

Innovative Dry Lubricant Coatings

LUBODRY®
PRODUCTIONS

Efficient Experienced Environmental



COMPANY PROFILE

- company established since 1995, European leader in permanent / dry lubricant impingement processes
- Headquarters and production facilities : Sartrouville (78500 - France)
- 2 technical-sales offices : Sartrouville (78) & Lyon (69)
- ISO 9001 (2015 version) and EN 9100 certified, LUBODRY® processes compliant with aeronautics specs SAE AMS2525, AMS 2526 and AMS 2530
- 100+ active clients in France, Germany, Italy, Switzerland and Poland (export >25%)
- Space technology / Used by all types of industries



VISION

Statement : conventional lubricant solutions do not meet new technical and industrial challenges

- ⦿ Heavy maintenance cost
- ⦿ Operators' safety concerns
- ⦿ Equipments' lifespan concerns, and above all :
- ⦿ Environmental issues

VISION

New management & new ambitions :

- R&D investment
- Production investment
- Launch of the AOG / Rapid Service Unit
- Improved quality management system
- Empowered CRM

Business targets :

- 3 new production facilities in France (Rhône-Alpes, Aquitaine, Grand-Ouest), 2016/2017
- 3 new production facilities in Europe (Italy, Germany, United Kingdom), 2017/2018
- Exports : > 50%



VISION

Immediate achievements

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- Continuous improvement of existing LUBODRY® dry lubricant processes
 - Development of new and advanced lubricant solutions
 - New technical requirements better assessed and met
 - Active cooperation within research projects, through partnerships with research institutes and other industrial businesses
 - Response time decreased by 35% in comparison with 2014/2015
 - Active membership of main technological and industrial clusters

Make LUBODRY® Productions the industry indispensable partner in Europe

LUBODRY® PROCESSES

APPLICATION PRINCIPLES

- Three different dry lubricant processes/coatings, depending on operation temperatures and chemical compatibility with the environment
 1. LUBODRY® G: Graphite
 2. LUBODRY® M: Molybdenum Disulfide (MoS_2)
 3. LUBODRY® W: Tungsten Disulfide (WS_2)
- High-velocity projection of dry lubricant micro-particles
- To ensure perfect and long-lasting adhesion processes, workpieces are micro-blasted prior to the application processes (440 Mesh white Corundum or 220 Mesh brown Corundum)
- LUBODRY® processes are cured in a stove during 1h30 at 140° C max. or, when required, polymerized at ambient temperatures for 7 days
- The LUBODRY® W process does not require cure time
- Application possible on all types of substrates

LUBODRY® PROCESSES TECHNICAL PROPERTIES

- Dry lubricant processes based on Graphite, Molybdenum Disulfide (MoS₂) or Tungsten Disulfide (WS₂) lamellar structures
- Do not create extra-thickness at the surface of processed workpieces (up to 1μm tolerance)
- Friction coefficient among the lowest in the industry : from 0,02 through 0,07
- Lubrication performance increases with the payload
- Performance under extreme temperatures : from -250°C through +1 100°C (up to 1500°C in vacuum)
- Compliant with most aerospace, military and medical specs and requirements

LUBODRY® PROCESSES ADVANTAGES

- Anti-wear, anti-seize and anti-adhesion
- Reduced temperatures and operation noise of workpieces
- Original dimensions of workpieces are preserved, no extra machining required after application (up to 1µm tolerance)
- Environment friendly : no reject during application process, no pollution during operation of workpieces, chemical stability
- Not subject to radiations
- No out-gassing in vacuum
- Permanent lubrication : molecular bonds between dry lubricant micro-particles and substrates
- Resistance to corrosion (high performance under salt spray conditions)
- Prevent fretting-corrosion issues
- Drastically reduce maintenance operations relating to conventional lubricants
- Increase industrial parts lifespan and improve productivity / **output**
- Prevent electrical discharge phenomena

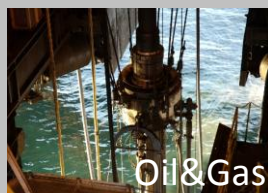
INDUSTRIES & APPLICATIONS



Space



Medical



Oil & Gas



Motorsport



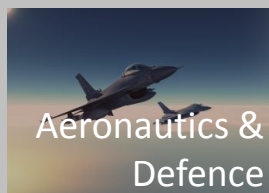
Semi-conductors



Food & Beverage



Clean Energies



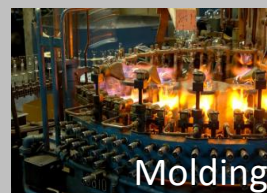
Aeronautics & Defence



Precision mechanics



Hydraulics



Molding



Machinery



Mechanics



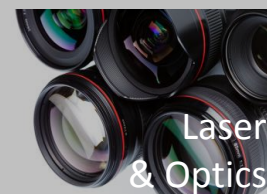
Ground transportation



Plastics injection



Robotics



Laser & Optics



Nuclear

- Space program components
- Molds, pins, ejectors (plastics and aluminium injection)
- Seals, hinges
- Motor and transmission components in the Motorsport industry
- Cylinders
- Break pads
- Axles, cam-shafts
- Screw-nut systems, screws
- Titanium and aluminium fasteners

- Springs, tensioners
- Bearings
- Ball joints
- Weapons and ammunitions
- Marine mechanics components
- Industrial plumbing
- Valves, pumps, and cams
- Cogs
- Air-pressurized systems
- Servo-commands

- Actuators
- Connectors
- Sliding systems, linear guides
- Gear forks
- Machinery
- Micro-components (watches, micro-drives, etc.)
- In addition to oil- and grease-based lubricants, to improve their respective friction coefficient

SERVICES

- Clients' satisfaction record (time and quality) : >99,9%
- In order to help you reduce your immobilisation costs and meet your urgent requirements, LUBODRY® PRODUCTIONS has set up specific processes and resources
- Select the ultimate option (shipment time not included)
 - AOG Service (aeronautics maintenance) : 4h max.
 - High Emergency Service : 4h max.
 - Emergency Service : same day - 12h max.
 - Rapid Service : 24h max.
 - Regular Service : 3 to 5 days



AOG / Emergency number : +33 (0)1 39 57 17 25

Reach us 24/7

Processed at our Sartrouville production facility

PHYSICAL & FUNCTIONAL SPECS

	LUBODRY® G	LUBODRY® M	LUBODRY® W
COMPOSITION	Graphite (C)	Molybdenum Disulfide (MOS2)	Tungsten Disulfide (WS2)
APPEARANCE / COLOUR	Gray / dark gray	Silver / gray / blue-gray	Silver / gray / polished rhodium
SUBSTRATES		All kinds of metals, platings, plastics and man-made materials	
SURFACE		No modification on surface and structure	
DENSITY	2 090 - 2 230 kg/m3	5 060 kg/m3	7 500 kg/m3
THICKNESS	0,0001"	0,0001"	0,00002"
MOLECULAR WEIGHT	12,0107 g/mol	160,07 g/mol	247,97 g/mol
RADIATION STABILITY		Stable under radiation	
OUTGASSING		Low	Very low
ADHESION TYPE	Physicochemical binding by molecular adsorption, without any flaking, peeling or delamination. Marginal migration of the surface treatment, which could easily be removed on demand		Physicochemical binding by molecular adsorption, without any flaking, peeling or delaminating. No migration of the surface treatment
APPLICATION PROCESS	High pressure projection using a tailor made suction nozzle with pressurized air (101,6 psi to 203,19 psi). May also be applied into deep bores with a ratio of 1 to 7 with the diameter		High pressure projection using a tailor made suction nozzle with pressurized air (101,6 psi to 203,19 psi). May also be applied into deep bores with a ratio of 1 to 7 with the diameter
APPLICATION TEMPERATURE	Application at ambiente temperature and polymerization at ambiente temperature during 7 days, or : 3 hours at 90°C or 1.5 hour at 140°C		Application at 20-35°C, no need for heat treatment
TEMPERATURE RANGE			
- Normal atmosphere :	From -250°C to +1100°C	From -200°C to +400°C	From -200°C to +600°C
- Vacuum :	From -250°C to +1500°C	From -200°C to +800°C	From -200°C to +800°C
LOAD CAPACITY	Same as the substrate, up to 2,750 Mpa	Same as the substrate, up to 1,720 Mpa	Same as the substrate, up to 2,750 Mpa
ANTI-ADHESION PROPERTIES	Good : process recognized for its anti-adhesive properties (example : plastic injection molds)		
CONDUCTIVITY	Good : Same electrical properties as semi-conductors	Acceptable	Good : Same electrical properties as semi-conductors
MAGNETISM		Non-magnetic	
COEFFICIENT OF FRICTION			
- In motion :	0,02-0,07	0,02 - 0,07	0,03 max.
- Vacuum :	Low	Low	Low
CORROSION PREVENTION		- With additional treatment : Excellent corrosion resistance - Without treatment : Minor delay of corrosion, superior to bare substrate	
CHEMICAL STABILITY	Excellent chemical stability : inert substance, non-corrosive, insoluble in water, compatible with oils, alcohols and most fuels and solvents		
VACUUM STABILITY		Good - no degassing	Very low outgassing
10-9 Torr : LUBODRY® G & LUBODRY® M			
10-14 Torr : LUBODRY® W			
ATEX		No use restriction	
COMPATIBILITY	Compatible with most oils, fuels, solvents, alcohols, paints and coatings		
BIOCOMPATIBILITY	-	-	Yes

REFERENCES



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LUBODRY®
PRODUCTIONS

Your permanent & pollution-free lubricant solution !