

Coatings Matrix

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Leader in surface coatings for critical components

Everlube Products

+44 (0)1386 425758 www.everlube.co.uk www.emcoatingsuk.co.uk

About EM Coatings Services & Everlube Products

E/M Coating Services & Everlube Products have been supplying, designing and manufacturing highly engineered coating solutions for a diverse range of markets for over 40 years.

We have a dedicated and highly experienced technical team operating from our well-equipped and specifically designed facilities, enabling us to provide our customers with the very highest levels of quality, service and technical support. Our facilities feature the very latest technology to ensure complete long-term environmental compliance and in addition to our central UK operation based in Evesham Worcestershire E/M coating services can provide application and product support worldwide.

Today E/M develops and applies a comprehensive and innovative range of technical coatings for customers from all industrial sectors, ranging from multi-national and OEM organisations to small specialist engineering and manufacturing companies.

As a pioneer in the original use of dry film lubricant coating products E/M has remained at the forefront of this vital technology utilising solid lubricant materials such as molybdenum-disulphide, graphite, PTFE and others.

E/M Coating Services is a business unit of Curtiss-Wright Surface Technologies (CWST) who provide highly engineered processes including world-class controlled shot peening and laser peening, engineered coatings and analytical services to improve the life, strength and performance of critical components. These are delivered through a wide network of over 70 dedicated international facilities and on-site work serving major industries such as aerospace, automotive, power generation, oil & gas, military & defence, petrochemical, marine, medical and other speciality industries.

Through this array of processes and a combination of superior service, quality, reliability, expertise and flexibility, CWST works in partnership with its customers to solve their complex challenges and improve the life and performance of their products.

In addition if our coating selection does not meet your engineering or industrial specification, then we also have available our in-house specialist chemists that can develop individual cost effective coatings solutions to fit your requirements, contact us to find out more.

		Coating	Solid Lubricant	Resin Type	Coefficient of Friction ASTM D 2714		ervice perature max	DFT (μm)	Load Capacity ASTM 2625 Method B	Wear Life ASTM 2625 Method A	Abrasion resistance ASTM D4060	Corrosion Protection ASTM B-117	Pre-treatment (see key)	Application Method (see key)	Full Cure	Colour/ Appearance	Specifications/ Approvals	Description/Typical Applications	Isopropyl	Hydrochloric Acid (10%)	Mineral Spirits / Paint Thinner	Toluene	Hydroxide (10%) Acetone	Skydrol 500	Jet Fuel (JP-4)	Distilled Water	Trichloro- ethylene	Anti-Icing Fluids Diethanolamine
	Fig	Everlube 9005	MoS ₂	Ероху	0.04 - 0.06			7 - 18	250,000 psi	365	Excellent	100 hrs	GB and/or Ph	Sp / DpSp / Br	1hr at 200°C	Grey/black matte		Low VOC & friction coating developed to reduce seizure on fasteners, bearings, cams, gears, splines & engine ring seals to aid assembly and running in.	V	~	~	v .	<i>' '</i>	~	~	v v	~	v v
	/ Friend	Everlube 644	MoS ₂	Ероху	0.03 - 0.06	-109°C	218°C	7 - 18	250,000 psi	375	Excellent	100 hrs	GB and/or Ph	Sp / Br	1hr at 200°C	Grey/black matte		Lead and antimony free dry-film bonded lubricant with a good chemical resistance. Typical applications:- fasteners, bearings, cams, gears, splines.	~	~	~	v .	/ /	~	~	v v	~	v v
	nmentally	Everlube 1174	PTFE	Ероху	0.02- 0.08	-73°C	230°C	7 - 50	40,000 psi	N/R	Excellent	1000 hrs	GB and/or Ph	Sp	1hr at 200°C	Range of colours available		Outstanding corrosion, chemical and UV resistance. Developed for threaded components and heavy duty connectors in the off-shore industry. Excellent barrier coating for materials susceptible to corrosion such as rare earth magnets.	~	~	~	v .	<i>'</i>	~	~	V V	~	v v
	Enviro	Everlube 9002	MoS ₂	Ероху	0.04 - 0.08	-73°C	200°C	7 - 18	250,000 psi	450	Excellent	100 hrs	GB and/or Ph	Sp / DpSp / Br	1hr at 200°C	Grey/black matte	Mil-PRF-46010, AS5272 ty III	Low VOC dry film bonded MoS ₂ coating. Lead free lubricant with a high molecular weight resin. Good chemical, wear, friction & abrasion resistance developed for high load bearing applications.	~	~	~	v .	V V	~	~	V V	•	v v
	Heavy Duty	Everlube 1PX1	MoS ₂	Phenolic	0.04 - 0.08	-73°C	150°C	7 - 18	175,000 psi	200	Very good	100 hrs	GB and/or Ph	Sp / DpSp / Br	1hr at 150°C	Grey/black matte		Low friction coating reduces galling, pick up, corrosion on rotating & sliding components where conventional lubricants are not practical e.g. flanges, valves, leadscrews, hydraulic/pneumatic bearings.	~	~	~	v .	V V	~	~	V V	~	v v
		Ecoalube 643	MoS ₂	Ероху	0.04 - 0.08	-73°C	200°C	7 - 18	250,000 psi	450	Excellent	100 hrs	GB and/or Ph	Sp / DpSp / Br	1hr at 200°C	Grey/black matte	AS5272 ty II	Low friction dry film bonded MoS ₂ coating. Lead free high load bearing lubricant with a high molecular weight resin. Good chemical, wear, friction & abrasion resistance. Ideal for threaded components.	~	~	~	v .	V V	~	~	V V	~	v v
		Everlube 620C	MoS ₂	Phenolic	0.4 - 0.08	-73°C	150°C	7 - 18	250,000 psi	250	Good	100 hrs	GB and/or Ph	Sp / DpSp / Br	1hr at 150°C	Grey/black matte	AS5272 ty II, MIL-L-8937D, MIL-L-46010E Ty 1	Everlube 620C is an MoS ₂ dry-film bonded heavy duty coating. Developed for the aerospace/defence industries. Typical uses are hydraulic fittings, valve components and non-intrusive medical instruments.	~	•	•	v .	V V	~	~	V V	~	v v
Cure		Everslik 1301	MoS ₂	Phenolic	0.04 - 0.08	-73°C	150°C	7 - 18	250,000 psi	250	Good	100 hrs	GB and/or Ph	Sp / DpSp / Br	1hr at 150°C	Grey/black matte	Various petrochemical approvals	Everslik 1301 is an MoS ₂ dry-film bonded heavy duty coating. Developed for the petrochemical markets to prevent pick up, galling & seizure. Ideal for threaded components e.g. jackscrews, valve stems, ball & butterfly.	~	~	~	v .	V V	~	~	V V	~	v v
Thermal C		LubeLok 2006	MoS ₂ / Graphite	Silicone	0.02 - 0.08	-100°C	400°C	7 - 18	100,000 psi	60	Fair	N/R	GB	Sp / DpSp / Br	1hr at 260°C	Grey/black matte	Various aerospace approvals	Graphite/MoS ₂ solid film bonded lubricant with a silicone resin system. This coating provides lubrication at higher temperatures. It has an extremely low coefficient of friction and good chemical resistance.	~	~	~	v .	V V	~	~	V V	~	v v
Ther	High Temperatur	Formkote T-50	Graphite	Silicone	0.02 - 0.08	-55°C	800°C	7 - 18	40,000 psi	N/R	Fair	N/R	GB	Sp / DpSp / Br	1hr at 260°C	Grey/black matte	Various aerospace approvals	Mould release for die casting of titanium, aluminium and zinc for temperature exceeding 800°C. It can also be used in tube bending and extruding. Available in aerosols, quarts, gallons & pails.	N/R	N/R	N/R N	N/R N	I/R N/F	R N/R	N/R	N/R N/F	R N/R	N/R N/R
		Everlube 1200	None	Silicone	N/A	-55°C	650°C	7 - 25	N/A	N/A	Very good	2000 hrs	GB and/or Ph	Sp / DpSp / Br	1hr at 260°C	Metallic black or silver		Outstanding thermal stability. Excellent corrosion, chip and abrasion resistance. As a stand alone barrier coating, is the perfect solution for an array of demanding applications from aesthetically pleasing coatings for the protection of brake discs to providing corrosion protection to high temperature incinerator stacks. Everlube® 1200 is an ideal base coating for Everlube's extensive range of solid film lubricant top coats including our highest performing resin bonded PTFE sub-sea fastener grade Everlube 1174.	N/R	N/R	N/R N	N/R N	I/R N/F	R N/R	N/R	N/R N/F	R N/R	N/R N/F
	эсе	Flurene 177	PTFE	PVDF	0.02 - 0.08	-15°C	200°C	20 - 50	20,000 psi	N/R	Excellent	100 hrs	GB and/or Ph	Sp	30min at 270°C	Range of colours available		Flurene 177 is a unique fluoropolymer coating that offers low friction combined with superb chemical and abrasion resistance. The coating is both flexible and offers outstanding wear resistance properties.	~	•	•	V .	<i>'</i>	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	V	V V	'	V V
	Resistar	Everlube 6108	PTFE	Phenolic	0.02 - 0.08	-73°C	150°C	7 - 25	20,000 psi	N/R	Good	1000 hrs	GB and/or Ph	Sp / DpSp / Br	1hr at 150°C	Satin black	Numerous aerospace and automotive approvals	PTFE based thermally cured solid film lubricant with a phenolic binder system. It has good anti-corrosive properties, good abrasion & chemical resistance. Developed for fasteners in the automotive industries for use on fasteners, seat slides and rails.	~	~	•	V .	V V	~	•	V V	'	V V
	emical	Everlube R-75	PTFE	PAI	0.02 - 0.06	-73°C	260°C	7 - 25	20,000 psi	300	Good	200 hrs	GB and/or Ph	Sp	1hr at 220°C	Satin black	Medical ISO 10993-6, 10 & 11 NSF-61	Good durability and abrasion resistance. Ideal for lighter load carrying applications. Can be used in non-intrusive medical applications.	'	•	'	· .	<i>'</i>	~	>	V V	~	V V
	ర్	Flurene 611	PTFE	PAI	0.02 - 0.08	-250°C	250°C	7 - 25	20,000 psi	N/R	Excellent	100 hrs	GB and/or Ph	Sp / DpSp	1hr at 200°C	Satin black		Resin based fluoropolymer coating giving a combination of low friction and wear resistance. Will operate in temperatures as low as of 250°C and as high as 250°C. Suitable for many industrial applications e.g. bearings, saw blades.	'	•	•	V .		'	>	V V		V V
	e jon	Everslik 1201	None	Ероху	N/A	-73°C	200°C	7 - 50	N/A	N/A	Excellent	2000 hrs	GB and/or Ph	Sp / DpSp / Br	1hr at 200°C	Gloss - Black, Red or Green	Various petrochemical approvals	High performance barrier coating which can be used as a base coat e.g. Everslik 1301. Inherent hydrophobic properties giving good chemical and water resistance. Used extensively in the petrochemical industries on subsea and top side components.	~	•	•	V .		~	~	V V	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	V V
	igh Corros Resistanc	Everlube 1155	None	Ероху	N/A	-73°C	200°C	15 - 50	N/A	N/A	Excellent	2000 hrs	GB and/or Ph	Sp	1hr at 200°C	Metallic silver		Outstanding chemical and corrosion resistance. Excellent adhesion, toughness and durability. Developed specifically for rare earth magnets. Can be used as a barrier coating in a variety of harsh environments.	~	~	•	V .	V V	~	~	V V	'	V V
	E H	Everlube 6102G	PTFE / MoS ₂	Phenolic	0.02 - 0.08	-73°C	150°C	7 - 18	40,000 psi	N/R	Good	600 hrs	GB and/or Ph	Sp / DpSp / Br	1hr at 150°C	Satin black	Various automotive approvals. Medical ISO 10993 non-intrusive	PTFE/MoS ₂ solid film lubricant. Enhances torque/tension and is applied to small springs, slides and fasteners for the automotive and domestic markets.	~	~	~	V .	<i>'</i>	~	~	V V	•	V V
	- 8	Permaslik GLF	MoS ₂	Ероху	0.04 - 0.08	-73°C	120°C	7 - 18	250,000 psi	120	Fair	100 hrs	GB and/or Ph	Sp / DpSp / Br	24hr > 5°C	Grey/black matte	Mil-PRF-46147	Air drying MoS ₂ coating applied from an aerosol, easy to apply and ideal for use in the field as a repair or permanent coating. Used to aid assembly on threaded components, shafts, splines & bushes, etc.	~	~	~	v ,	<i>'</i>	~	~	V V	~	V V
0	orrosic	Everlube 1180	None	Ероху	N/A	-73°C	150°C	15 - 50	N/A	N/A	Good	500 hrs	GB and/or Ph	Sp	16hr > 5°C	Gloss - Black		2-pack air cure system, ideal for on site repair of corrosion resistant coatings. Can be used in conjunction with Permaslik GLF to provide a complete barrier/friction reducing repair system.	'	~	V	v .	<i>'</i>	~	'	V V	~	V V
r Cure	0 %	Everlube 1188	PTFE	Urethane	0.02 - 0.08	-70°C	150°C	10 - 30	N/R	N/R	Fair	100 hrs	GB and/or Ph	Sp / DpSp / Br	16hr > 5°C	Range of colours available		This coating has can be used where excellent friction characteristics are required but heat curing is unavailable, for example as a repair coating for damaged parts, or for temperature sensitive substrates such as plastic and rubber.	N/R	N/R	N/R N	N/R N	I/R N/F	R N/R	N/R	N/R N/F	R N/R	N/R N/R
Air	Femp.	Permaslik RMAC	MoS ₂	Titanate	0.04 - 0.08	-225°C	400°C	7 - 18	250,000 psi	160	Fair	N/R	GB and/or Ph	Sp / DpSp / Br	6hr > 5°C	Grey/black matte	Various aerospace and automotive approvals	High temperature & load bearing MoS ₂ coating. Also available in an aerosol so ideal for applying in the field. Quick drying and is used on slides, rails, threads to prevent pick up and galling.	~	N/R	~	✓ N _i	/R /	~	V	V V	<u> </u>	V V
	High	Permaslik RGAC	Graphite	Titanate	0.02 - 0.08	-225°C	600°C	7 - 18	40,000 psi	N/R	Fair	N/R	GB and/or Ph	Sp / DpSp / Br	6hr > 5°C	Black matte		High temperature & load bearing Graphite coating. Also available in an aerosol so ideal for applying in the field. Quick drying and is used on slides, rails, threads to prevent pick up and galling.	V	N/R	•	✓ N	/R /	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	V	V V	'	V V



Dry Film Lubricants

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What are Dry Film Lubricants?

Dry Film Lubricants are complex coatings made up of lubricating additives in a continuous matrix of a binder. This tough coating layer provides low frictional resistance between two mating parts. The lubricating additives fit into two main categories; crystalline lattice (lamella) type structures such as Molybdenum Disulphide, Tungsten Disulphide and Graphite or Fluorocarbons such as PTFE. These varying pigments (additives) can be combined with a wide range of resins to achieve different properties, such as: high load bearing, very low coefficient of friction, high temperature, chemical resistance, corrosion resistance, abrasion resistance.

Why are Dry Film Lubricants used?

Dry Film Lubricants can be used for a number of different reasons. They are often used when liquid lubricants (grease/oil) cannot be used. Liquid lubricants have a relatively narrow band of usable conditions. Once out of this band (due to temperature, load, wear, migration, debris) the liquid can change fluid state and no longer provide protection. In these conditions a Dry Film Lubricant will remain intact and provide continuous lubrication.

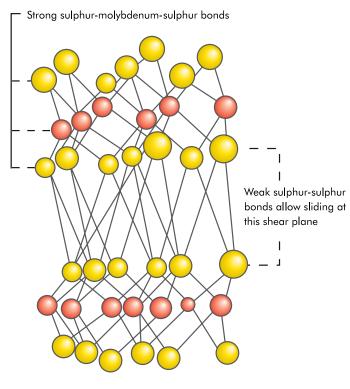
How do 'Crystalline Lattice' (MoS₂) Dry Film Lubricants work?

Molybdenum Disulphide (MoS_2) is a good example. The structure of MoS_2 can be seen in Figure 1. Although the bonds between the Molybdenum and the sulphur atoms are strong, the bonding between the crystalline lattice layers (sulphur to sulphur) are weak. This means the shear forces between the layers are very low. This shearing at the weak shear planes, provides the lubricity between sliding surfaces. This lubrication mechanism is the same for Tungsten Disulphide and Graphite.

How do PTFE coatings work?

There are three key factors that give PTFE its unique 'anti stick' properties. They all derive from its chemical structure, displayed in Figure 2. PTFE is made up of a chain of carbon atoms, with two fluorine atoms on each carbon. The first thing that is noted about the structure in Figure 2, is that the fluorine atoms are far larger than the carbon atoms, effectively shielding them. Therefore, it's almost impossible for any other chemical structure to gain access to the carbon atoms. The second and key factor is the bond strength between the carbon and the fluorine. Even if another atom or substance could gain access, the carbon-to-fluorine bonds have an extremely high bond dissociation energy (BDE) of up to 544 kJ/mol., making them almost unbreakable. The third factor is that fluorine is naturally an 'anti social' atom, which physically wants to repel other atoms. The combination of these factors gives PTFE coatings their ultra low coefficient of friction and excellent chemical resistance.

Figure 1



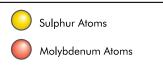
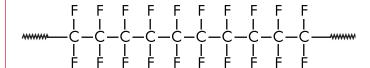
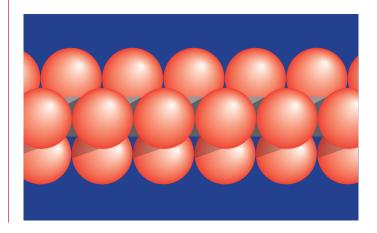


Figure 2





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MARKETS

- Aerospace
- Agriculture
- Automotive
- Chemical
- Defence
- Electronics
- Food
- Marine
- Medical
- Mining/quarrying
- Motorsport
- Petrochemical
- Power Generation
- Printing
- Rail
- Telecommunications
- Textile

COATING SERVICES

- Dry film lubricants MoS₂, PTFE, Graphite, WS₂
- Coatings for corrosion, chemical & environmental protection
- Titanium anodising
- Zinc rich coatings for corrosion protection
- Impingement coating processes for ultra thin solid film lubricants
- Nonstick/release coatings for low coefficients of friction
- Primers for rubber and plastics for sound absorbing and dampening materials
- High temperature resistant coatings
- Rare earth magnet coatings
- Coatings for EMI/RFI shielding provide highly conductive coatings and platings to control electromagnetic interference
- Ultra thin conformal parylene coating to reduce friction and protect against contamination
- Pre-treatments including Ti Anodising, Phosphate Conversion Coating and Chilled Iron Blasting, Aluminum Oxide Blasting and Vapour Degreasing

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EVESHAM OFFICE

Everlube Products

Enterprise Way, Vale Industrial Park Evesham, Worcestershire WR11 1GX, UK

Tel: +44 (0)1386 425758

Email: everlubeukenquiries@cwst.com

Web: www.everlube.co.uk

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CURTISS -WRIGHT

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