation	The tilt of the long axis of a tooth in a mesial or distal direction.
Anterior	The section of the dental arch that includes teeth mesial to the posterior, thus the cuspids and incisors.
Austenite	The high temperature phase of Nickel Titanium wire. In its austenitic phase, NiTi is stiff and elastic and will immediately return to shape after bending. (See Superelastic.)
Austenite-finish temperature, A_f	Temperature at which the metallurgical transformation of a shape memory wire from its low temperature phase to its high temperature phase is complete. (ADA)
Austenite-start temperature, A_s	Temperature at which the metallurgical transformation of a shape memory wire begins.
Bicuspid	A premolar tooth; a tooth with two cusps or pointed portions of the tooth. (ADA)
Buccal	The outer region of the arch against the cheek, usually referenced in the distal region.
Central Incisor	Teeth adjacent to, and on either side of, the midline.
Compression (as in springs)	Open coil springs, wound such that there are spaces between helixes. In use, the coils are compressed and produce forces outward to create space.
Curve of Spee	The curvature of the occlusal plane of the teeth, in the mesial/distal direction.
Cuspid	Having to do with the pointed portion of the tooth, generally referring to the tooth posterior to lateral incisor. Canine.
Deformation	Mishapen, usually in reference to the angle or percentage that wire does not return to its original shape after being bent; permanent bend set.
Distal	Referring to the direction away from the median line of the mouth, or to the back of the arch.
Distalizing (as in springs)	A spring made up of both open and closed coil sections. Generally used to move molars in the distal direction (toward the back of the mouth) to create space for crowded anterior segments or in preparation for fixed orthodontic treatment.
Elasticity	The apparent ease with which a wire can be deflected without incurring permanent deformation.
Extension (as in springs)	Closed coil springs, such that the helixes are wound tightly together. In use, the coils can retain space or, when extended, produce forces to close space.
Extrusion	Movement of the tooth along its long axis toward the occlusal plane.
Friction - Dynamic	The force needed to maintain steady motion when two objects are in contact with one another.
Friction - Static	The force needed to initiate movement, from rest, between two objects that are in contact with one another.
Inclination (Torque)	The tilt or tip of the tooth in a buccolingual or faciolingual direction.
Intrusion	Movement of the tooth along its long axis back into the bone.
Labial	Referring to the lips, or in the direction toward the lips.
Lateral incisor	Teeth posterior to the centrals and anterior to the cuspid teeth.
Leveling	Initial phase of treatment with the purpose of aligning the teeth in the same plane.
Lingual	Referring to the tooth surface adjacent to the tongue.
Mandibular	Lower jaw reference.
Martensite	The low temperature phase of Nickel Titanium wire. In its martensitic phase, NiTi is soft and bends easily. The wire will stay in this state until exposed to heat above its Transformation Temperature Range (TTR). Martensitic wires are responsive to chilling, as they become even softer and more easily bent.
Maxillary	Upper jaw reference.
Mesial	Referring to the direction toward the median line of the mouth, or toward the front of the arch.

Molar	Teeth posterior to the premolars (bicuspid).
Occlusal	The chewing surface of the posterior teeth, or contact points of opposing (maxillary and mandibular) teeth.
Posterior	The section of the dental arch that includes teeth distal to the anterior, thus the premolar (bicuspid) and molar teeth.
Premolar	Bicuspid.
Proclination	The labial inclination of an incisor tooth.
Resiliency	A material's ability to resist permanent deformation when bent; often referred to as its springback ability.
Shape Memory	A characteristic of particular materials, such as Nickel Titanium, that allow the pre-formed material to return to shape by heating the wire through its TTR (transformation temperature range). For example, when martensitic wires are ligated in a maloccluded arch, the body temperature of the patient causes the wire to begin to return to its pre-formed shape; this is the wire's shape memory characteristic.
Stress Induced Martensite	The spontaneous phase change from Austenite to Martensite as stress is applied to the material at a temperature above Af. Stress induced Martensite immediately reverts to Austenite as stress is removed, unless permanent deformation has been introduced into the material.
Superelasticity	A characteristic of certain materials, such as Nickel Titanium, that allows it to recover from bends and deformations without taking a permanent set while in the Austenitic phase. This occurs due to the immediate formation of stress-induced martensite on loading and the immediate reversion to Austenite upon unloading.
Tensile Strength	When stretched, the maximum force a wire can withstand without breaking.
Thermal	Term used for martensitic wire, as it is responsive to heat-activation. See Martensite.
Tipping	Applying force to the tooth such that the tooth turns or rotates either mesial-distally or buccal-lingually.
Torque	Intentional engagement of a wire in torsion to change the inclination of the tooth; also refers to an angled section of an archwire which generates the same result.
Transformation Temperature Range (TTR)	For shape memory alloys, such as Nickel Titanium, a change of phase occurs, such as from martensite to austenite, in a specific temperature range. The TTR is adjustable by several means to produce desired characteristics.
Uprighting	Tipping in the mesial-distal direction.

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Establishment registration may be viewed on the FDA website: <http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfRL/registration.cfm>

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