DISCREET™ Ultra-Low Friction Bracket

Uniting brilliant aesthetics with outstanding ultra-low frictional forces

Research reports 30% less friction than common ceramics

DESIGN CHALLENGE
WITH ENGINEER CLAUS SCHENDELL

During fixed appliance therapy, friction generated at the bracket/wire and wire/ligature interfaces is a critical factor in determining the efficiency of biological tooth movement. The increase in frictional forces within the aesthetic line has been well documented over the years. The challenge was how to produce an aesthetic bracket that could satisfy the demand for optimal appearance and performance.

Surface roughness plays a large role in the production of frictional forces in the majority of aesthetic brackets. Material selection and manufacturing methods needed to be revised to produce a smoother surface. A new combination of compounds which includes ceramic took advantage of properties found in these new atomic structures, and produced the ultra smooth surface we needed to decrease friction but continue to maintain high optical clarity.

We also used a new manufacturing method called Laser Sintering, used in the past to produce products that require a mirror polished surface like kitchen utensils, ophthalmic lenses, watch faces, could now be used for the production of aesthetic brackets, producing the smoothest results possible.

Ultra-low friction
The new material composition of the bracket shows in comparison to all other common aesthetic bracket materials on the market superior low frictional forces and provides premium sliding mechanics

Safe debonding
Highest bonding strength combined with fracture-less debonding of the bracket ensures optimal protection of the dental enamel

Precise tolerances
This one-piece-bracket is manufactured with a unique laser aided sintering technology, allowing complex and precise bracket shapes with smallest slot tolerances for optimum performance of the prescription

Endless clarity & translucency
The DISCREET™ assures true clarity during the entire treatment process. Even after a 24hr Curry bath no discoloring of the material was recorded

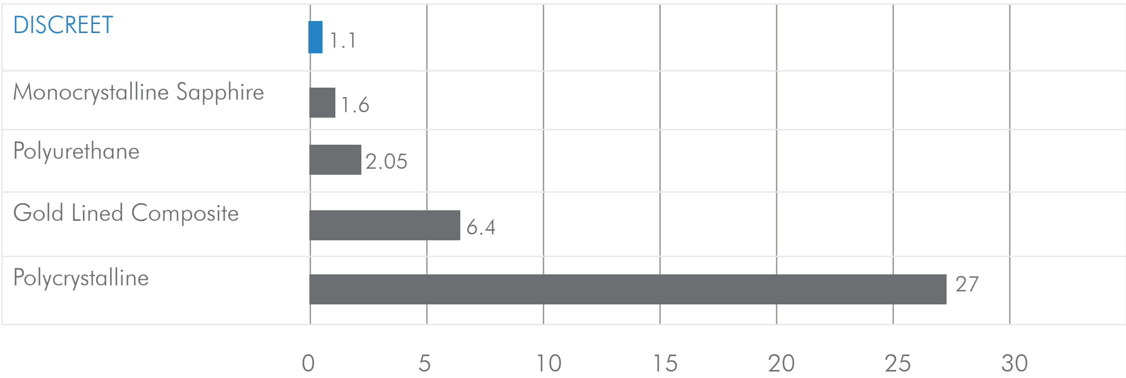
Fractural toughness
Manufacturing methods, material selection, and optimum morphology produces a bracket that can withstand the rigours of orthodontic forces

Significant reduction in attrition of teeth
Attrition of teeth is prevalent with all other common ceramic brackets. Combining new compounds has produced a strong reliable bracket but eliminates the extreme hardness of the common ceramic bracket

Biocompatibility
The combination of different translucent materials, including ceramic, ensures outstanding high biocompatibility. Our combination of compounds are CE-certified and approved by biocompatible tests like mutagen, skin sensitization, cytotoxicity and oral toxicity

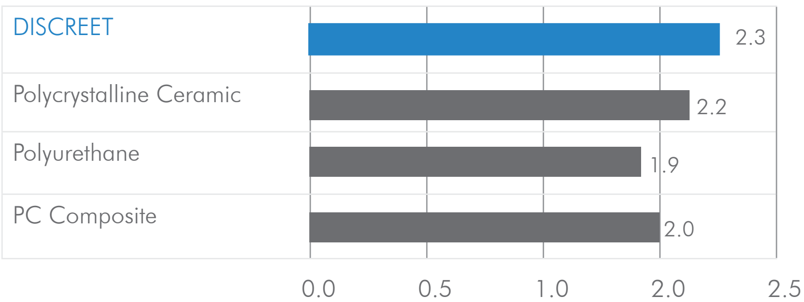
Outstanding low frictional forces for optimal sliding mechanics *produces reliable, predictable control of treatment.*

Frictional Force in N - Offset test



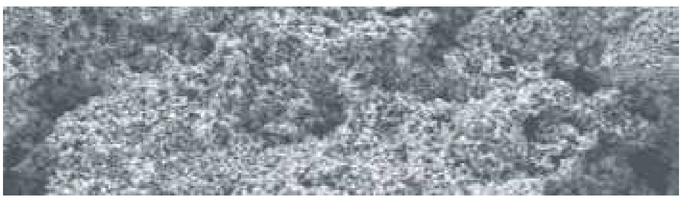
Exceptional torque fracture resistance creates accurate rotation control and reduces breakages during treatment.

Average Torque Strength in Ncm



Safe, reliable and predictable debonding

Mechanical retention is achieved through indentations and added undercuts in the base of the bracket. Laboratory testing indicated that the mean linear tensile strength of enamel is 14.5MPa. The force required for debonding falls within a range safe for the enamel yet strong enough to hold throughout full orthodontic treatment.



DISCREET™ BRACKETS Roth*

UPPER	Torque	Ang	In/Out	Width	U - R .018	U - L .018	U - R .022	U - L .022
Central	11°	5°	0.84	3.35	480-11	480-21	488-11	488-21
Lateral	8°	9°	1.14	3.45	480-12	480-22	488-12	488-22
Cuspid	-2°	8°	0.88	3.38	480-13	480-23	488-13	488-23
Cuspid w hook	-2°	8°	0.88	3.38	480-13/H	480-23/H	488-13/H	488-23/H
1. Bicuspid	-7°	0°	1.04	3.30	480-14/25	480-14/25	488-14/25	488-14/25
1. Bicuspid w hook	-7°	0°	1.04	3.30	480-14/15/H	480-24/25/H	488-14/15/H	488-24/25/H
2. Bicuspid	-7°	0°	1.04	3.30	480-14/25	480-14/25	488-14/25	488-14/25
2. Bicuspid w hook	-7°	0°	1.04	3.30	480-14/15/H	480-24/25/H	488-14/15/H	488-24/25/H

LOWER	Torque	Ang	In/Out	Width	L- R .018	L - L .018	L - R .022	L - L .022
Anterior	0°	0°	1.09	2.80	480-31/42	480-31/42	488-31/42	488-31/42
Cuspid	-11°	7°	0.88	2.08	480-43	480-33	488-43	488-33
Cuspid w hook	-11°	7°	0.88	2.08	480-43/H	480-33/H	488-43/H	488-33/H
1. Bicuspid	-17°	3°	1.09	2.08	480-44	480-34	488-44	488-34
1. Bicuspid w hook	-17°	3°	1.09	2.08	480-44/H	480-34/H	488-44/H	488-34/H
2. Bicuspid	-21°	6°	1.19	2.13	480-45	480-35	488-45	488-35
2. Bicuspid w hook	-21°	6°	1.19	2.13	480-45/H	480-35/H	488-45/H	488-35/H

Cases-Single tray or 10-case tray

1 case .018	10 case .018	1 case .022	10 case .022	Description
480-001	480-001/10	488-001	488-001/10	DISCREET™ Bracket Upper + Lower 5-5
480-001/H	480-001/H/10	488-001/H	488-001/H/10	DISCREET™ Bracket Upper + Lower 5-5 w. Hook on 3
480-001/H345	480-001/H345/10	488-001/H345	488-001/H345/10	DISCREET™ Bracket Upper + Lower 5-5 w. Hook on 3-4-5

DISCREET™ BRACKETS MBT (McLaughlin/Bennett/Trevisi)*

UPPER	Torque	Ang	In/Out	Width	U - R .018	U - L .018	U - R .022	U - L .022
Central	17°	4°	0.99	3.35	490-11	490-21	499-11	499-21
Lateral	10°	8°	1.27	3.45	490-12	490-22	499-12	499-22
Cuspid	0°	8°	0.93	3.38	490-13	490-23	499-13	499-23
Cuspid w hook	0°	8°	0.93	3.38	490-13/H	490-23/H	499-13/H	499-23/H
1. Bicuspid	-7°	0°	1.04	3.30	490-14/25	490-14/25	499-14/25	499-14/25
1. Bicuspid w hook	-7°	0°	1.04	3.30	490-14/15/H	490-24/25/H	499-14/15/H	499-24/25/H
2. Bicuspid	-7°	0°	1.04	3.30	490-14/25	490-14/25	499-14/25	499-14/25
2. Bicuspid w hook	-7°	0°	1.04	3.30	490-14/15/H	490-24/25/H	499-14/15/H	499-24/25/H

LOWER	Torque	Ang	In/Out	Width	L- R .018	L - L .018	L - R .022	L - L .022
Anterior	-6°	0°	1.42	2.80	490-31/42	490-31/42	499-31/42	499-31/42
Cuspid	0°	3°	0.78	2.08	490-43	490-33	499-43	499-33
Cuspid w hook	0°	3°	0.78	2.08	490-43/H	490-33/H	499-43/H	499-33/H
1. Bicuspid	-12°	2°	1.14	2.08	490-44	490-34	499-44	499-34
1. Bicuspid w hook	-12°	2°	1.14	2.08	490-44/H	490-34/H	499-44/H	499-34/H
2. Bicuspid	-17°	2°	1.19	2.13	490-45	490-35	499-45	499-35
2. Bicuspid w hook	-17°	2°	1.19	2.13	490-45/H	490-35/H	499-45/H	499-35/H

Cases-Single tray or 10-case tray

1 case .018	10 case .018	1 case .022	10 case .022	Description
490-001	490-001/10	499-001	499-001/10	DISCREET™ Bracket Upper + Lower 5-5
490-001/H	490-001/H/10	499-001/H	499-001/H/10	DISCREET™ Bracket Upper + Lower 5-5 w. Hook on 3
490-001/H345	490-001/H345/10	499-001/H345	499-001/H345/10	DISCREET™ Bracket Upper + Lower 5-5 w. Hook on 3-4-5

*The adenta version of this technique does not indicate endorsement by the doctor. They do not claim to be a duplication of any other

CLEAR Ceramic™ Bracket

Flawless, pure Monocrystalline Sapphire Ceramic brackets

A solid single crystal, continuous edge to edge with no grain boundaries produces maximum optical clarity

Most of the ceramic brackets on the market are made out of either polycrystalline or monocrystalline sapphire. The primary difference between these two materials is their optical clarity. Monocrystalline alumina ceramic brackets have a more translucent (clearer) appearance whereas polycrystalline brackets are more whitish (tooth colored). This form of alumina has been selected because of its superior physical strength and favorable optical and aesthetic properties. Our ceramics are nonporous, resistant to staining and eliminate the absorption of odors.

Slot design
Heat polished for added smoothness to produce optimal sliding mechanics

Perfect material
Made from crystal clear and nonporous Monocrystalline Sapphire

Superior patient comfort
Ultra smooth & contoured shapes

Low profile
Small and aesthetically pleasing to your patients plus an anatomical bracket base for easy bracket placement

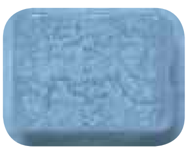
High resistance
High resistance to staining and odor absorption

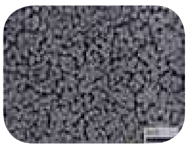
Maximum tie-wing strength
Tie wings are designed for easy, reliable ligation and optimal fracture resistance

Unique bonding base
Partially coated Zirconia sphere base designed specifically to reduce the force needed for safe fracture-free debonding.

The Science behind bond strength

Micrographs show clearly our unique Double Fusion Method. The base of the bracket is coated with Zirconia powder, which produces Spheroid particles; each particle has a mass of tiny dendrites. These properties allow for a secure retention during the length of treatment and provide predictable and safe debonding at the end of treatment.





Correct material produces big advantages

Monocrystalline Sapphire alumina has a modulus of rupture greater than 35,000 psi (241.3 MPa). This strength is essential to producing a ceramic bracket without breakage issues. Standard ceramic brackets are rather bulky as they have to overcome the physical property limitations of other types of material, so they tend to be somewhat uncomfortable to the patient.

Monocrystalline Sapphire´s strength enables us to offer a small and comfortable bracket for the patient. It offers our orthodontists the mechanical strength needed for predictable treatment.

CLEAR CERAMIC™ BRACKETS Roth*

UPPER	Torque	Ang	In/Out	Width	U - R .018	U - L .018	U - R .022	U - L .022
Central	12°	5°	1.14	3.20	450-11	450-21	455-11	455-21
Lateral	8°	9°	1.46	2.90	450-12	450-22	455-12	455-22
Cuspid	-2°	9°	0.52	3.50	450-13	450-23	455-13	455-23
Cuspid w hook	-2°	9°	0.52	3.50	450-13/H	450-23/H	455-13/H	455-23/H
1. Bicuspid	-7°	0°	1.12	3.20	450-14/25	450-14/25	455-14/25	455-14/25
1. Bicuspid w hook	-7°	0°	1.12	3.20	450-14/15/H	450-24/25/H	455-14/15/H	455-24/25/H
2. Bicuspid	-7°	0°	1.12	3.20	450-14/25	450-14/25	455-14/25	455-14/25
2. Bicuspid w hook	-7°	0°	1.12	3.20	450-14/15/H	450-24/25/H	455-14/15/H	455-24/25/H

LOWER	Torque	Ang	In/Out	Width	L- R .018	L - L .018	L - R .022	L - L .022
Anterior	0°	0°	1.44	2.83	450-31/42	450-31/42	455-31/42	455-31/42
Cuspid	-11°	7°	0.80	3.50	450-43	450-33	455-43	455-33
Cuspid w hook	-11°	7°	0.80	3.50	450-43/H	450-33/H	455-43/H	455-33/H
1. Bicuspid	-17°	3°	1.10	3.20	450-44	450-34	455-44	455-34
1. Bicuspid w hook	-17°	3°	1.10	3.20	450-44/H	450-34/H	455-44/H	455-34/H
2. Bicuspid	-21°	6°	1.10	3.20	450-45	450-35	455-45	455-35
2. Bicuspid w hook	-21°	6°	1.10	3.20	450-45/H	450-35/H	455-45/H	455-35/H

Cases-Single tray or 10-case tray

1 case .018	10 case .018	1 case .022	10 case .022	Description
450-001	450-001/10	455-001	455-001/10	CLEAR™ Bracket Upper + Lower 5-5
450-001/H	450-001/H/10	455-001/H	455-001/H/10	CLEAR™ Bracket Upper + Lower 5-5 w. Hook on 3
450-001/H345	450001/H345/10	455-001/H345	455-001/H345/10	CLEAR™ Bracket Upper + Lower 5-5 w. Hook on 3-4-5

CLEAR CERAMIC™ BRACKETS MBT (McLaughlin/Bennett/Trevisi)*

UPPER	Torque	Ang	In/Out	Width	U - R .018	U - L .018	U - R .022	U - L .022
Central	17°	4°	1.06	3.20	460-11	460-21	466-11	466-21
Lateral	10°	8°	1.45	2.90	460-12	460-22	466-12	466-22
Cuspid	0°	8°	1.00	3.50	460-13	460-23	466-13	466-23
Cuspid w hook	0°	8°	1.00	3.50	460-13/H	460-23/H	466-13/H	466-23/H
1. Bicuspid	-7°	0°	1.42	3.20	460-14/25	460-14/25	466-14/25	466-14/25
1. Bicuspid w hook	-7°	0°	1.42	3.20	460-14/15/H	460-24/25/H	466-14/15/H	466-24/25/H
2. Bicuspid	-7°	0°	1.42	3.20	460-14/25	460-14/25	466-14/25	466-14/25
2. Bicuspid w hook	-7°	0°	1.42	3.20	460-14/15/H	460-24/25/H	466-14/15/H	466-24/25/H

LOWER	Torque	Ang	In/Out	Width	L- R .018	L - L .018	L - R .022	L - L .022
Anterior	-6°	0°	1.50	2.83	460-41/42	460-31/32	466-41/42	466-31/32
Cuspid	0°	3°	0.88	3.50	460-43	460-33	466-43	466-33
Cuspid w hook	0°	3°	0.88	3.50	460-43/H	460-33/H	466-43/H	466-33/H
1. Bicuspid	-12°	2°	1.72	3.20	460-44	460-34	466-44	466-34
1. Bicuspid w hook	-12°	2°	1.72	3.20	460-44/H	460-34/H	466-44/H	466-34/H
2. Bicuspid	-17°	2°	1.72	3.20	460-45	460-35	466-45	466-35
2. Bicuspid w hook	-17°	2°	1.72	3.20	460-45/H	460-35/H	466-45/H	466-35/H

Cases-Single tray or 10-case tray

1 case .018	10 case .018	1 case .022	10 case .022	Description
460-001	460-001/10	466-001	466-001/10	CLEAR™ Bracket Upper + Lower 5-5
460-001/H	460-001/H/10	466-001/H	466-001/H/10	CLEAR™ Bracket Upper + Lower 5-5 w. Hook on 3
460-001/H345	460-001/H345/10	466-001/H345	466-001/H345/10	CLEAR™ Bracket Upper + Lower 5-5 w. Hook on 3-4-5

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