SILICATE COATING TECHNOLOGY · PFAS-FREE · WATER-THINNED

Corrosion protection without the fluoropolymer.

Acheulean manufactures a general-purpose, water-based silicate corrosion inhibitor for steel. Fasteners, structural steel, pipelines, towers and process equipment are all protected by one coating. It delivers the protection engineers specify from conventional fluoropolymer systems, with chemistry that carries no PFAS, no TDI and ultra-low VOC, and it is in service today across power generation and telecom infrastructure.

200,000 m²
of desulfurization towers and thermal pipelines protected at Shandong power plants, 2022

60+
communication towers coated for China Tower Corporation, Changchun Branch, 2024

One coating
Threaded hardware, structural steel, pipework and towers in a single qualification package

IN EVERY DRUM PFAS-free chemistry · zero TDI · water as the only thinner · VOC <50 g/L · tested to ASTM and ISO methods · manufactured in Guangdong, China

THE PROBLEM WE BUILT FOR

Corrosion is a US $2.5 trillion problem, and the standard answer is being regulated out.

Corrosion costs the global economy roughly 3.4% of GDP each year.[1] For decades the answer on critical steel and threaded hardware has been fluoropolymer coatings. They work, but they are built on PFAS chemistry now facing restriction across the EU, the United States and Canada. Asset owners are being asked to protect steel for longer while removing the chemistry that did the protecting.

Acheulean's answer is silicate. It forms a hard, adherent, chemically inert barrier on steel with water as the carrier: no fluorine chemistry, no solvent handling, no incoming regulatory cliff. And because protection is set by film build rather than by formulation, one product covers threaded hardware, structural steel and process equipment on the same asset.

HOW IT COMPARES

	ACHEULEAN SILICATE	CONVENTIONAL FLUOROPOLYMER*
PFAS content	**None**	Present
VOC	**<50 g/L**	High
TDI	**Zero**	Varies by system
Thinner / clean-up	**Water**	Solvent
Products to qualify	**One, across asset classes**	Separate systems by substrate
Regulatory outlook	**Clear**	Phase-out pressure

* Typical fluoropolymer systems for industrial steel and threaded hardware; comparison is on chemistry and handling. 1. NACE International, IMPACT Study.

ONE COATING, MANY ASSETS

A general-purpose corrosion inhibitor, specified by build rather than SKU.

A single water-thinned silicate coating protects threaded hardware, structural steel, pipework, vessels and towers. Instead of a different product for each asset class, the same chemistry is applied at the film build the application calls for: thin on threads where fit tolerance governs, heavier on surface area where barrier thickness governs. That means one product to qualify, one SDS, one applicator procedure and one inventory line instead of several.

APPLICATION MATRIX

ASSET	TYPICAL DRY FILM	WHAT IT PROTECTS AGAINST
Threaded hardware & fasteners	**10–15 µm**	Bolting, studs, nuts and anchors, protected without forcing oversize tapping
Structural steel & bridges	**30–40 µm**	Weathering, moisture ingress and rust creep on beams and connections
Pipework & process equipment	**40 µm**	Chemical exposure, condensation and thermal cycling
Towers, masts & galvanised steel	**30–40 µm**	Freeze-thaw, UV and salt-laden air where re-coating access is costly

Film build is set by specification and application method.

TECHNICAL DATA

COMPOSITION & HANDLING	
Chemistry	**Silicate-based**
Thinner / clean-up	**Water**
VOC	**<50 g/L**
PFAS	**None**
TDI / HDI	**Zero TDI · HDI ≤0.2%**
Solids	**65% by weight / 48% by volume**
pH	**10.5–11.5**
Flash point	**≥192 °C**
Filtration	**100 mesh**
Shelf life	**12 months, unopened**
Packaging	**9 kg set · 20 kg drum**

APPLICATION & CURE	
Ambient temperature	**0–40 °C**
Coverage	**0.06–0.10 kg/m², build-dependent**
Flash-off	**10 min**
Force cure, thin film	**60 °C / 20 min**
Oven cure, full build	**100 °C / 30 min**
Touch dry	**≤30 min**
Service ready	**≤8 h**

PERFORMANCE	
Neutral salt spray	**Up to 1,000 h (ISO 9227)**
Pull-off adhesion	**Up to 6.5 MPa (ISO 4624)**
Filiform corrosion	**Up to 120 h (ISO 4623-2)**
Water immersion	**240 h, no blistering (ISO 2812-2)**
UV stability	**Class 4 (ISO 16474-2)**

Performance values are build-dependent. Full technical datasheet and SDS available on request.

PROVEN IN SERVICE

2026 — **China State-Owned Rail System, Maintenance Programme**

Critical infrastructure components require coatings that maintain their protective properties over time. This delivers consistent, long-term performance.

2024 — **China Tower Corporation, Changchun Branch**

Over 60 communication towers protected. This is telecom infrastructure in one of China's harshest freeze-thaw climates, where access for re-coating is expensive and disruptive.

2022 — **Shandong Power Plants, Desulfurization & Thermal Systems**

Approximately 200,000 m² (2,152,000 ft²) of desulfurization towers and thermal pipelines protected using 70 tonnes of coating in high-temperature, high-humidity, chemically aggressive process service.

THIRD-PARTY TEST DATA

Independent laboratory testing on silicate coating panels, 2026. Test certificates are released to qualified partners under technical review.

TEST	METHOD	RESULT
Cross-cut adhesion	ASTM D3359-23, Method B	**5B, no coating removal**
Pull-off adhesion	ASTM D4541-22, Method E	**11 MPa**
Dry film thickness	ASTM D7091-22	**41.7 µm**
Neutral salt spray	ASTM B117-26 / ISO 9227	**1,600 h**

Additional qualification testing for critical bolting, including hydrogen embrittlement (ASTM F519) and coefficient of friction / K-factor (ISO 16047), can be commissioned against a defined project specification.

WORKING WITH US

Distributors & supply partners

Territory supply into fastener, industrial and MRO distribution. Samples for qualification, then container-scale supply. Private-label and co-branded programmes considered.

Asset owners & EPCs

Field trials and specification approval support, including test panels, technical documentation and application guidance for applicators and job-site crews.

SECTORS SERVED

Oil & gas and midstream pipelines · power generation and transmission · telecommunications infrastructure · structural steel and bridges · marine and coastal · water treatment · industrial fastener distribution · mining and heavy equipment

Let's put it on your steel.

Samples, technical datasheets and SDS available for qualification testing.

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