



An ISO 9001:2008 Certified Company

Leaders in Specialized Heat Treatment & Surface Treatment of Metal Components

NITROTUFF®

**Ferritic,
Nitro - Carburizing Process**

NITROXY®-QPQ

**Advanced
Oxidizing Process**

LUBEKOTE®

**Advanced
Molycoat Process**



SALEM MATERIAL TECHNOLOGY & COMPANY

M/S Salem Material Technology & Company Incorporated in 1996, dedicated to meeting the need for Specialized Heat Treatment, Surface Treatment & Quality Service to the industries which serve a wide spectrum of Customers.

M/s SMT is a Technology driven company with ISO 9001-2008 Certified by TUV-NABCB Accreditation.

We provides solutions for all of your heat-treatment & Surface treatment requirements and has the expertise in Similar industry in terms of Cost, Quality and Services. With over more than 30 years practical experience, we have acquired valuable market support as we serve.

Our quality process and services have a reputation for cost-efficiency, reliability and customer's support that is unmatched by any other Metal Treaters.

Welcome to SMT

Our Process:

Wear, Fatigue, Friction, Lubrication, Corrosion are common phenomenon in all Engineering Metal components. The performance of the components is enhanced by Heat Treatment, Surface Treatment, Surface coatings of the components.

M/s SMT & Company presently doing following Propriety processes servicing for improving life term of the components are:

- NITROTUFF®
- NITROXY® - & NITROXY® - QPQ
- LUBEKOTE®

All the above mentioned process are our own proprietary chemical composition similar to TUFFTRIDE / MELONITE / AND SURSULF (QPQ) of international standard and meeting the REQUIREMENTS OF SAE AMS 2753C

1

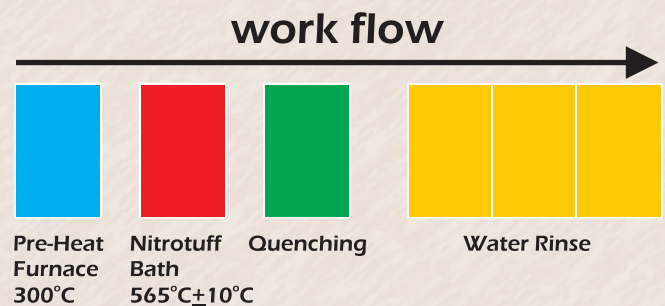
NITROTUFF®

NITROTUFF® - is a Specialized Propriety Saltbath nitro-carburizing Surface treatment process which is non-pollutive to improve wear, Scuff, Seizure ,fatigue strength, corrosion resistance, lubricity properties of ferrous material.

NITROTUFF® process operated in low temperature ($565\pm 10^{\circ}\text{C}$) there will not be any distortion after the process. The salt melt consists of alkali cyanate and alkali carbonate. It is operated in a pot made from a nickel-based material and equipped with an aeration device. The visual appearance of the components colour will generally be uniform dark grey.

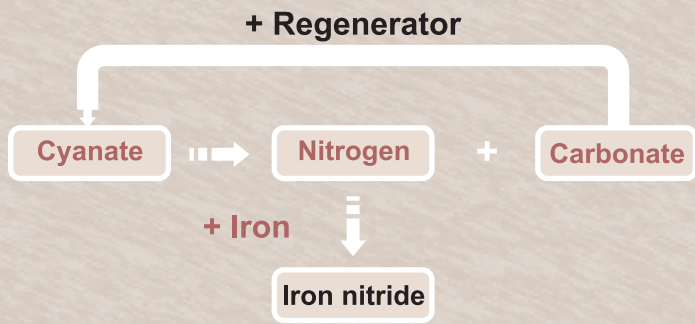
NITROTUFF® Process is a thermochemical treatment that simultaneously diffuses nitrogen and carbon into the surface of ferrous metals. During the process, a two-part surface layer is formed, an outer iron nitride layer with a nitrogen diffusion layer below it.

NITROTUFF® Process Line



During this treatment, nitrogen and carbon are absorbed by and diffused into the surface of the metal. Reproducible and uniform layers with a predetermined thickness will be formed on all areas of the metal. The result of this process improved surface properties on ferrous metal parts while maintaining dimensional and shape stability

NITROTUFF® Process Reaction



This process can be used for carbon steels, alloy steels, stainless steels, die steels, high speed steels and cast iron including, SG iron.

In many cases Nitrotuff® process can be used as alternative to other surface layer process such as case Hardening and hard chromium plating with improved quality and greater economy.

Also selective Nitriding service available on request.

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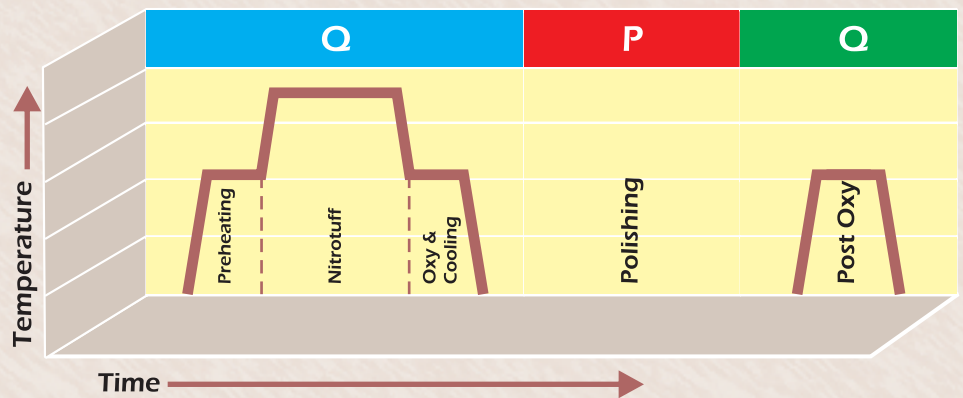
NITROXY® & NITROXY® - QPQ

NITROXY® - QPQ - Advanced Oxidizing Process for wear corrosion, fatigue, Seizure, Scuffing & Cosmetic appeal of ferrous components. This process which combines thermochemical diffusion in molten salt bath with a passivation and finishing treatment of metal components.

Nitroxy® advanced Oxidizing Process for wear corrosion, fatigue, Seizure, Scuffing & Cosmetic appeal of ferrous components. This process which combines thermochemical diffusion in molten salt bath with a passivation and finishing treatment of metal components.

The Process previously Nitrotuff® -Nitriding treated parts in no way affects the wear and fatigue resistance etc... Nitroxy® process operating at the temperature of $420^{\circ} \pm 10^{\circ}\text{C}$.

NITROXY® - QPQ PROCESS CYCLE



A supplemental Property process known as QUENCH - POLISH - QUENCH(QPQ) is offered by M/s. SMT to service customers whose parts operate for extended periods in corrosive environments and are subject to high levels of friction. producing superior wear resistance, improved fatigue strength, and surface lubricity,cosmetic appeal and

environmentally acceptable alternative to chrome and other plating.

The Process based on a sequence of process events that occur with this process. It begins with the Nitrotuff®-nitrocarburizing segment, followed by Nitroxy®-Oxidizing salt bath quench, which produces a layer of epsilon iron nitride., then followed by polishing and additional quenching steps.

The product of this quench-polish-quench process is a layer of iron oxide on the surface that enhances the corrosion resistance for non-stainless steels and promotes an appealing, additional lustrous black finish.

The Lustrous black finishes increase the consumer product applications cosmetic appeal, making products appear modern and attractive.

3

LUBEKOTE®

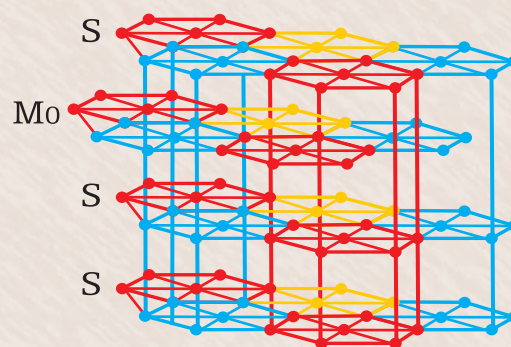
Lubekote® - Dry thin film lubrication coating based on Molybdenum disulfide provides superior lubrication, excellent corrosion resistance. Moly coating can be applied to all metallic Surfaces.

Lubekote® are a combination of molybdenum disulphide lubricant and high performance resins This coating Once applied to a metal , like methods of conventional painting method ,Brushing, spraying or dipping.

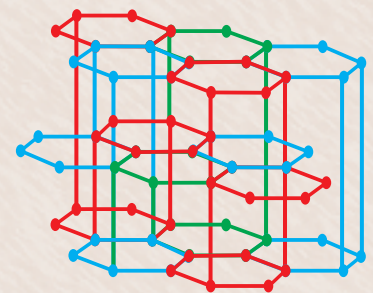
Before the Surface coating Surface preparation is necessary like Degreasing (or) Nitriding (or), (or) phosphating, or any other type of surface pretreatment Depending on the material

After the coating Moly coatings are thermally cured and thoroughly bonded to the base metal of the coated parts. The film covers all surface roughness and optimizes friction even under extreme loads and working conditions.

MoS₂ Structure



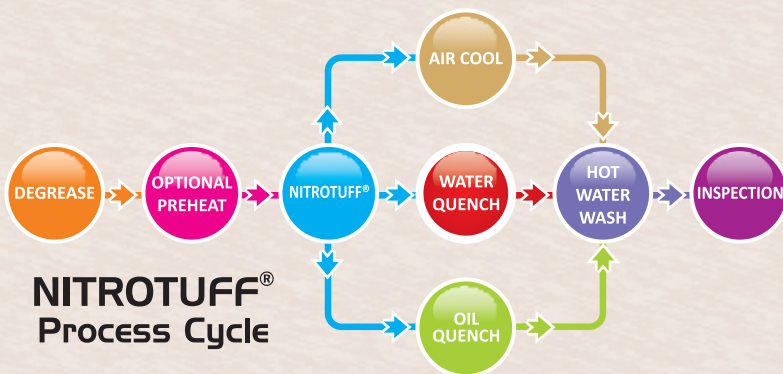
Graphite Structure



In many industrial applications, it is either impossible or impractical for components to be lubricated using liquid lubricants. Where liquid lubricants could fail due to load, temperature or the component environment, Mos2-dry film bonded lubricants solves all these problems. After completion of the coating components are black and gray colour.

NITROTUFF® ADVANTAGES

- Distortions free
- Save material cost
- Corrosion resistance
- Shorter process Cycle
- No quality rejections
- Increase the productivity
- Improve wear properties
- Increase Surface hardness
- Increase fatigue resistance
- uniform smooth surface finish & uniform Growth
- improves the sliding Properties
- No peeling off due to diffusion process
- Increase the life of treated components
- Increase the wear and corrosion resistance
- Improve fatigue characteristics of the metal
- Reduces the Friction & Increases the life



ADVANTAGES OF NITROXY® - QPQ

- NITROXY® - Processing:
Includes the properties of NITROTUFF®
- **And Additional that:**
- More Corrosion Resistance
- Decreased surface roughness usually around 1µm thick, but can be varied according to the cooling time.

Advantages of Lubekote®

- Increase the wear resistance
- Excellent corrosion resistance compared to plating
- Good appearance
- Reduces the co-efficient of friction and torque
- It also has corrosion resistance comparable to conventional plating like zinc, chromium, cadmium, nickel, etc
- Reduce running and maintenance costs, machine downtime and operational limitations
- Uniform film thickness
- Economical
- Special coatings
- very good adherence strength due to its extreme metallurgic properties
- Dismantling is easier
- Fully effective lubrication even after prolonged shutdown
- Since the dry film lubricant, so it does pick-up drit, dust, oil or greases
- Enables permanent lubrication on joints and slow sliding application
- Enables storage for long periods especially suitable for marine transportation
- No spalling, peeling, or chipping of the coating from the substrate
- Provide superior lubrication in harsh operating conditions and
- Environmental extremes
- Dry, clean lubrication unaffected by dust, dirt and moisture.
- Effective in high-vacuum conditions, where graphite will not work
- Nonflammable, non-staining protection on metals

TYPICAL APPLICATION

1

NIRTOTUFF®

Bushing, crankshafts, cylinder liners, Engine Valves, bearings, rockers, Pins, Sheet Metal Components, Shock Absorber Rod, Clutch Friction Discs, Pump Body & Impellers Parts, Injector Pins, Forging Dies, Thread Rolling Dies, Splined Shafts, Aluminum Extrusion Dies, Wind Screen Wiper

Shafts, Valve Seat Inserts, Universal Ball Joints, Telescopic Cylinders, Differentials, Cams shaft, Rocker Shafts, Stub Axles, Fasteners, Carburetor components, distributor shafts, yokes, steering knuckles, camshaft, gears, valve actuating pistons, pump bodies, pump impellers, guides, sliders, forging punches and dies, drills, milling cutters, Switch gear component, slide ways, Carburetor parts, shafts, Tyre mould Segments, wire drawing parts

2

NIRTOXY® - QPQ

Automobile components, cutting tool holders, broaches, drill bits, and cutting tools. Fork tube, Sheet Metal components, Burner components, Wiper assembly components, Hydraulic jack Rods, Bearing gauges, Hydraulic Jack Rods, ic Cylinder, Inner Fork Tube, Seating Guides, Carburetor Parts, Wind Screen Wiper Swivels & Arms, Fasteners, Pump Body, Impellers & other parts., Switch Gears, Drills, Reamers, Milling Cutters, Punches, Dies, Universal

couplings and CV joints, Spark plug central electrodes, Manifolds, heatshields and exhausts, Turbochargers, Cylinder liners, steel, Cylinder blocks and motorcycle housing, Gasket surfaces, Tyre valves, Pulleys, drives and clutches, Splines and couplings, Callipers, Titanium flex tubes and cases, Rope termination plates, Potting frames, Gate valves, Coring tubes, Sub-sea systems, towed arrays, cameras, Robots, Fibre optic connectors, Actuator mandrels, Gripper trees and housings, Titanium enclosures and threads, Seal faces Pump parts, splines and couplings, Connectors and mandrels, Layup plates, Electronic boxes, Slip rings, Antennae, Connectors, couplings, splines, shafts.

3

LUBEKOTE®

Cutting Blades, All Sliding Surfaces Components, vacuum and aerospace applications, Rings & Seals, Gas cylinder threaded parts, Chain, Tyre mould segments, Wire drawing parts, Machine tools, Pins, Taps, Compressors parts, Chucks, Collets and Tools, Circuit Breakers and Switches, Taps and pins,

Pilot Valves, Chain Saws, Bushes Differential pins, Threaded components, Engine and Drive Train Parts, Gears and sprockets, Friction disks, Brake disks, Electrical Connectors, Slide Mechanisms, Journal pinion carriers, Gear forks, Journal pinion carriers, Racing motor gears, Racing motor connecting rods, Turbocharger components, Piston ring systems, Rollers, Pumps, Locks & Pins, Drive Chains, Conveyors Etc.

Applicable Industries

- Aerospace
- Automotive
- Biotechnology
- Casting
- Chemical
- Construction
- Defence
- Electrical
- Locomotive
- Machinery
- Material handling
- Marine
- Mining
- Machinery
- Measuring equipment
- Nuclear

- Electronics
- Engine Valves
- Forging
- Food Processing
- Gas
- Genetics
- Hydraulics
- Hardware
- Heavey Equipment
- Oil
- Optical
- Petro Chemical
- Pumps
- Pharmaceutical
- Petroleum
- Packaging
- Renewable Energy

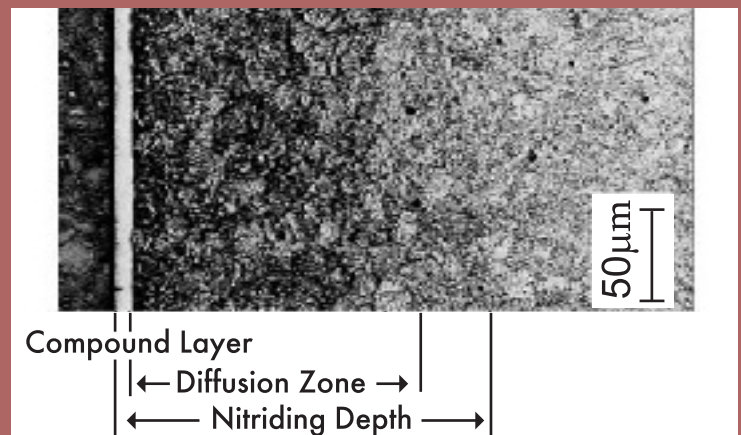
NITROXY® - QPQ INCLUDES

- Further more Enhanced Corrosion
- Lustrous black finishes
- Excellent quality at an affordable price
- Low Light Reflection
- Further Decreased Coefficient of Friction
- Improved uniformity regarding depth of hardned surface

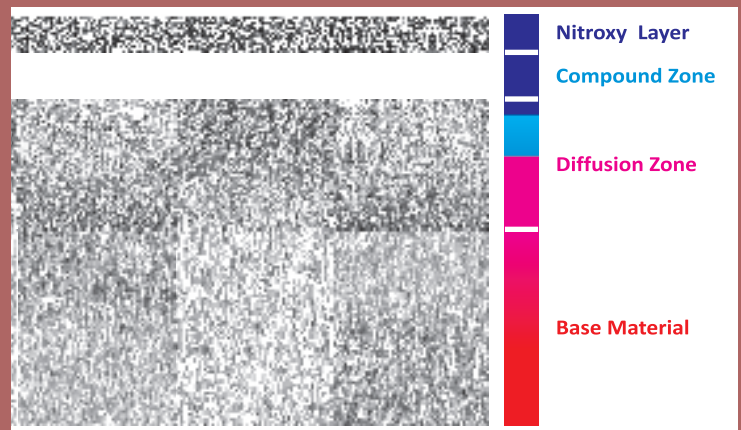
Metallographic Facilities



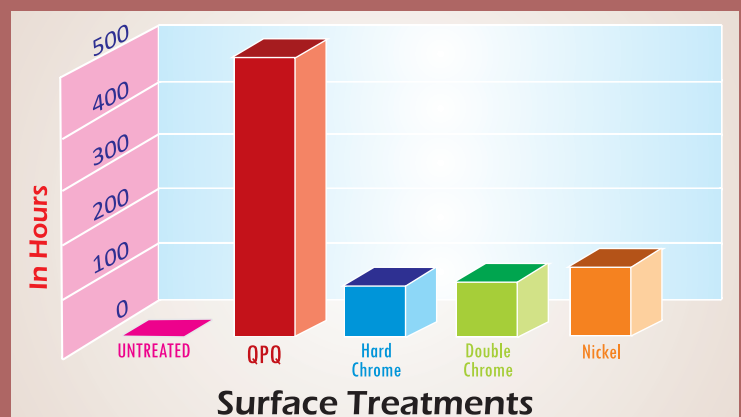
NITROTUFF® Microstructure



NITROXY® Microstructure



Corrosion Resistance



Believe

Better



Our Mission

Our Mission is to be the most successful Heat Treatment and Surface Treatment company in the world at delivering the better Quality Service in markets as we serve.

Our Vision

Our vision is to bring our Company into the World class Quality Heat Treatment & Surface Treatment through innovative technology & Service



Our Group Company



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Coimbatore - 641 021. Ph : 0422-2672898



M/S **Indotherm Technologies**
S. F. No. 646/1, Thillai Nagar, Eachanari,
Coimbatore - 641 021. Cell : 98422 23997

If your company interested in improved performance of your components, equipment and machinery, reduced production cost and material cost /consistent quality and service along with continuous success...

Please Contact :



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SPECIALIZED HEAT TREATMENT & SERVICE