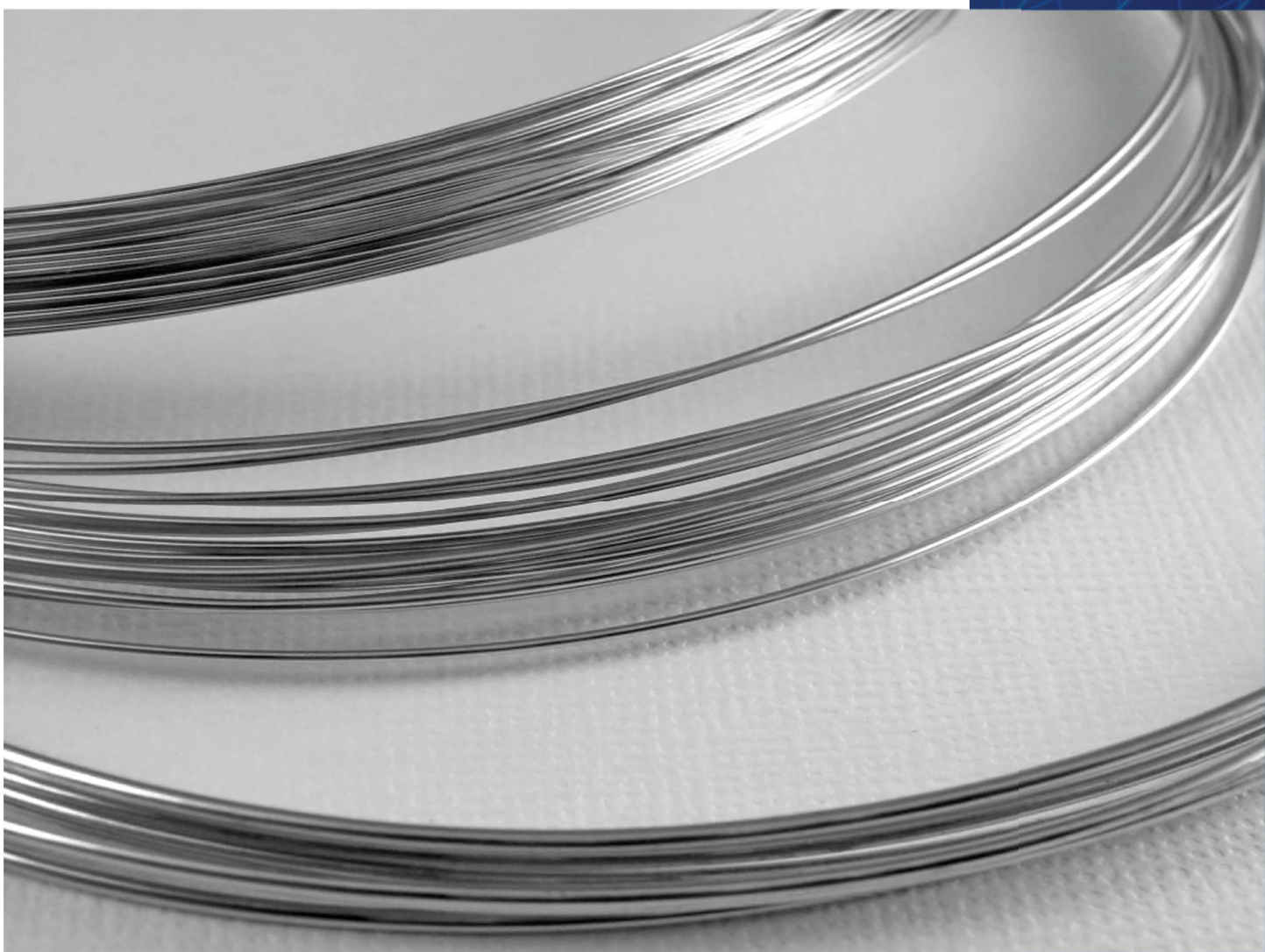


GUMMETAL®

a wire like no other



JM Ortho Corporation



GUMMETAL®

JM Ortho Corporation which has been committed to making continuous innovations in the Orthodontic field successfully developed the **GUMMETAL®** world-class premium orthodontic wire, which has unique characteristics, manufactured with exceptional craftsmanship.

GUMMETAL® is an entirely new Ti-Nb based beta titanium alloy developed by Toyota Central R&D Labs, a Toyota think tank, which displays the good properties of rubber.

GUMMETAL® is the world's first alloy that has low Young's modulus and high strength at the same time. This unique qualities cannot be obtained from any other conventional metallic materials.

Its properties are ideal for orthodontic wire: high stored energy, good formability, low stiffness, low surface friction, large springback, bio-compatibility and environmental stability.

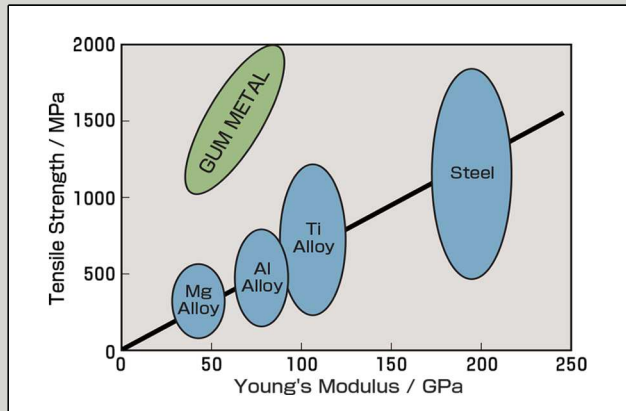
GUMMETAL® - a wire like no other.



GUMMETAL®

Ultra Low Young's Modulus yet with Ultra High Strength

GUMMETAL is SOFT but STRONG. Therefore, easier adaptation of a full sized wire for 3 dimensional control from early phase of treatment is possible while providing optimum orthodontics force that is moderate and continuous, resulting faster teeth movement, alleviating pains.

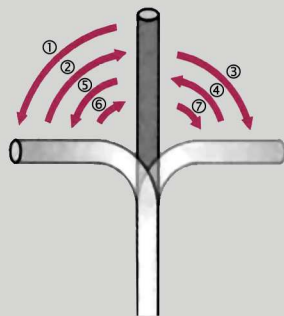


Key characteristics of several conventional biocompatible metal alloys and GUMMETAL

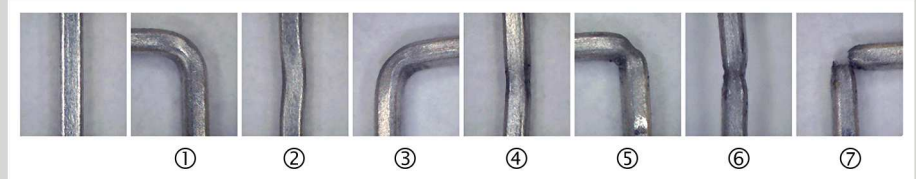
Metal for dental use	Conventional metal	Main elements	Young's modulus GPa	Tensile strength MPa
Noble metal	12%Au-Ag-Pd alloy	Au-Ag-Pd	>250	900
Stainless steel	SUS316	Fe-Cr-Ni-Mo	200	860
Co-Cr alloy	ASTM F562	Co-Cr-Ni-Mo	170	1000
Titanium	Pure Titanium	Ti	102	270
Ni-Ti alloy	Nitinol	Ti-Ni	105	700
$\alpha + \beta$ Titanium alloy	ASTM F136	Ti-Al-V	85	860
Ti-Nb alloy	GUMMETAL	Ti-Nb-Ta-Zr	45	1100

(Cr, Ni, V are cytotoxic)

FATIGUE TEST



REPEATED 90° BENDING

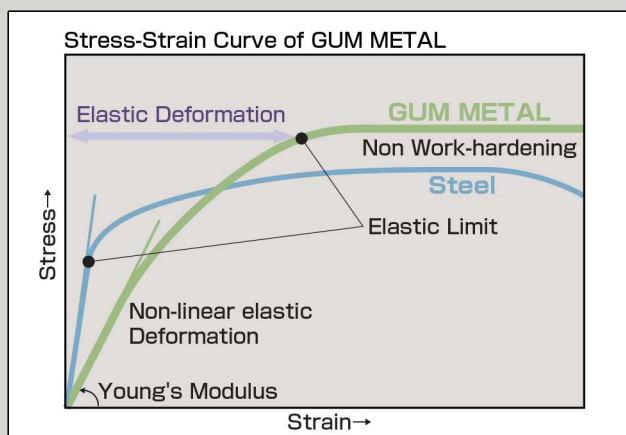


Gummetal Wire .018 x.022

broken at 7 times bending

Ultra High & Nonlinear elasticity with Super plasticity (no work-hardening)

Super-elastic nature of GUMMETAL is one digit higher in elastic deformation compared to general metallic materials. Young's Modulus changes depending on amount of distortion and performs the Nonlinear behavior, a characteristic similar to GUM or rubber. It does not show work-hardening at all under any kind of hard working, continuous deformation is possible to any desired level. It results no stress change by adjustment while ensuring less breakage in the mouth. GUMMETAL is FLEXIBLE but FORMABLE



Gummetal wire's unique structure showing the marbled appearance

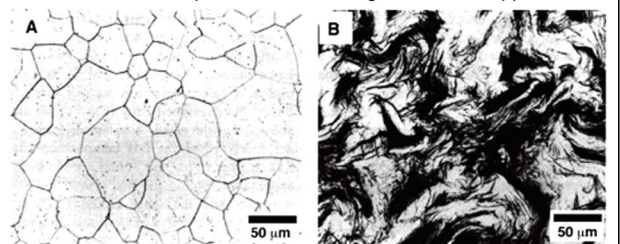


Fig. A
Structure of common metal

Fig. B
The micrograph shows the filamentary structure of GUMMETAL, as a result of being cold-worked during the manufacturing process.

UNIQUE FEATURES

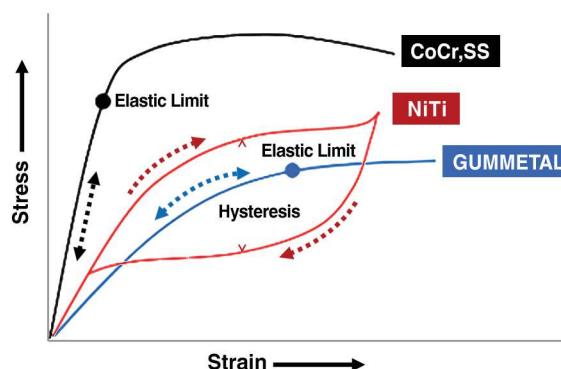
GUMMETAL®

High Spring Back and No Hysteresis

Results to maintain easier control of orthodontic force with high resilience as well as loading force that is the same as unloading force

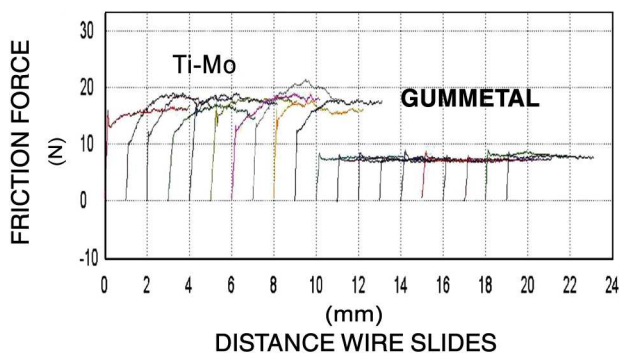


This unique feature maintains a stable wire bending while ensuring wire springback bringing along the teeth into correct position.



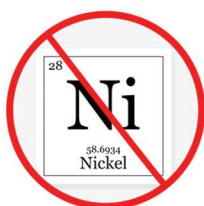
Low Friction

Results efficient teeth movement and is suitable for sliding mechanics.



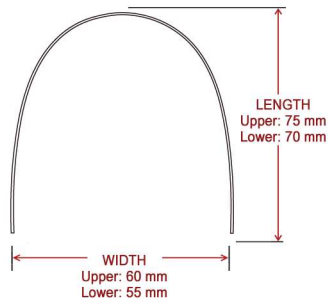
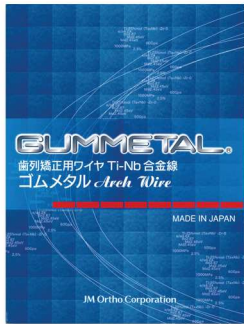
The friction between GUMMETAL surface and metal brackets is just half of other titanium wires.

Biocompatible



All the constituent atomic elements of the alloy are biocompatible and non-toxic. GUMMETAL is Nickel free alloy for Nickel sensitive patients.

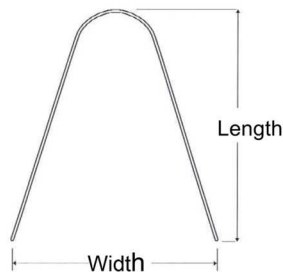
GUMMETAL ARCHWIRE NATURAL FORM



* 5 Solo Packs

Wire Size	Product Code	
	Upper	Lower
.014	GM14UE	GM14LE
.016	GM16UE	GM16LE
.018	GM18UE	GM18LE
.016 X .016	GM1616UE	GM1616LE
.016 X .022	GM1622UE	GM1622LE
.017 X .022	GM1722UE	GM1722LE
.017 X .025	GM1725UE	GM1725LE
.018 X .022	GM1822UE	GM1822LE
.018 X .025	GM1825UE	GM1825LE
.019 X .025	GM1925UE	GM1925LE
.021 X .025	GM2125UE	GM2125LE

GUMMETAL ARCH BLANKS (FOR LINGUAL)



* 5 Solo Packs

Wire Size	Width (mm)	Length (mm)	Diameter of anterior section	Product Code
.016 X .016	62	65	26 φ	GM1616-1E
.016 X .022	62	65	26 φ	GM1622-1E
.0175 X .0175	62	65	26 φ	GM175175-1E
.0175 X .0175	68	68	32 φ	GM175175-4E
.017 X .025	62	65	26 φ	GM1725-1E
.018 X .022	62	65	26 φ	GM1822-1E

GUMMETAL STRAIGHT WIRE (CUT)

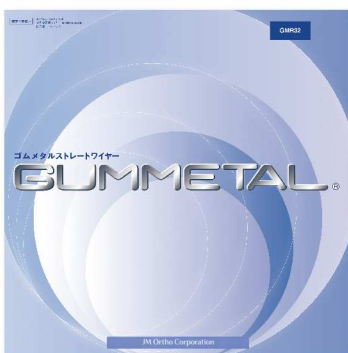


* 355mm x 5 pcs.



Wire Size	Product Code
.012	GMC12
.014	GMC14
.016	GMC16
.018	GMC18
.016 X .016	GMC1616
.016 X .022	GMC1622
.017 X .022	GMC1722
.017 X .025	GMC1725
.0175 X .0175	GMC175175
.018 X .022	GMC1822
.018 X .025	GMC1825
.019 X .025	GMC1925
.021 X .025	GMC2125

GUMMETAL STRAIGHT WIRE (ROLLED)



*Available in plastic tube for protection

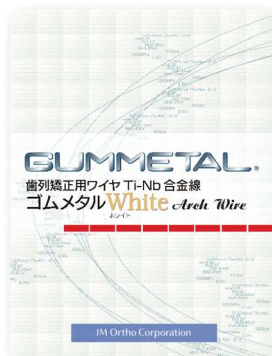
Used as overlay arch



Wire Size	Length	Product Code
.028	3.2m	GMR28
.032	2.5m	GMR32
.036	2.0m	GMR36
.040	1.6m	GMR40

PRODUCT LINE UP

GUMMETAL WHITE ARCHWIRE

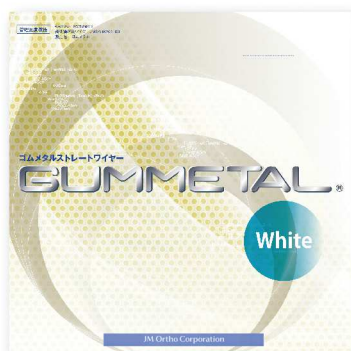


Rhodium plated

* 5 Solo Packs

Wire Size	Product Code	
	Upper	Lower
.016 X .016	GMW1616UE	GMW1616LE
.016 X .022	GMW1622UE	GMW1622LE
.017 X .022	GMW1722UE	GMW1722LE
.017 X .025	GMW1725UE	GMW1725LE
.018 X .022	GMW1822UE	GMW1822LE
.018 X .025	GMW1825UE	GMW1825LE
.019 X .025	GMW1925UE	GMW1925LE

GUMMETAL WHITE STRAIGHT WIRE (ROLLED)



*Available in plastic tube for protection

Used as Overlay arch



Wire Size	Length	Product Code
.032	2.5m	GMWR32
.036	2.0m	GMWR36

GM ATTACHMENT (FOR COFFIN TYPE APPLIANCES)

102 : For DBS



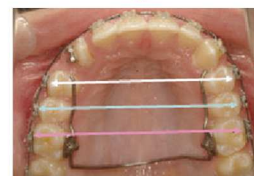
GM attachment base



201 : For welding



GM attachment for welding



TRANSVERSE EXPANSION USING GM ATTACHMENT

102 KIT AND 201 KIT COMES WITH

① Transfer Attachment (plastic)



plaster model

② GM Attachment Driver

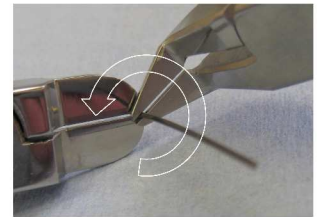
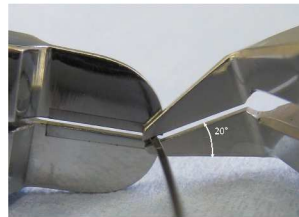


special screw driver to lock the wire firmly into the slot

PRODUCT NAME	MATERIAL	CONTAINS	PRODUCT CODE
GM Attachment 102 kit (for bonding)	Titanium	10 pcs - attachment 102 10 pcs - transfer attachment 1 pc - attachment driver	GMA102K
GM Attachment 201 kit (for banding)	Stainless Steel	10 pcs - attachment 201 10 pcs - transfer attachment 1 pc - attachment driver	GMA201K

GM TORQUEING PLIERS

PRODUCT CODE : GMTP2



Angled beak with 20 degrees triangular shape to aid in proper torque application

GEAW PLIERS

PRODUCT CODE : GEAW1



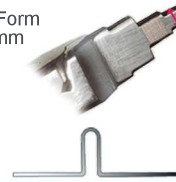
GEAW SYSTEM



GUMMETAL
Edgewise
Arch wire

GEAW PLIER

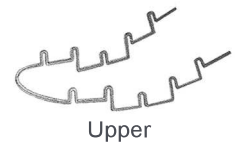
Short Form
2.5 mm



Regular Form
3.5 mm



COMBINATION (regular & short form)



Upper



Lower

HASEGAWA GAUGE

PRODUCT CODE : HBPG



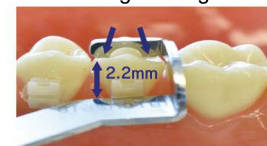
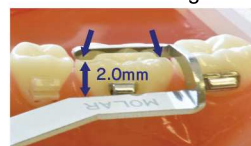
HASEGAWA BRACKET POSITIONING GAUGE

enables to determine
the proper bracket
position based on the
marginal ridge.

HOW TO USE HASEGAWA GAUGE



Place the Hasegawa Gauge on the marginal ridge



SH DIAMOND DIRECTOR

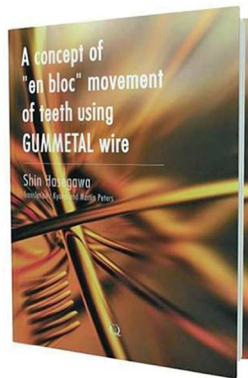
PRODUCT CODE : SHDD



- Diamond-blasted ligature director pushes the wire firmly with no slip
 - Replaceable chips have 3 into 1 package
- Product Code : SHDDPS



Title : A Concept of En Bloc Movement of Teeth Using Gummetal Wire
Author : Prof. Shin Hasegawa



This book outlines a system of orthodontic therapy based on the use of Gummetal arch wire that can improve patient comfort and shorten treatment time. Although many alloys have been used for orthodontic wire, none offer the benefits of Gummetal, which combines a super-low Young modulus with extreme strength. The use of Gummetal in en bloc protocols allows clinicians to construct simple orthodontic appliances that not only distribute a gentle, near-optimum force but can also achieve an ideal occlusion in less time than traditional treatment. The author details the characteristics and application of Gummetal and the en bloc treatment strategies that maximize three-dimensional tooth movement in orthodontic therapy.

PRECAUTIONS

Because of its super elastic characteristic, GUMMETAL wire cannot be formed by the arch wire turret. It can be formed however by the hollow chop pliers.

GUMMETAL wire must not be heat-treated. Since the GUMMETAL is titanium alloy, it would get oxidized when it is heat-treated. Besides high temperature impairs primary characteristics of GUMMETAL, snuffing out its peculiar marble-like structure.

GUMMETAL wire is not a shape-memory alloy. It gets permanent deformation if bent beyond the elastic limit.

GUMMETAL wire can easily be deformed if it gets strong pressure such as a contact by the antagonist.

Make sure to check out the GUMMETAL wire at every visit of the patient no matter what size of the GUMMETAL wire he/she is wearing because there is a possibility to find a deformation.

GUMMETAL wire can get broken if it gets scars or deep indentations when grasped with serrated pliers.

MANUFACTURED BY

JM Ortho Corporation