

A COMPLETE OFFER FOR ALL YOUR LUBRICATION NEEDS

● Lactuca, Spirit and Vulsol: soluble cutting fluids

Ease of use, performance and protecting operator health, are the guiding themes of this range of products. They can cover all your needs and all forms of machining, from cast iron to aircraft titanium or refractory alloys.



● Osyris: fluids for temporary corrosion protection

For protection lasting between one month and 3 years. Depending on the nature of the product, it forms a protective layer on the surface of the metal, which may be oily, waxy or dry.



● Martol: stamping fluids

In response to the different problems associated with cutting - pressing - drawing, Total has developed the MARTOL range. This range is based around three different technologies: soluble oils, neat oils, vanishing fluids, some of which can be thermally de-oiled.

● Drasta: heat treatment fluids

These products are formulated to guarantee the best results. They help reduce workshop smoke and cut consumption, whilst optimising oil sump service life.



● Maintenance lubricants

Hydraulic systems, compressors, gears, slideways and greases. In addition to our Metalworking products, we can meet all your workshop's lubrication needs.



TOTAL

TOTAL LUBRIFIANTS

16 rue de la République - F 92922 Paris La Défense Cedex
Tél : 33 (0)1 41 35 40 00 - www.lubricants.total.com

NEAT OILS

For your machining needs,
an experienced co-pilot you can count on



010007 - The document is the property of TOTAL - Photocopy strictly FORBIDDEN - 03/00



TOTAL

DRIVING SUSTAINABLE DEVELOPMENT

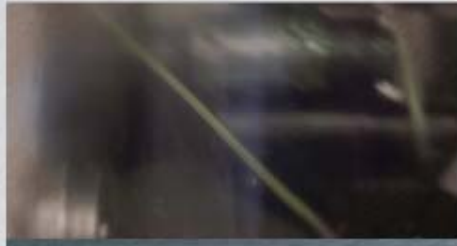
Operator safety

Formulations for a healthier atmosphere in your workshops

Reduce oil mist.

The rise of high speed machining combined with the use of increasingly high flooding pressures can generate oil mist.

The use of low-volatility base oils and additives, combined with specific anti-mist agents, reduces oil mist formation, thereby diminishing the number of particles suspended in the air and reducing oil consumption. That is why we always check the performance of our cutting oils and assess their tendency to generate oil mist. In addition, thanks to the partnerships and close relations we have formed with professionals in suction and ventilation equipment, we can steer you towards materials solutions that work in sync with our products.



Formulations that work for safety and the environment



TOTAL supplies you products free of chlorine and VOC.

In formulating our neat oils, we take great care to keep abreast of changes in health and safety regulations.

We keep a particularly close eye on the regulations on VOC (Volatile Organic Compounds). Under European directive 1999/13/EC, most of our neat cutting oils, even those that are highly fluid, are not affected by these regulations.

Reducing lubricant quantities

Machining and micro-lubrication



Increasingly environmental concerns and the cost of lubrication are driving reductions in the quantities of cutting oils used.

MQL (Minimum Quantity Lubrication) technology makes it possible to use very small quantities of lubricants.

This technology is used in machining with the same level of productivity and quality achieved with traditional lubrication, even for previously unthinkable applications such as deep drilling, broaching and high speed machining.

The other advantages are in the post process stage, with clean machined parts that require little or no degreasing and chips that emerge dry and can therefore be recycled more easily.

The products

Micro-lubrication requires the use of special products that prevent residues or deposits forming anywhere in the application system. Nozzle clogging would have a disastrous effect, since it is not easily seen by the naked eye, given that the lubricant is scarcely visible.

Main lubricant characteristics:

- wettability,
- polarity (capacity to attach to the surface),
- reinforced lubricity properties,
- high flash point,
- biodegradability.

Check out part of our VALONA MQL range on the centre page.

Minimum lubrication techniques

Micro-lubrication techniques have come a long way in recent years. These days, there is a whole range of powerful machines and application methods on the market.



Coaxial tube systems (2 channels) allow separate lubricant feeding, using air as the propellant. The air and lubricant only come together close to the nozzle outlet.



This principle applies whether using external nozzles or core nozzles that run through the tool, for example in drilling.

This technique is applied in most materials and for a variety of operations:

- cutting with band saws and circular saws,
- drilling,
- tapping,
- milling,
- broaching,
- thread rolling,
- bar turning,
- turning.

SOME MORE BACKGROUND

Regulations

Oil mist

The aim of central prevention is to capture oil mist at source: machine hooding, suction at source, general ventilation, filtered air suction systems, and of course, regular maintenance.

These measures will keep oil mist levels within the recommended threshold values: 1 mg/m³ (CNAM-INRS, France) and 0.5 mg/m³ (NIOSH recommendation, US).

We help you comply with the regulations.

QUALITY PRODUCTS AND SERVICES

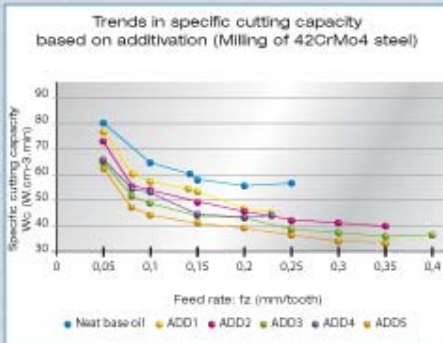
A scientific formulation approach

An innovative qualifying method

With the tool-material combination method, we use machine tools with on-board instrumentation to analyse the operational results achieved for specific energy consumption.

The aim is to measure the formulation's contribution to machining performance (cutting force and tool wear).

These tests are used to deduce "formulation laws" that enable us to develop chemically and mechanically efficient products. At TOTAL, the product formulator puts himself in the tool operator's place.



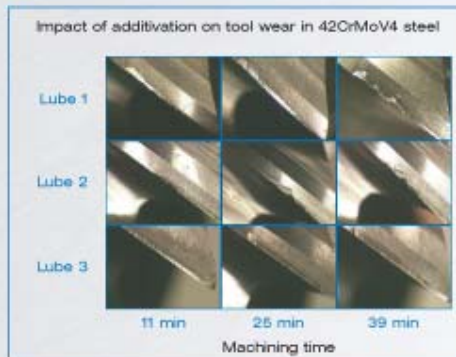
Optimising your production costs

Save energy and increase productivity.

We supply a range of machining fluids to meet the toughest specifications. These products have been designed to extend tool service life and reduce cutting forces. You can see the difference in your cutting tool budget and energy consumption.

Whatever tools you use, our products improve performance and generate high work rates.

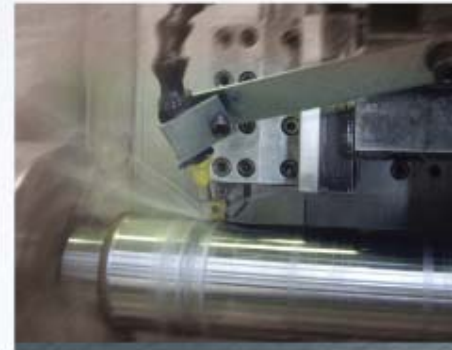
All this enhances your productivity and reduces part waste levels.



Tailored expertise and support

Confirmed product performance

Replacing a cutting oil is always a tricky process: it is complex and costly to free up workshop time and resources to carry out tests. We offer a range of neat cutting oils with performance that has been tested by machining trials, in conditions that are often close to those of your workshops. Our teams are happy to carry out on-site audits and suggest the solutions that offer the best balance of technical and economic efficiency.



Support from responsive local experts

Because we have experience and a total understanding of our products and what they do, our sales technicians and product engineers can advise you and support your operators with practical experience in the setup process.

For example, in establishing a cleaning procedure before the fluid is loaded.



Our specialists are on-call to boost your effectiveness.

SOME MORE BACKGROUND

Technical

What cutting oil is for

It facilitates cutting by its chemical action reducing tool wear by enhancing the way the chip travels over the cutting face and by reducing friction between the tool flank in contact with the machining surface.



Tool-material combination A rational testing method

Mechanical performance tests are carried out using machine tools with on-board instrumentation. The tests employ tool-material combination method. This AFNOR approved method tells you a tool's scope of operation, in a given material, for a given cutting fluid. They offer the advantage of defining operational scope by identifying limits (e.g. cutting speed, feed rate, etc.).

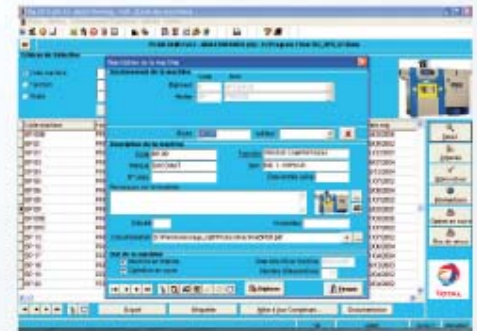
TIG XP 5 Metal Working Optimise your maintenance processes

An effective and easy to use tool.

The sole software package on the market, an industry benchmark to handle all your maintenance.

Dedicated functions for all lubrication: consolidation of LUBIANA analyses and document handling (safety data sheets, technical specifications, etc.). Maintenance tracking and scheduling: preventive, corrective and conditional operations.

All the data is instantly accessible, even spanning several production sites. Currently available in 11 languages.



NEAT OILS

The best of our high-performance range

Not all our products are included in this table. Feel free to contact us

Bar turning with deep drilling and tapping on steel and stainless steel. Suitable for thread and tooth grinding on hard steels.

If your speciality is machining aluminium alloys, if you manufacture on machining centers and transfer machines, and are looking for a fluid and highly filtrable product.

If you mainly work on bar turning steel, copper alloys and few stainless steel, these products have been designed for you. (Cutting/lubrication version with SCILIA MS 5032)

From general machining to bar turning, deep drilling and aerospace industry: the highest flexibility with a wide spectrum of operations and materials. Two viscosities as required. (Cutting/lubrication version with SCILIA MS 7046)

If your activity involves gear cutting, grinding on high-alloy steels (100 Cr6), refractory and titanium alloys (TA6V), this product is particularly suitable for difficult internal machining tasks.

If you machine hard steels in tough material removal conditions: bearings, industrial pipework, automotive subcontracting, etc.

	Series 5000				Series 7000				Series 9000			
	Cutting		Cutting and lubricating	Scilia	Cutting		Cutting and lubricating	Scilia	Cutting			
	Valona				Valona				Valona			
	AU 5510	MS 5009	MS 5020	MS 5032	ST 7016	MS 7009	MS 7023	MS7046	ST 9013	ST 9122	ST 9037	ST 9520
OPERATIONS												
Turning	★		★				★		★	★	★	★
Milling		★	★				★		★	★	★	★
Drilling	★	★	★			★	★	★	★	★	★	★
Boring	★	★	★			★	★	★	★	★	★	★
Bar turning	★	★	★	★	★	★	★	★	★	★	★	★
Deep drilling						★	★	★	★	★	★	★
Gear cutting							★	★	★	★	★	★
Tapping	★				★		★	★			★	
Broaching						★	★					
Grinding									★	★		★
MATERIALS												
Steels	★	★	★	★	★							
Semihard steels	★	★	★	★	★							
Steel alloys					★	★	★	★	★	★	★	★
High-alloy steels									★	★	★	★
Stainless steels		★	★	★	★	★	★	★	★	★	★	★
Aluminium alloys	★					★	★	★				
Copper alloys	★	★	★	★								
Titanium						★	★	★	★	★	★	★
Heat resistant alloys						★	★	★				★
Pure copper	★											
Viscosity at 40°C (mm ² /s)	10	9	20	32	16	9	23	46	13	22	37	20
Corrosion Cu (3h at 100°C)	1	1	1	1	4	1	1	1	4	3	3	4
Flash point (°C)	> 160	> 160	> 200	> 210	> 180	> 160	> 180	> 190	> 160	> 180	> 210	> 180
Colour (ASTM D 1500)	0,5	0,5	0,5	1	1	1,5	1,5	1,5	3	3	3	1

★ Optimum use

* If <2: noncorrosive on copper alloys

SOME MORE BACKGROUND

Colours according to ASTM D 1500



This reference scale can be used to define the colour of a petroleum product. The scale runs from 0.5 for the lightest coloured products to 8 for the darkest.

Using the lightest possible coloured product offers the following advantages:

- users can see what they are doing during adjustment, whereas a dark product would prevent them seeing what is happening,
- an additional method of detecting changes in the product:
 - The level of contamination by fine particles from the machined material is easier to detect;
 - Accidental pollution by another product can induce a sudden change of colour (undetected with a dark product).

BIODEGRADABLE

VALONA MQL* 3046

Standard minimum quantity

If your activity involves sawing aluminium alloys, copper, steels, multi-operation on CNC center, post-machining. This vegetable-based product ensures high performance.

VALONA MQL* 5035

Minimum quantity lubrication for hard metals

If you machine hard steels or special materials (e.g. tantalum). If you want to improve a shape geometry, a surface state.

VALONA BR 9015

Special for broaching

Top tiers product designed for high-speed broaching on high-alloy steels. Suitable for heavy duty machining jobs.

Range

VALONA GR Specially for grinding, sharpening, honing

Ask our advice!

*MQL : Reducing lubricant quantities is now a reality. We can support you in this move towards sustainable development with a specially designed and tested range.

SUPPORT THROUGHOUT PRODUCT LIFE CYCLE

Choice of cutting fluid

- On-site audits
- Product recommendation
- Off-site testing



Before start-up

- Checking the compatibility of the replacement product (miscibility, foaming)
- Advice: cleaning of machines and installations
- Establishing monitoring settings
- On-site assistance in the setup phase



In operation

- Test monitoring and results
- On-site technical support
- Analytical monitoring: LUBIANA
- Advice on installing materials (filtration, cooling, etc.)
- Optimised storage methods (tanks, telemetry, etc.)
- Efficient and reliable logistics

LUBIANA monitors your cutting oil

- Analytical monitoring of your cutting oil for greater efficiency over time and extended life of your production tool.
- Our engineers carry out customised diagnostics which can be accessed online, on TIG MW software or on paper. The results history gives you a full record of the quality of your cutting oil.

lubiana

End of life

- Recycling of packaging
- Product recycling facilitated by the absence of chlorine



SOME MORE BACKGROUND

Regulations

REACH

New European regulation No. 1907/2006 on chemical products - REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) - applies to companies which manufacture or import into Europe more than one ton of a given chemical substance per year. It is particularly restrictive in that a substance may only be used for the purpose for which it has been licensed.

Since the regulations are very costly, not all market operators will be able to comply with the directive.

We guarantee that our products are REACH compliant.

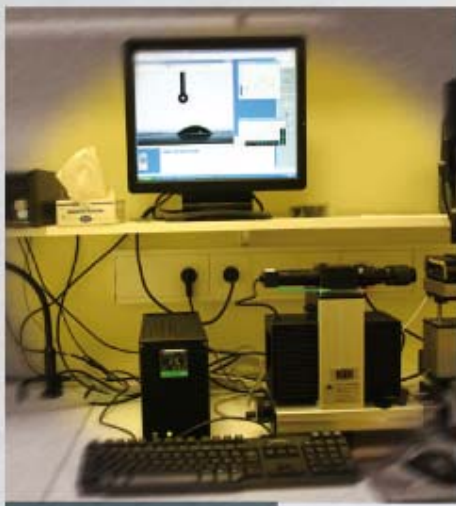
TOTAL' RESOURCES SERVING THE METALWORKING INDUSTRY

R&D resources

The resources to meet your needs

In order to provide you with efficient products and the support you need, we operate a dedicated research centre which has extensive technological and analytical resources.

Our development and production teams work closely together, providing the responsiveness you need in your business. So that you receive them on the best possible terms (costs, timescales), we manufacture neat cutting oils at 30 production sites around the world (including 5 in Europe).



A network of partners ready to help

Need to produce a new part and haven't got available resources to do it in time?

TOTAL has a network of partners in the cutting community who can help. These partners – professional bodies, universities and technical centres – have machine tools with on-board instrumentation that can be used to check development assumptions or, more simply, to outsource testing.

Machining courses

Through its global approach to machining, COM-OP can clarify your various questions about machining operations.

Intercompany or in-house training courses provide the framework for a rational methodology.

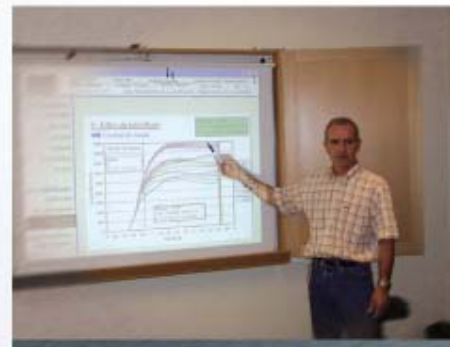
Fully confidential, training courses are extended in your workshops and method departments, where you can put the acquired knowledge into practice.

Learning about lubricants and cutting fluids

TOTAL is approved as a training provider, which is a guarantee of quality and means that you can incorporate the investment into your company's training budget.

All courses are delivered by Application Engineers in constant liaison with customers.

Formation Lubrifiants Programme Clients



Like to know more about cutting fluids? We provide training courses specifically on that subject.

These courses are designed for workshop operators and technicians who use cutting fluids, but also for technical managers and maintenance departments.

The aim is to provide a general understanding of cutting oils, their installation, their maintenance and in-service monitoring.

