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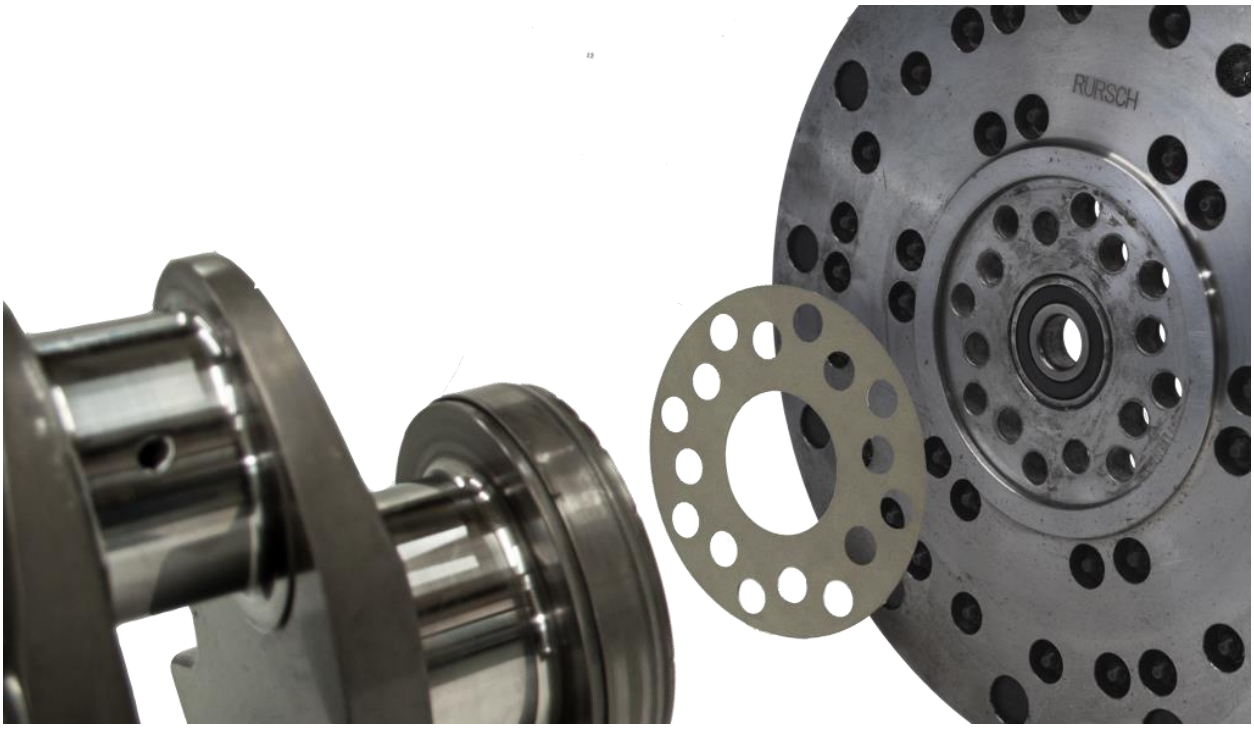
Ni-Grip® Friction Shims

Technical White Paper



Prepared for: Engineers, Asset Integrity Managers, Procurement Engineers, Design Engineers & R&D Teams across Oil & Gas, Wind Energy, Automotive, Aerospace, Power Generation, Marine, Robotics, Construction, Mining & Medical Industries

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Executive Summary

Executive Summary

Ni-Grip® Friction Shims from Surface Technology, Inc. represent the most powerful, versatile, and cost-effective upgrade available for bolted mechanical joints. By incorporating STI's patented CDC® (Composite Diamond Coating) technology — millions of precision diamond particles embedded in an electroless nickel alloy matrix — Ni-Grip® Shims deliver **up to 5× greater friction at the clamped interface** compared to bare metal-on-metal contact.

This white paper provides engineers and procurement professionals across ten key industries with a definitive technical reference: how the technology works, where it adds the most value, full material and design specifications, installation best practices, and the compelling business case for adoption.

Friction shims are not a niche product for a single sector — they are an enabling technology for **any industry that depends on reliable, safe, and efficient bolted connections.**

Section 1 — What Are Friction Shims?

Friction shims are precision-engineered thin metal components placed between two mating surfaces in a bolted connection to dramatically increase friction at the interface.

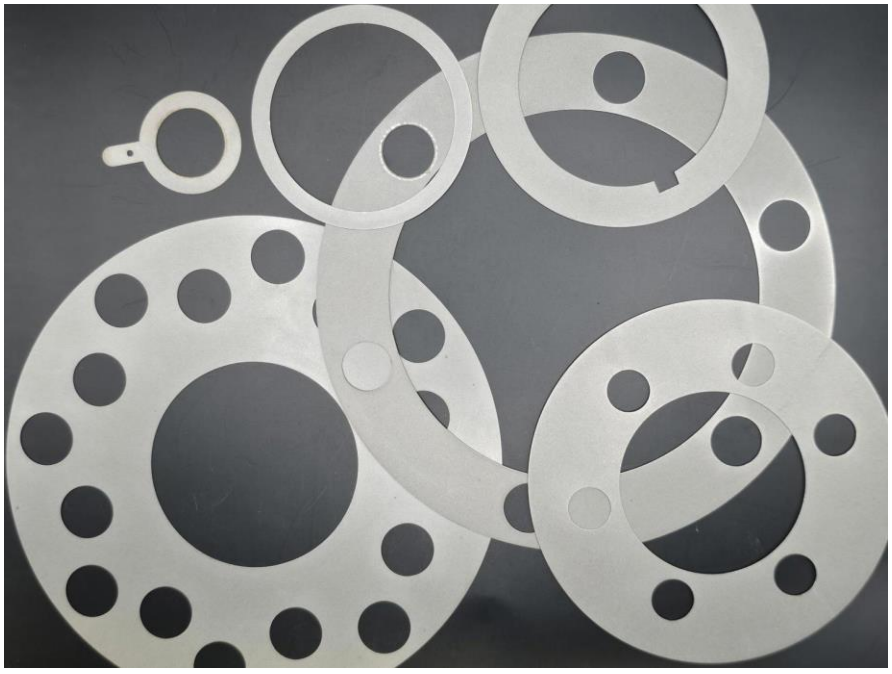
STI's Ni-Grip® Friction Shims consist of a steel, stainless steel, or aluminum substrate coated on both sides with STI's patented CDC® (Composite Diamond Coating) technology — millions of diamond particles embedded in and protruding from a uniform electroless nickel alloy matrix.

When clamped under pressure, the hard diamond particles "bite" into both mating surfaces, creating a **mechanical micro-form fit** that locks the surfaces together at the microscopic level. This micro-interlocking mechanism delivers **up to 5× greater friction coefficient** compared to bare metal-on-metal contact — preventing relative slippage even under high shear, vibration, dynamic loading, and cyclic fatigue.

Crucially, Ni-Grip® Friction Shims require **NO increase in bolt size, joint weight, or structural complexity.** They are a drop-in solution that transforms joint performance from within existing engineering tolerances.

Key Characteristics:

- **Substrate:** Steel, stainless steel, or aluminum; others available on special order
- **Coating:** CDC® electroless nickel alloy with embedded diamond particles (both sides)
- **Thickness:** Typically 0.0045" – 0.040" (0.1–1.0 mm); custom thicknesses available
- **Geometry:** Circular, ring, segmented, tabbed, slotted, tapered, bespoke to customer drawings
- **Reusability:** Inspectable and reusable after disassembly when properly handled
- **Compatibility:** Works with dissimilar mating surface materials including painted, anodized, and e-coated surfaces



Ni-Grip® Friction Shims — Surface Technology, Inc. manufactures friction shims in any size, shape, and CDC® grade to suit any bolted connection requirement.

Section 2 — The Engineering Challenge: Bolted Joint Failures

Bolted joints are the fundamental fastening system in virtually every industry. Despite their apparent simplicity, they are among the most common sites of mechanical failure, maintenance cost, and safety risk across all industrial sectors.

Universal Failure Modes

Failure Mode	Mechanism	Common In
Bolt Relaxation	Loss of preload through embedding and material creep	All industries
Vibration-Induced Loosening	Dynamic loading causes incremental self-loosening	Automotive, Wind, Aerospace, Industrial
Fretting Corrosion	Micro-slip generates oxide debris, accelerating fatigue	Marine, Oil & Gas, Power Generation
Gasket/Interface Creep	Softening of interface material reduces clamp load	Oil & Gas, Power Generation
Thermal Cycling Fatigue	Repeated expansion/contraction compromises integrity	Aerospace, Power Generation, Automotive
Shear Overload	In-plane loads exceed static friction capacity	Construction, Mining, Heavy Machinery
Micro-slip at Precision Joints	Tiny movements compromise repeatability and tolerances	Robotics, Medical, Aerospace

> **The common factor across all these failure modes is insufficient friction at the clamped interface.**
>
> Ni-Grip® Friction Shims directly address this root cause — at the point of failure.

Section 3 — How Ni-Grip® CDC® Technology Works

The CDC® (Composite Diamond Coating) process is an electroless nickel deposition technique in which industrial-grade diamond particles are co-deposited within the nickel alloy matrix. The result is a coating with diamond particles protruding from both faces of the shim substrate. The CDC® coating is metallurgically bonded to the base metal for optimal adhesion and integrity.

Under bolt preload, the protruding diamond particles indent into both mating surfaces — regardless of whether they are painted, anodized, e-coated, machined, or finished. This creates a **micro-form fit** — a three-dimensional mechanical interlock that resists:

- In-plane shear forces
- Torque and torsional loads
- Vibration-induced slip
- Interface creep under sustained load

Performance Comparison

Parameter	Bare Metal-on-Metal	With Ni-Grip® CDC® Friction Shim
Friction Coefficient	~0.10 – 0.15	**~0.3 – 0.9+**
Slip Load Capacity	Baseline	**Up to 5× higher**
Torque Transmission	Baseline	**Up to 5× higher**
Fretting Risk	High	**Greatly reduced**
Vibration Loosening	Common	**Significantly mitigated**
Bolt Resizing Required	Often	**Rarely or never**
Joint Redesign Required	Often	**Not required**

Ni-Grip® Friction Shims work on virtually any mating surface: steel, aluminum, stainless steel, e-coat/painted surfaces, anodized aluminum, and rough or unfinished machined surfaces.

Section 4 — Material & Design Specifications

4.1 — Ni-Grip® Friction Shim Product Specifications

Specification	Detail
Substrate Materials	Steel, Stainless Steel, Aluminum, others
Coating Technology	CDC® — electroless nickel alloy with embedded diamond particles, both sides
Standard Thickness	0.1 – 1.0 mm (custom thicknesses on request)
Operating Temperature	Up to 800°C (1475°F)
Contact Pressure (recommended)	≥50 MPa for maximum performance
Geometry Options	Circular, ring, segmented, tabbed, slotted, tapered, fully bespoke
Corrosion Resistance	Inherent in CDC® coating; offshore and sour-service variants available
Certifications	QA Program manufacturing; FDA-reviewed coatings
Complete Shim Products	STI manufactures finished, ready to use friction shims according to customer specifications
Custom Coating Service	STI applies CDC® to customer-supplied shim blanks

4.2 — CDC® Product Grade Table

CDC® Grade	Diamond Particle Size	Volume Concentration	EN Alloy Hardness (HV)	Typical Friction Coefficient	Commonly Used For
CDC®-8	8–10 µm	30–40%	450–900	0.3 – 0.4	Precision assemblies, tight tolerances, medical
CDC®-25	20–25 µm	25–50%	450–900	0.5	Aerospace, automotive, general industrial, pipeline flanges

CDC® Grade	Diamond Particle Size	Volume Concentration	EN Alloy Hardness (HV)	Typical Friction Coefficient	Commonly Used For
CDC®-35	35–40 µm	25–50%	450–900	0.7	Structural joints, energy, wind, heavy machinery
CDC®-80	80 µm	25–50%	450–900	0.9	Maximum grip, offshore, mining, large flanges

Note: Friction coefficients are indicative values under recommended contact pressure. Actual values depend on substrate material, surface finish, and test conditions. STI's in-house laboratory can conduct application-specific friction testing and validation.

Section 5 — Key Industries & Applications

Ni-Grip® Friction Shims are proven across ten major industrial sectors. The following section provides a dedicated overview for each industry — covering specific challenges, relevant applications, and the value Ni-Grip® delivers.

5.1 — Oil & Gas

The Challenge

Oil and gas flanged connections — pipelines, risers, wellheads, compressor flanges, vessel nozzles, and subsea equipment — are among the most safety-critical mechanical interfaces in modern industry. HPHT (High-Pressure High-Temperature) environments, sour service, and inaccessible subsea locations demand exceptional joint integrity over the full life of the asset.

Key failure risks: bolt relaxation, fretting corrosion, vibration-induced loosening, gasket creep, and thermal cycling fatigue. Consequences of failure include hydrocarbon leaks, fires, environmental incidents, regulatory shutdowns, and serious safety events.

Governing Standards: ASME PCC-1, API 6A, ASME B16.5, EN 1591, NACE MR0175.

Application	Key Benefits of Ni-Grip® Friction Shims
Pipeline Flanges	Prevents slip under surge pressures; enables smaller bolts
Wellhead & Christmas Trees	Replaces heavy locking features; essential for HPHT and deepwater
Compressor & Pump Flanges	Eliminates fretting wear; maintains integrity in high-vibration environments
Riser Systems (Offshore)	Resists fatigue loosening from wave action and vessel motion
Subsea Equipment Joints	Maintains clamp load for life-of-field where re-torquing is impossible
Structural & Module Connections	Resists in-plane shear from seismic and operational loads

5.2 — Wind Energy

The Challenge

Wind turbines are subject to continuous dynamic, cyclic, and reversing loads from wind and gravity. Tower flanges, main shaft joints, blade root connections, gearbox interfaces, and nacelle mounting flanges must maintain full preload and shear capacity throughout a 20–25-year asset life — often in remote or offshore locations where maintenance access is costly and infrequent.

Bolt fatigue loosening, fretting corrosion at flange faces, and micro-slip under millions of load cycles are the dominant failure modes in wind turbine bolted connections.

Governing Standards: IEC 61400-1, GL Wind, DNV-ST-0126.

Application	Key Benefits of Ni-Grip® Friction Shims
Tower Segment Flanges	Prevents progressive loosening under cyclic wind loading
Blade Root Connections	Critical safety joint; shim eliminates fretting and maintains preload
Main Shaft & Hub Joints	High torque transfer; shims reduce bolt count or bolt size
Gearbox Mounting Flanges	Vibration environment; shims resist micro-slip and fretting wear

Application	Key Benefits of Ni-Grip® Friction Shims
Base frame Connections	Structural integrity over 25-year life; reduced inspection cycles
Offshore Foundation Monopile Flanges	Subsea and splash-zone exposure; corrosion-resistant shim variants available

Ni-Grip® Advantage: Enables smaller, lighter bolted connections — a direct contribution to turbine weight reduction and cost optimization. CDC®-25 and CDC®-35 grades are most frequently specified for wind energy applications.

5.3 — Automotive & Electric Vehicles

The Challenge

Modern vehicles — and especially electric vehicles (EVs) demand ever-greater structural performance from increasingly lightweight designs. Battery packs are heavy; electric motors generate high instantaneous torque; NVH (noise, vibration, and harshness) is critical to passenger experience. Multi-material structures (aluminum, CFRP, high-strength steel) create additional challenges for bolted joint design.

Key applications: chassis shear joints, battery pack mounting, suspension subframe connections, drivetrain flanges, motor mounting, and structural body-in-white joints.

Application	Key Benefits of Ni-Grip® Friction Shims
Chassis Shear Joints	Prevents lateral slip; enables weight reduction via smaller fasteners
EV Battery Pack Mounting	High-mass assembly; shims handle weight and vibration without slip
Suspension Subframe	Dynamic and impact loads; shims improve fatigue life of joint
Motor & Gearbox Flanges	High instantaneous torque from EV powertrains; micro-form fit resists slip
NVH Management	Eliminates micro-movements that generate noise and reduce joint life
Multi-Material Joints	Works through e-coat, anodize, and paint

Ni-Grip® Advantage: Drop-in to existing manufacturing processes; compatible with painted and e-coated surfaces; contributes to lightweighting by reducing bolt count or size. CDC®-25 is the most commonly specified for automotive applications.

5.4 — Aerospace & Defense

The Challenge

Aerospace structures demand the absolute highest reliability from every bolted joint at the lowest possible weight. Satellites, rockets, structural frames, wing-to-fuselage joints, landing gear fittings, engine mounts, and actuator connections must maintain shear capacity under static, dynamic, and fatigue loading over decades of service.

High-strength aluminum, titanium, and carbon fiber composites present material combinations that challenge conventional friction assumptions. Micro-slip in precision aerospace joints causes fretting fatigue, which is one of the most common causes of structural fatigue crack initiation.

Application	Key Benefits of Ni-Grip® Friction Shims
Structural Airframe Joints	Prevents fretting fatigue at critical structural interfaces
Wing-Fuselage Connections	High shear capacity in compact space; weight-critical
Engine Mounts	Vibration and thrust loads; shims maintain joint clamp load
Landing Gear Fittings	Impact and cyclic fatigue environment; micro-form fit essential
Actuator & Control Surface Joints	Precision repeatability; shims prevent micro-slip drift
Defense Structural Mounts	Shock, blast, and vibration environments

Ni-Grip® Advantage: Available in stainless steel and aluminum substrates for weight-critical applications. CDC®-8 for precision, close-tolerance joints; CDC®-35 for structural and high-load connections. Lightweight, compact — zero added envelope.

5.5 — Power Generation

The Challenge

Power generation equipment such as gas turbines, steam turbines, generators, heat exchangers, pressure vessels, and nuclear plant components often operate under sustained high temperature and pressure loads, and sometimes for decades between planned maintenance. Bolt relaxation, thermal cycling fatigue, and gasket creep are persistent threats to joint integrity. In nuclear applications, fastener reliability is a major safety concern.

Application	Key Benefits of Ni-Grip® Friction Shims
Gas & Steam Turbine Bases	Thermal cycling and vibration; shims prevent loosening between shutdowns
Generator Mounting Flanges	High vibration; shims maintain preload and eliminate fretting
Heat Exchanger Flanges	Pressure-temperature cycling; enhanced joint clamp stability
Pressure Vessel Nozzles	Code-compliance joints; shims improve safety margin without redesign
Nuclear Plant Fasteners	Life-of-plant fastener integrity; CDC® coating resists radiation environments
Renewable Energy Connections	Hydropower shaft and turbine runner flanges; high torque joints

> **Ni-Grip® Advantage:** CDC® coating rated to 800°C (1,475°F) are compatible with nuclear and high-temperature environments; and ASME Section III compliance pathway available.

5.6 — Marine & Shipbuilding

The Challenge

Ships and offshore platforms are built around welded and bolted structures exposed to salt water, constant vibration from propulsion systems, wave loading, and highly corrosive environments. Propeller

shaft flanges, deck equipment mounts, structural bulkhead connections, and mooring system joints all rely on bolted interfaces that must remain secure throughout a long vessel life.

Application	Key Benefits of Ni-Grip® Friction Shims
Propeller Shaft Flanges	High torque transmission; shims prevent slip and fretting on shaft interfaces
Engine Room Structural Mounts	Vibration environment; eliminates loosening and micro-slip
Deck Equipment Foundations	Dynamic loads from cargo, cranes, and wave action
Mooring Equipment Connections	High shock and impact loads; shims prevent joint slip
Hull Structural Joints	Long-life integrity; corrosion-resistant CDC® coating protects interface
Offshore Platform Connections	Combination of dynamic, thermal, and corrosive loading

> **Ni-Grip® Advantage:** Corrosion-resistant CDC® coating compatible with marine environments and stainless steel shim substrates are available for saltwater exposure. CDC®-35 and CDC®-80 are used often for high-torque propulsion joints.

5.7 — Robotics & Automation

The Challenge

Industrial robots and precision automation systems depend on sub-millimeter repeatability and absolute joint rigidity to deliver accurate, repeatable motion. Any micro-slip at joint interfaces, tool changers, axis mounting flanges, arm segment connections, robot base mounts will directly degrade positional accuracy, cause backlash, increase maintenance, and shorten component life.

Robots are being employed more and more each day. Increasingly, robots must be compact and lightweight while transmitting substantial forces through their joint interfaces. Friction shims are an enabling technology for achieving higher stiffness in smaller, lighter joint designs.

Application	Key Benefits of Ni-Grip® Friction Shims
Robot Base Mounting	Eliminates slip between robot base and machine tool table or floor plate
Arm Segment Flanges	Joint stiffness critical for end-effector accuracy
Tool Changer Interfaces	Precision repeatability; shims prevent micro-slip drift
Servo Motor Mounts	Torque transfer; shims resist loosening under cyclic servo loading
Cobot Joint Connections	Compact, lightweight design; shims deliver stiffness without weight penalty
Gantry & Linear System Joints	Structural connection for linear guides and gantry arms

Ni-Grip® Advantage: Ni-Grip® Friction Shims with the ultra-thin CDC®-8 grade is ideal for precision, close-tolerance robotic joints. Aluminum can be used for the shim substrate for lightweight designs.

5.8 — Construction & Civil Engineering

The Challenge

Structural steel connections such as moment joints, column splices, beam-to-column connections, wind bracing, and crane runway girders must resist in-plane shear forces over a building or bridge lifetime. Traditional slip-critical connections rely on surface coatings (Class A, B, or C) and high-strength bolts that often require costly surface preparation and inspection.

Friction shims can dramatically increase the slip resistance of structural connections; enabling lighter, smaller, and more architecturally elegant designs, or providing a safe and practical strengthening solution for existing structures.

Governing Standards: AISC 360, RCSC Specification for High-Strength Bolt Connections, Eurocode 3 EN 1993.

Application	Key Benefits of Ni-Grip® Friction Shims
Moment & Shear Connection Plates	Up to 5× increase in slip resistance; smaller or fewer bolts
Column Base Plates	Prevents column base slip under lateral (wind/seismic) loads
Crane Runway Girder Joints	High shear under rolling load; shims prevent fatigue loosening
Modular Building Connections	Factory-quality precision with field-installation simplicity
Bridge Expansion Joints	Manages controlled movement while resisting dynamic traffic loads
Retrofit Structural Strengthening	Enhances existing connections without removal or redesign

> **Ni-Grip® Advantage:** Particularly valuable in seismic zones where lateral load demands on bolted connections are highest. Enables lighter, more sustainable structural designs.

5.9 — Mining & Heavy Industry

The Challenge

Mining and heavy industrial equipment operates in among the most demanding environments of any industry — extreme vibration, shock loads, abrasive contamination, corrosive chemicals, and constant heavy-cycle operation. Critical connections include crusher frames, conveyor drive flanges, mill drive gear couplings, haul truck chassis joints, and dragline structural connections.

Bolted joint failure in mining and heavy industry directly causes costly unplanned downtime, production losses, and serious safety events.

Application	Key Benefits of Ni-Grip® Friction Shims
Crusher Frame Connections	Extreme vibration and shock; shims prevent loosening and fretting
Mill Drive Gear Coupling Flanges	High torque transmission; CDC®-80 delivers maximum grip
Conveyor Drive Unit Mounts	Continuous vibration; eliminates bolt loosening maintenance cycle
Haul Truck Chassis Joints	Heavy-duty shear loads; shims prevent lateral slip of body mounts

Application	Key Benefits of Ni-Grip® Friction Shims
Dragline Structural Connections	Cyclic loading in high-mass systems; enhanced preload retention
Processing Plant Equipment Mounts	Foundation and baseplate connections in high-vibration environments

> **Ni-Grip® Advantage:** CDC®-40 and CDC®-80 as the maximum-grip grades are the first choice for mining and heavy industry.

5.10 — Medical & Dental Equipment

The Challenge

Medical and dental equipment must maintain precision alignment and structural integrity over decades of repeated use, sterilization cycles, and loading. Imaging equipment (MRI, CT scanners), surgical robots, dental chairs, and prosthetic implant components all have zero tolerance for micro-slip or fastener loosening. Biocompatibility and chemical resistance to sterilizing agents are additional requirements.

Application	Key Benefits of Ni-Grip® Friction Shims
Imaging Equipment Mounting	Eliminates micro-vibration from loose joints in precision scanners
Surgical Robot Arm Joints	Precision repeatability and absolute rigidity
Dental Chair & Equipment Frames	Resists loosening under repeated cyclic patient loading
Prosthetic Implant Connections	Where applicable, FDA-reviewed CDC® formulations support compliance
Laboratory Equipment Mounts	Anti-vibration joint integrity for precision instruments

> **Ni-Grip® Advantage:** CDC®-20 and the CDC®-8 ultra-fine grade for the smallest, most precise interfaces. FDA-reviewed CDC® coating formulations.

Section 6 — Installation Guide & Best Practices

This guide applies across all industries. Follow these steps for all Ni-Grip® Friction Shim installations regardless of the application. Consult your Surface Technology, Inc. technical representative for any support on your specific application.

Step 1 — Inspect & Clean Mating Surfaces

Ensure all mating surfaces are free of dirt, grease, oil, and debris before assembly. Surface condition directly impacts shim performance. Contaminants between the diamond particles and the mating surface reduce the micro-form fit. Use a clean lint-free cloth and appropriate solvents to clean the mating surfaces If needed. *Note: Ni-Grip® shims are designed to work through e-coat, primer, and light oxide layers — aggressive surface prep is not required for coated surfaces.*

Step 2 — Select the Correct Ni-Grip® Shim

Match shim geometry precisely to the mating interface. Select the appropriate CDC® roughness grade (CDC®-8 through CDC®-80) based on contact pressure, surface finish, operating conditions, and required friction coefficient. Consult STI's technical team for grade selection support: **technicalservice@surfacetechnology.com** or **1 (609) 259-0099**.

Step 3 — Position Accurately

Use tabbed or clip variants to hold the shim in position during assembly — this prevents relative movement before bolt torque is applied. Maintain alignment throughout the assembly sequence. **Install one shim per interface only. Never layer or stack shims.**

Step 4 — Torque to Specification

Apply bolt loading to achieve ≥50 MPa contact pressure uniformly across the shim surface. Follow the applicable assembly standard for your industry:

- **Pressure equipment:** ASME PCC-1 cross-pattern torque sequence
- **Structural:** RCSC / Eurocode 3 tension control procedures
- **Wind energy:** IEC / DNV/GL turbine-specific bolt tightening procedures
- **General:** Manufacturer torquing specification

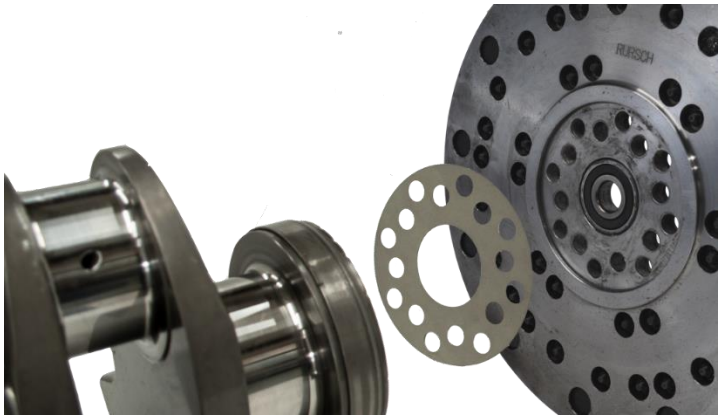
Use a calibrated torque wrench or tensioning tool. For safety-critical and HPHT joints, ultrasonic bolt load measurement can be used to verify actual load achieved.

Step 5 — Re-use Protocol

Inspect shims visually upon disassembly. Shims may be reused if:

- The diamond particle layer is intact across the shim surface
- The substrate shows no signs of deformation, cracking, or permanent distortion
- No signs of substrate corrosion or chemical attack

Clean thoroughly before re-installation. Discard any shim that fails inspection criteria. Contact STI's technical team if re-use suitability is uncertain.



READ BEFORE INSTALLATION

Never stack Ni-Grip® Friction Shims or use them as spacers. Use one shim per bolted interface only. Stacking fundamentally alters joint mechanics and invalidates all performance data. Do not use shims to fill an unintended gap as they are friction enhancement components, not dimensional spacers. Always follow the applicable industry bolt assembly standard. Failure to observe this warning may result in joint failure, loss of load, and serious safety consequences.

Section 7 — Industry Standards & Compliance

Ni-Grip® Friction Shims are compatible with the major bolted joint standards governing every industry covered in this white paper. No new code cases or special dispensations are required — the shims enhance performance within the boundary conditions already defined by existing codes.

Section 8 — Performance & Value: The Business Case

Ni-Grip® Friction Shims deliver value across four strategic pillars: Safety, Cost, Efficiency, and Sustainability to benefit every industry in which bolted joint reliability is critical.

Safety	Cost	Efficiency	Sustainability
Reduced risk of joint failure and associated consequences. Fewer unplanned release events, structural failures, or equipment damage incidents. Improved personnel safety across full asset lifecycle. Enhanced regulatory compliance and audit performance.	Smaller bolts reduce material cost per joint. Lighter flanges and structures reduce support, fabrication, and transport costs. Reduced rework, re-torquing, and emergency maintenance callouts. Reusable shims reduce lifecycle consumable costs. Potential reduction in joint count in new designs.	Drop-in installation means no joint redesign required. Reduced inspection frequency. Extended maintenance intervals across asset lifecycle. Compatible with existing assembly tooling and procedures.	Smaller, lighter joints reduce material consumption and embodied carbon. Longer joint life reduces maintenance traffic and associated emissions. STI's Ewing, NJ facility is solar-powered and environmentally committed.

Key Performance Metrics

- Up to **5× increase** in static friction coefficient
- Up to **5× increase** in shear and torque load capacity
- Potential **bolt count or bolt size reduction** — same performance, less material
- **Reusable** — reducing lifecycle costs versus single-use solutions

- **Drop-in solution** — no joint redesign required
- Compatible with **virtually all mating surface materials** and finishes

Section 9 — Why Choose Surface Technology, Inc.?

STI is the world's leading manufacturer of Ni-Grip® Friction Shims and CDC® Composite Diamond Coatings. Operating from its award-winning, solar-powered facility in Ewing, NJ since 1972, STI has built an unmatched record of technical innovation and customer support across every major industrial sector.

Advantage	Details
Pioneer & World Leader	Decades of diamond coating innovation; the standard others follow
Patented CDC® Technology	Proprietary Composite Diamond Coating® — not available from any other source
Every Industry Served	Oil & Gas, Wind, Automotive, Aerospace, Power, Marine, Robotics, Construction, Mining, Medical, Textile, Paper, and more
Custom Manufacturing	Any size, shape, thickness, or CDC® grade to meet your drawings and requirements
Coating Service	Send STI your own shim blanks — we apply CDC® to any base metal you supply
Fast Delivery	Large and small quantities; industry-leading fast delivery times
Expert Technical Support	In-house electroless nickel and friction testing laboratory; dedicated technical service team
Solar-Powered – Zero Discahrge Facility	Environmentally committed manufacturing in Ewing, NJ

Contact STI's Team

Contact Type	Details
Sales Enquiries	sales@surfacetechnology.com
Technical Service	technicalservice@surfacetechnology.com
Customer Support	customersupport@surfacetechnology.com
Phone	1 (609) 259-0099
Website	www.surfacetechnology.com
Address	1405 Lower Ferry Road, Ewing, NJ 08618, United States

Section 10 — Conclusion & Key Takeaways

Ni-Grip® Friction Shims are not a product for a single sector. They are a universal solution for the fundamental engineering challenge of bolted joint reliability. Wherever a joint must resist slip, absorb vibration, survive corrosion, or maintain preload over a long service life, Ni-Grip® delivers a proven, measurable, and cost-effective improvement. STI offers friction shims to meet any application requirements.

Five Key Takeaways

1. **The technology is universal.** The same CDC® diamond coating principle that prevents fretting in an offshore wellhead also eliminates loosening in a wind turbine tower flange, satellite components, a robotic arm joint, an automotive battery mount, and more. The physics are identical with applications from space to subterranean and everywhere in between.
2. **Drop-in adoption.** No redesign, no new tooling, no additional fasteners. Ni-Grip® Friction Shims retrofit directly into existing bolted connections and integrate seamlessly into new designs within standard engineering tolerances.
3. **Proven across all industries.** Oil & Gas, Wind Energy, Automotive & EV, Aerospace & Defense, Power Generation, Marine & Shipbuilding, Robotics & Automation, Construction & Civil Engineering, Mining & Heavy Industry, Medical & Dental, and many more that all use friction shims to solve the same root problem.

4. **The business case is compelling.** Fewer bolts, lighter joints, less maintenance, longer life, and improved safety means that Ni-Grip® Friction Shims deliver a high return on a low investment.
5. **STI is the proprietary source of CDC®.** Patented Composite Diamond Coating technology is available exclusively from Surface Technology, Inc., and its licensed distributors, since 1972.

Closing Statement

Contact Surface Technology, Inc. today to discuss how Ni-Grip® Friction Shims can transform the integrity, safety, and efficiency of your bolted joints — whatever your industry, whatever the application, whatever the environment.

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Ni-Grip® Friction Shims for Better Joints and Smarter Engineering

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