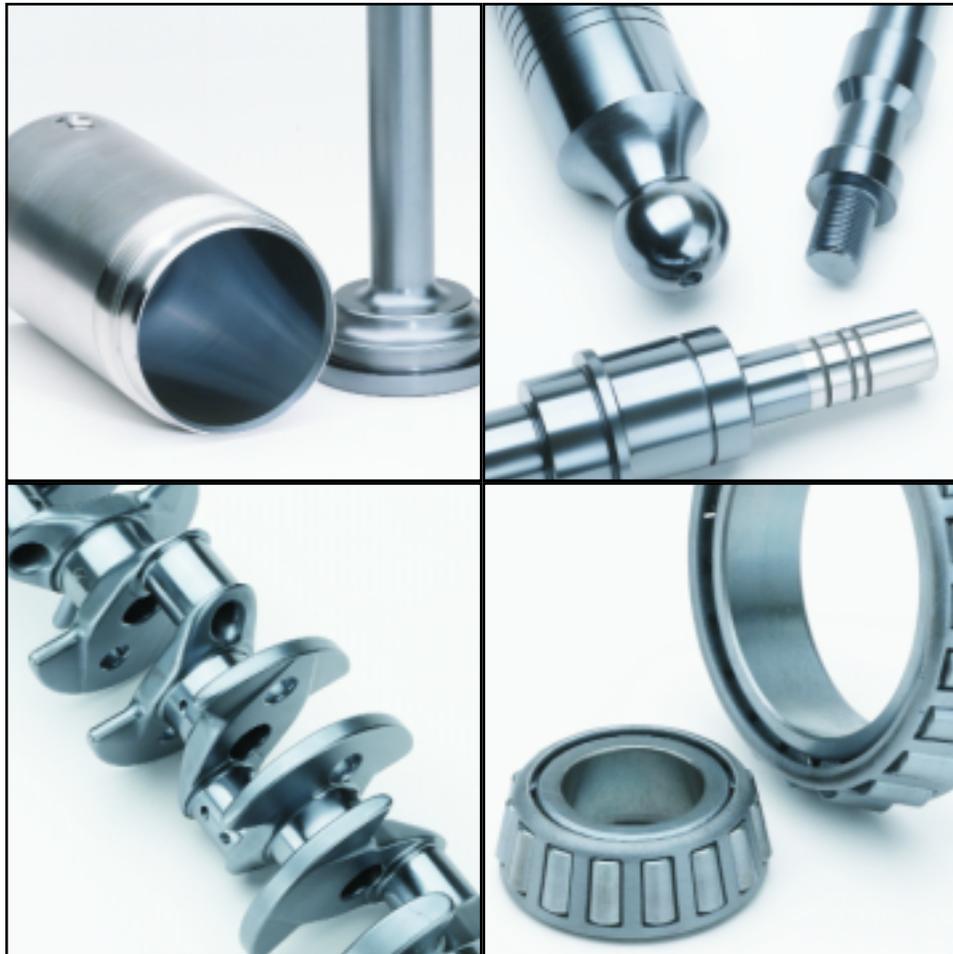


Dynacron®

Dry Lubricant System

A molecular bonded, dry film lubricant system that outperforms conventional lubricants.



Applications include:

Bearings & Gears • Tooling & Cutting Dies

Valve, Pump & Mechanical Components

Injection Molding • Medical / Dental • High Vacuum

Aerospace / Aircraft • Automotive

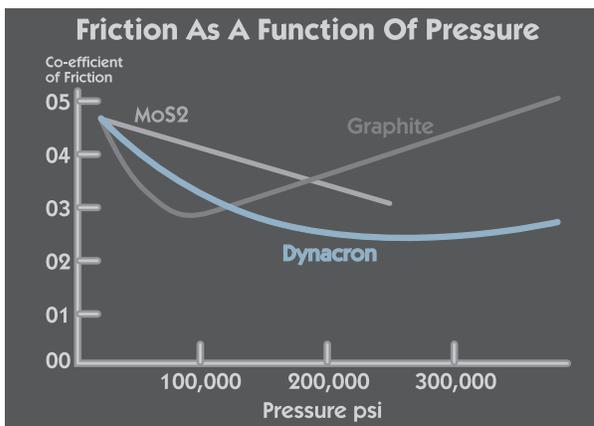
Dynacron® Dry Lubricant System

Dynacron® is a modified tungsten disulfide compound in a lamellar form. It can be applied to all metal, hardened and plated parts, and most man-made materials at room temperature to provide superior lubrication without altering the dimensional characteristics of the part or introducing contaminants common with wet lubricants.

The dry lube system technology was originally developed for NASA as a supplemental lubrication for use in aerospace programs. Its outstanding performance in outer space has led to uses in many other industries that require a superior lubrication system.

The Dynacron system is now employed throughout the lubrication spectrum as a stand-alone lubricant or as a part of a lubrication system.

Out Performs Graphite & Molybdenum Disulfide



The Dynacron Process

Our process includes a thorough atomic cleaning of the substrate, controlled atmospheric application of a proprietary formulated, modified tungsten disulfide, 100% quality control inspection and careful repackaging.

When the tungsten disulfide is applied in lamellar form through our precision process it forms a thin, uniform coating that forms a molecular bond with the substrate, and will not chip, flake or peel. It is inert, inorganic, non-toxic, non-corrosive and resistant to most petrochemical fuels, solvents and acids. Yet it is compatible with all wet lubricants.

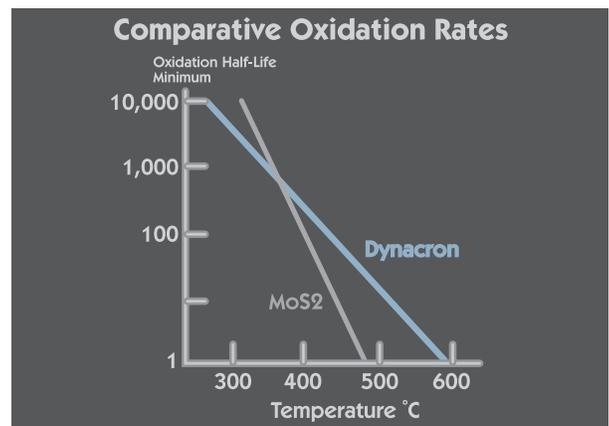
A surface treated with Dynacron will have a coefficient of friction of .030 (dynamic), and an operating range of -188° to +538° C (-400° to +1000° F). Its load characteristics are the same as the substrate it has been applied to, up to 350,000 psi.

Dynacron Features:

- Thin (1/2 micron), uniform dry film coating
- Molecular bonding
- Applied at room temperature
- Retains surface finish and original dimensions
- Can be applied to almost all substrates
- Lubricates in a wide temperature range
- Will not crack or peel from metal surface

Dynacron Benefits:

- Provides the lowest co-efficient of friction (0.030 dynamic)
- Anti-Galling & Anti-Seizing, eliminates "Stick-Slip"
- Compatible with other lubricants
- Reduces noise
- Environmentally friendly, inert and non-toxic



Industry Applications

Bearings & Gears

The sub-micron structure (1/2 micron) is completely uniform with virtually no dimensional change and is an excellent lubricity coating for tight tolerance components such as gear teeth, bearing races, cages and balls. The lamellar crystal structure improves wear characteristics, prevents spalling, reduces friction and noise and is compatible with fluid lubrication. It can be applied to all ferrous and non-ferrous metals.



Medical / Dental

The Dynacron process is completely inert, non-toxic and non-migratory. The coating is unaffected by gamma radiation and ethylene oxide. It has been widely used on medical products such as surgical instruments, medical and dental equipment components, pharmaceutical tablet punches, MRI and diagnostic equipment.

Valve, Pump & Mechanical Components

The sub-micron lamellar crystalline structure creates a complex capillary surface environment aiding in fluid lubrication retention providing significant reduction in wear characteristics. The low coefficient of friction (0.030 dynamic) reduces drag and improves lubricity translating to an increase in performance in most environments.



Aerospace / Aircraft

With a broad operating range between -350°F (-188°C) and $+1000^{\circ}\text{F}$ ($+538^{\circ}\text{C}$) and low outgassing characteristics, Dynacron is utilized on a wide range of aerospace and aircraft components. The molecular bonded structure is non-migratory, eliminating any potential for particulate contamination. The dimensional buildup of only 0.000020 inch (0.5 micron) makes the coating ideal for tight tolerance requirements.

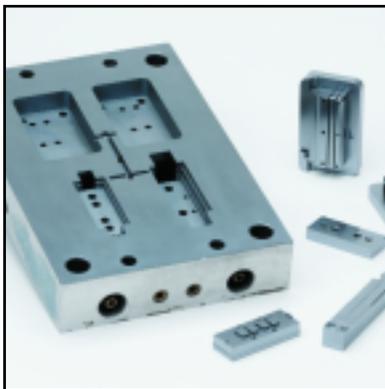
Tooling & Cutting Dies

Dynacron can be applied to all PVD and CVD coatings in addition to all Ferrous and non-ferrous substrates. The extremely low coefficient of friction improves chip evacuation on cutting tooling and significantly reduces galling, material adhesion and residual pickup. Dynacron has been used successfully on end mills, saw blades and drill bits. It is also an excellent addition to chucks, tooling holders and die components.



Automotive

Widely used in the racing industry and secondary automobile product market, Dynacron offers an extremely low coefficient of friction (0.030, dynamic) significantly improves lubricity characteristics and reduces wear on most engine parts. It has been successfully utilized for rack and pinion gears, gear box components, pistons, cam shafts and transmission components.



Injection Molding

With operating temperatures between -350°F (-188°C) and $+1000^{\circ}\text{F}$ ($+538^{\circ}\text{C}$) the Dynacron dry film lubrication process will significantly improve part release and material flow for most high density plastics, including polycarbonate, polyethylene, polypropylene, ABS, polycarbonate and styrene. The improved flow characteristics and part release permit lower temperature and pressure requirements while producing a significant reduction in cycle times. In addition the improved release eliminates or minimizes flash, sticking, scuffing and other blemishes. Dynacron reduces friction and breakage for ejector pins and improves lubricity and reduces wear on gibs, slides, lifters, leader pins and bushings.

Dynacron Technical Data

Composition:	Modified tungsten disulfide (WS ₂) in lamellar form
Hardness:	1.0-1.5 Moh's scale
Molecular Weight:	248.02
Appearance:	Metallic silver when first applied, burnishing changes to polished rhodium
Co-efficient of Friction:	0.030, inclined plane method
Adhesion:	Mechanical molecular interlock
Carrier:	Dry air, no binder or adhesives
Curing:	No cure time required, applied at ambient temperature
Thickness:	0.000020 In. (1/2 micron) or less
Density:	7.4 gms/cc
Substrates:	All metal and plated surfaces, glass, fiberglass, rubber, porcelain and man-made surfaces
Temperature Range:	-188° to +538° C (-350° to +1000° F) in normal atmosphere, up to +1316° C (+2400° F) in a vacuum of 10-14 Torr
Chemical Stability:	Inert, non-toxic, corrosion resistant
Corrosion Resistance:	Minor delay of corrosion, will not inhibit eventual corrosion
Lox Compatibility:	Insensitive to detonation by, or in the presence of liquid oxygen
Load Capacity:	Same as substrate, up to 350,000 psi
Magnetism:	Non-magnetic
Vacuum Environment:	10-14 Torr
Degradation:	Will not cause distortive stress relief, additional stresses, or degradation to any surface
As a Substrate:	Accepts most paints, all platings, and is compatible with solvents, fuels and oils

Contact Surcom for:

Consulting - Our 35 years of experience with molecular-bonded, dry lubricant systems can help you develop better performing parts and component systems.

Prototyping - We treat small to large lots of parts, with quick turnaround. Call for pricing and special delivery options.

Turnkey Systems and Licensing - Surcom offers turnkey processing systems and licensing options for in-plant processing. Contact us to discuss your requirements and our successful in-plant programs.

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