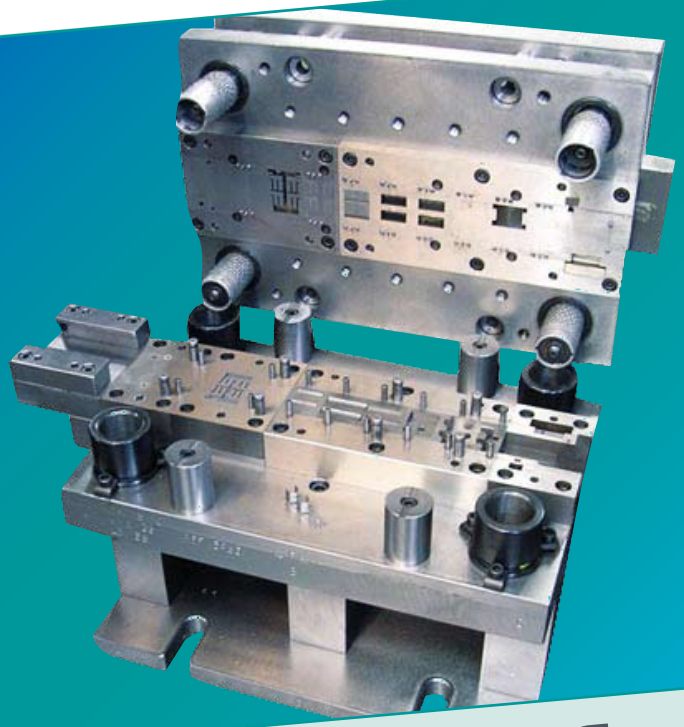
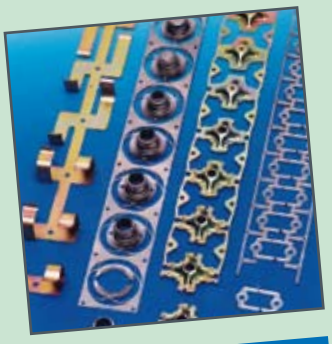
oléotechnique®





Vapol VG

Nano-Lubricant for cutting and stamping

VG 50 Technical grade
VG 100 Ultra-refined grade
VG 200 Food grade

Agrochemical lubricants
Evanescent substitute

Vapol VG

Nano-Lubricant for cutting and stamping

Agrochemical lubricants
Evanescent substitute

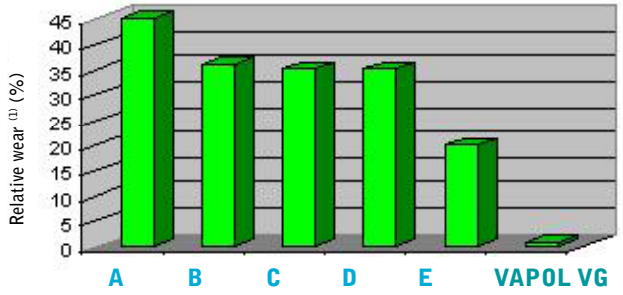
Since 1972, when OLEOTECHNIQUE initiated and invented evanescent fluids (patent N°7202593), demand for this type of product has been in constant growth.

While evanescent fluids provided the solution for numerous set-forming issues and improved production costs by eliminating or minimising degreasing operations, operators are now confronted with numerous legal issues associated to the use of such products:

- ✓ Occupational disease
- ✓ Sensitisation or allergenic cutaneous aspect
- ✓ VOC emissions
- ✓ ATEX regulations concerning explosive vapours
- ✓ Environmental aspect in the event of accidental spillage and above all, the economic impact of the price upsurge in petrol products.

Vapol VG properties

Wear on REICHERT machine



A : Commercial evanescent *(with 20% fatty acid esters)*

B : Commercial evanescent *(with 20% polymer esters + 0.5% EP additive)*

C : Commercial evanescent *(with 30% fatty acid esters)*

D : Evanescent *(with 20% polyol esters + 1% EP additive)*

E : Sulfurated soluble oil for commercial stamping *(diluted at 10%)*

(1) : Results are given in relative value compared to aliphatic solvent 63°C flash point to which we have assigned index 100.

Higher efficiency

VAPOL VG have excellent properties: a very strong polarity, greater viscosity than traditional evanescent and exceptional wetting and covering power enabling natural production of a lubricating film guarantee in elastohydrodynamic lubrification regime. Their excellent lubrication properties ensure sufficient sliding capacity when a mixed or limited lubrication regime is reached. **VAPOL VG** help reduce friction coefficient in stamping and cutting without heavy addition, contrary to traditional evanescent.

VAPOL VG improve overall fluid performance levels :

- ✓ Extension of tool life-span
- ✓ Increase in productivity
- ✓ Improvement of the surface aspect of pieces

VAPOL VG performance have been evaluated in comparison to non-sulphurous evanescent oils traditionally used in cutting and stamping up to 20/10th thickness on all metals and soluble oils using the REICHERT machine, to simulate extreme operating conditions well-correlated with the majority of metal work operations.

No Toxicity

VAPOL VG considerably improve hygiene conditions, particularly because they do not emit vapours at ambient temperature. They are not irritant, not sensitising and has very little drying effect on skin. They necessitate no specific medical monitoring measures and do not require inclusion in the chart of professional diseases. Moreover, their formulation do not contain any substances that are classified as explosive, oxidising, extremely flammable, highly flammable, carcinogenic, mutagenic, toxic, toxic for reproduction, harmful, irritant, sensitising, corrosive or dangerous for the environment in compliance with the Decree of November 9 2004.

Free of COV

Compared to traditional evanescent oil, **VAPOL VG** allow immediate clearance with regards to the Decree of May 29 2000 concerning VOC emissions. Their vapour pressure are lower than the limit fixed by European Directive 1999/13/CE concerning the reduction of Volatile Organic Compound emissions.

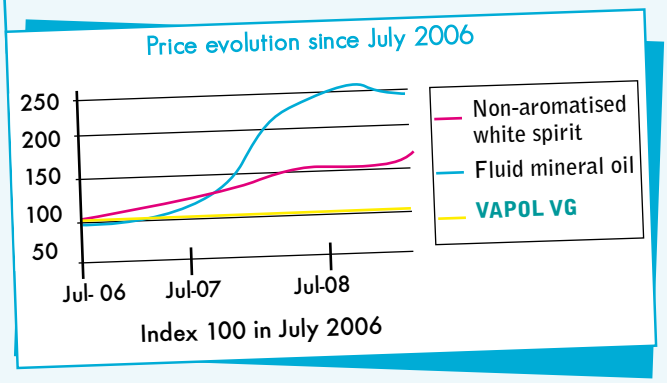
No risk of explosion

Contrary to the majority of solvent vectors for evanescent oil, **VAPOL VG** are totally non-flammable and non-explosive. They are not concerned by ATEX zone classification, in compliance with the Decree of July 8 2003.

100 % biodegradable

VAPOL VG are fully and rapidly biodegradable (according to OECD 301 B and OECD 302 C tests). Their use protect the environment and neighbouring populations in the event of accidental spillage. They require no authorisation for use from administrative authorities (Decree 2002-680).

More economical



VAPOL VG are an alternative to evanescents based on raw materials of petroleum origin which are becoming increasingly expensive.

Solvent vector is predominant in evanescent oils, only allowing distribution of the dry extract (additives) of oil bringing uniform performance to the metal surface.

Thanks to their controlled evaporation, **VAPOL VG** enable more economical use. All oil is used during the operation.

VAPOL VG significantly reduce consumption by significantly reducing the application quantity.

VAPOL VG allow removals significantly lower than 1.5 g/m^2.

Other properties

VAPOL VG are compatible with all material, metals, plastics, elastomers and rubbers. Extensive contact with paint and elastomers is not however recommended when using **VAPOL VG 50** (Technical grade).

VAPOL VG leave a small residual film which does not carbonise (no residual black traces) in contact with flames and allow welding.

VAPOL VG provide temporary inter-operation protection for up to one month in sheltered damp atmosphere (according to RENAULT 63 1861 test method).

VAPOL VG are 100% compatible with alkaline degreasing, according to RNUR test method

VAPOL VG 100 and 200 are fully thermo-degradable in furnace, tunnel or pulsated hot-air drying chamber from 195°C for at least 6 minutes and for removals up to 0g/m². Degradation is complete and free from staining and residue, whatever metals used.

Applications

VAPOL VG were developed for forming steel, coated steel, stainless steel, aluminium, copper and their alloys in thin sheets up to 10/10th thickness.

VAPOL VG are used for cutting, punching, bending, stamping, folding, rolling and forming of all metals. **VAPOL VG** also produce excellent results in calibration operations. They are also particularly recommended for use in heat exchanger fin production and copper pipe expansion.

In many cases, **VAPOL VG** can be an advantageous replacement for neat low-viscosity oils.

VAPOL VG are applied by low-pressure spraying, by drop lubrication, by felt transfer and by dip-impregnation with excess water removal by rollers.

Typical physico-chemical properties

Properties	Standards	Unités	Valeurs VAPOL VG 50 *Technical grade*	VAPOL VG 100 *Ultra-refined grade*	VAPOL VG 200 *Food grade*
Appearance	Visual	-	Clear	Clear	Clear
Colour*	Visual	-	Yellow	Amber	Colourless
Odour	-	-	Strong vegetable smell	Light	Very light
Density at 25°C	NF EN ISO 12185	Kg/m^3	879	860	859
Boiling point (°C)	ASTM D 1078	°C	180	175	175
Distillation at 760 mm Hg (Point moyen) Distillation at 20 mm Hg	ASTM D 850	°C	215-225 110	195-210 100	195-210 100
Flash point Closed cup	INF EN 22719	°C	>150	>150	>150
Spontaneous combustion temperature	ASTM E 659	°C	>300	>300	>300
Freezing point	NFT 60 105	°C	+ 4	- 14	- 16
Lower explosive limit	-	% (v/v)	Not explosive	Not explosive	Not explosive
Upper explosive limit	-	% (v/v)	Not explosive	Not explosive	Not explosive
Evaporation index (DEE = 1)	DIN 53170	-	>1000	>1000	>1000
Vapour pressure at 20°C	NF M 07 007	mbar	<0.1	<0.1	<0.1
VOC content	-	% (m/m)	0.0	0.0	0.0
Kinematic viscosity at 40°C	NF EN ISO 3104	$mm^2/s\text{-}1$	4.2	4.0	4.0
Acid index	DIN EN 14104	mgKOH/g	<0.5	<0.1	<0.01
Copper strip corrosion	ASTM D 849	rating	1 a	1 a	1 a
Surface tension at 25°C	ASTM D 971	Dynes/cm	30.5	29.8	29.6
Solvent content	-	% (m/m)	0	0	0
Aromatic content	-	% (m/m)	0	0	0
Benzene content	-	ppm	0	0	0
Chlorine content	-	ppm	0	0	0
Sulphur content	-	ppm	0	0	0

* *These products are made using natural vegetable oil esters. A constant colour cannot therefore be specified since it may vary depending on the product 's source, production site and pre-harvest climate. A difference in colour, even a significant one, will not alter the product's performance.*

Presentation

Drum: 200 Litres

Container : 1,000 Litres

Precautions of use

Store under cover in a temperate environment before use. Carry out compatibility tests before using on sensitive materials and in the case of extensive contact with paint with little cross-linking.

oléotechnique®

ISO 9001 VERSION 2000 (1993)
OHSAS 18001 VERSION 1999 (2005)
ISO 14001 VERSION 2004 (2006)
Integrated Management System (2007)

Your contact : Thierry BESNIER
Tél : 04 90 92 74 70 · Fax : 04 90 92 32 32
Z. I. La Massane · 13210 Saint Rémy de Provence