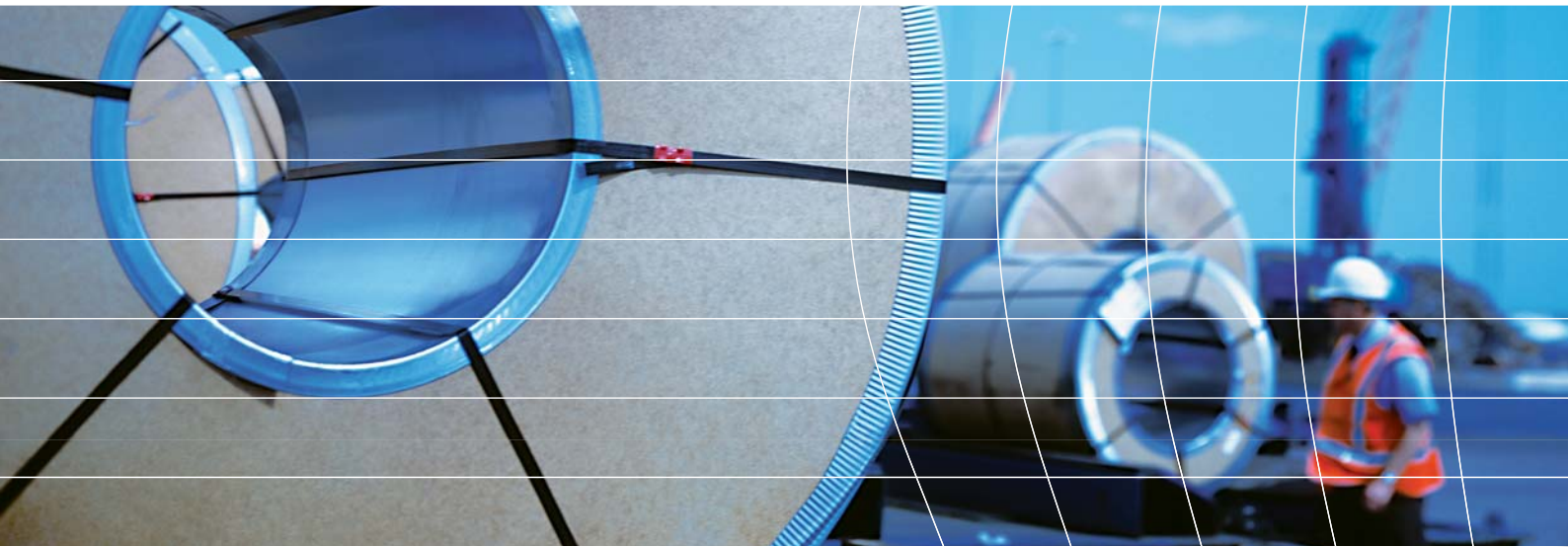
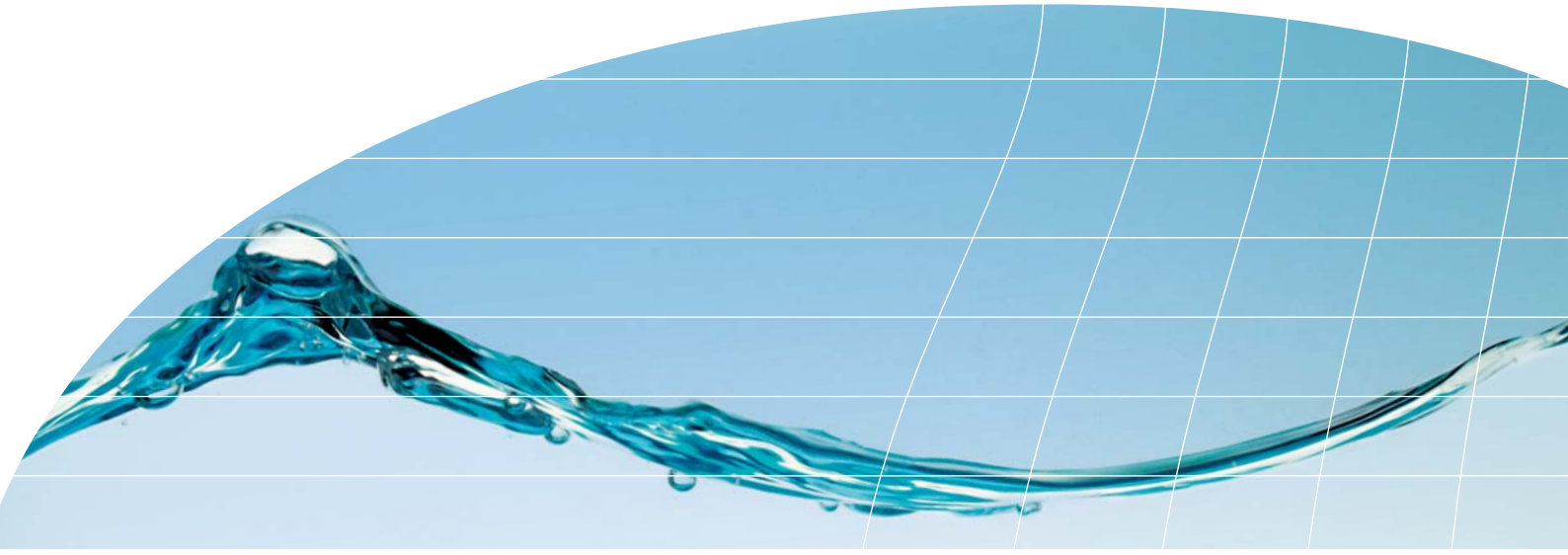


# Aluminium rolling industry

Reliability and productivity with TOTAL lubricants



**TOTAL**



## Products:

# In productivity lies quality

To satisfy a constantly growing demand in aluminium along with an optimal quality for food packaging, automotive, aeronautics, construction or household equipment industries among many other industries, such is the ever ongoing challenge of companies involved in aluminium rolling.

The rolling fluid is a key element of aluminium sheet production. With the LUBRILAM S range, TOTAL brings you both the reliability and the competitiveness you're looking for:

- **Savings** by reducing the consumption of rolling fluids and energy,
- **Quality** of operations, from roughing to some of your most demanding applications,
- **Productivity** by speeding up your production,
- **Safety** and **health** protection of your operators through the use of non-inflammable and harmless products,
- And of course, **deliveries on time** thanks to our tank monitoring system and our reactive logistics.

### ■ LUBRILAM S : EXCEPTIONAL PROPERTIES AT A GLANCE

- **Narrow boiling range:** reduces the consumption of energy and fluid
- **High flash point:** limits the risks of fire
- **Oxidation stability and UV resistance:** increases the fluid service-life
- **High purity:** provides high level of sheet cleanness after annealing
- **Limited volatility:** increases the productivity and ensures the safety
- **Very low vapour pressure:** insignificant VOC emissions when vapour pressure <0.01 kPa
- **Very low aromatic content, low odour:** respects the workers' health and their workshop environment
  - **FDA approved:** meets the requirements of the food packaging industries

# A COMPREHENSIVE OFFER TO FULFILL ALL

## ROLLING MILL LUBRICATION

**AZOLLA AL:** Hydraulic synthetic oil  
ISO VG: 15, 22, 32, 46, 68  
Non-staining of aluminium in the event of a leak in the hydraulic circuit  
Reduction in the formation of deposits  
Anticorrosion protection

**CARTER ALS:** Gear oil for back-up roll  
ISO VG: 220, 460  
Non-staining of aluminium  
Excellent protection of lubricated parts

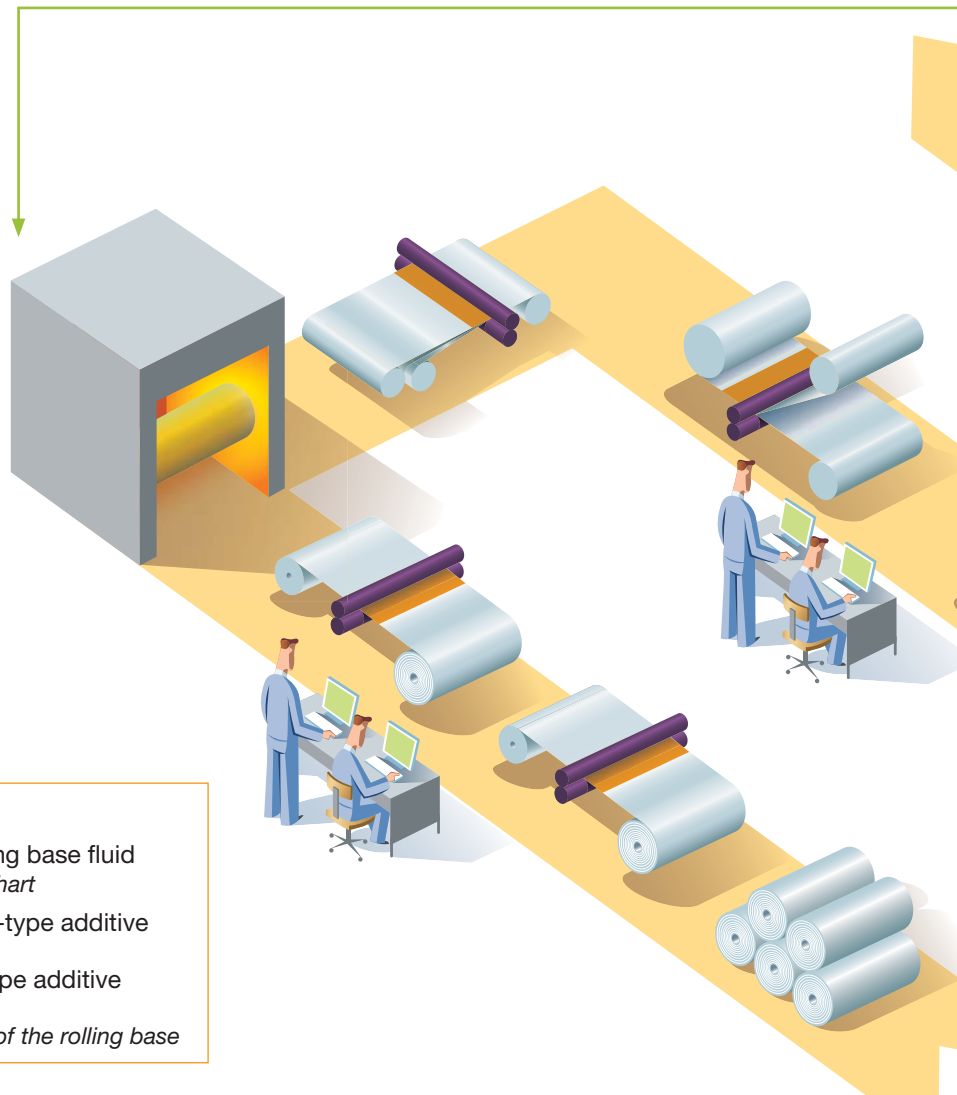
**CARTER SH:** Gear synthetic oil for working roll  
ISO VG: 150 to 1000  
Excellent protection against corrosion, wear and micropitting  
Extended oil service-life due to excellent thermal stability

## COLD ROLLING

**LUBRILAM S:** Cold rolling base fluid  
Properties detailed in the chart

**LUBRILAM C3:** Alcohol-type additive concentrate

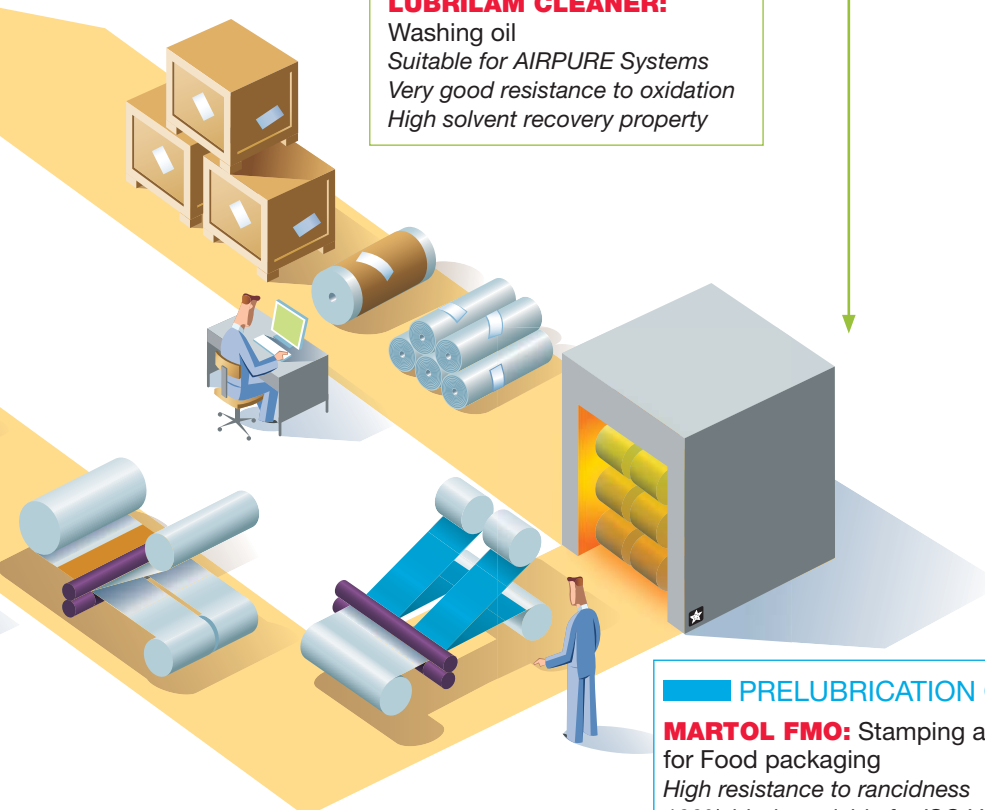
**LUBRILAM C6:** Ester-type additive concentrate  
Increases the smoothness of the rolling base



Properties Typical values		Units	Methods	LUBRILAM S 22 L	LUBRILAM S 23 L	LUBRILAM S 31 L
Density at 15 °C		kg/m <sup>3</sup> (lb/gal)	ASTM D 4052	817 (6.82)	816 (6.81)	805 (6.72)
Sayblot Color		-	ASTM D 156	+30	+30	+30
Boiling range	Initial Point	°C (°F)	ASTM D 86	201 (394)	213 (415)	221 (430)
	Final Point	°C (°F)		239 (462)	241 (466)	236 (457)
Flash Point (PENSKY-MARTENS)		°C (°F)	ASTM D 93	76 (169)	85 (185)	92 (198)
Total aromatic content		ppm	UV	5	3	100
Benzene content		ppm	ASTM D 6229	0	0	0
Aniline Point		°C (°F)	ASTM D 611	70 (150)	72 (162)	74 (162)
Vapour pressure at 20 °C		kPa	calculated	0.016	0.012	0.011
Viscosity	at 20 °C	mm <sup>2</sup> /s (cSt)	ASTM D 445	2.4	2.7	2.7
	at 40 °C	mm <sup>2</sup> /s (cSt)	ASTM D 445	1.7	1.9	1.9
Pour Point		°C (°F)	ASTM D 97	<-50 (<-58)	<-50 (<-58)	<-50 (<-58)

# YOUR NEEDS IN LUBRICANTS

**FUME RECOVERY SYSTEM**  
**LUBRILAM CLEANER:**  
 Washing oil  
 Suitable for AIRPURE Systems  
 Very good resistance to oxidation  
 High solvent recovery property



**PRELUBRICATION OF COIL**  
**MARTOL FMO:** Stamping and pre-induction oil for Food packaging  
 High resistance to rancidness  
 100% biodegradable for ISO VG 75 and ISO VG 235  
**MARTOL LVG:** Stamping and blanking oil for Automotive industry  
 Non-staining of aluminium  
 Elimination of residues by thermal degreasing  
 Excellent spreading capacity  
 Odourless

LUBRILAM S 40 L	LUBRILAM S 50 L	LUBRILAM S 54 L	LUBRILAM S 55 L	LUBRILAM S 60 L
820 (6.84)	817 (6.82)	811 (6.76)	815 (6.80)	817 (6.82)
+30	+30	+30	+30	+30
236 (457) 262 (504)	254 (489) 282 (540)	260 (500) 291 (556)	278 (532) 322 (612)	304 (579) 347 (657)
103 (217)	116 (241)	123 (253)	136 (277)	159 (318)
30	30	50	50	80
0	0	0	0	0
78 (172)	84 (183)	87 (189)	92 (198)	101 (214)
0.002	0.0008	0.0005	0.0001	< 0.0001
3.6 2.4	4.5 2.8	4.9 3.1	7.0 4.1	11.0 6.0
-50 (-58)	-40 (-40)	-33 (-27)	-19 (-2)	0 (32)

For more information see the Technical Data Sheets and the Material Safety Data Sheets.



## Services:

we support you throughout your entire operating environment

### **Plan** your orders with our VMI tank monitoring system

TOTAL offers a tailor made Vendor Management Inventory (VMI) solution: through a web based tank monitoring system, we remotely activate the delivery of your supplies according to your real time consumption.

**Save costs** of stock shortage and over-stocks by using VMI.

### **Benefit** from our expertise and on-site support

TOTAL makes a commitment to optimize the efficiency of your rolling process, from start to finish. Our field engineers and technical backup are at your side to select the correct lubricant for your application and to ensure the best use of it.

**Gain competitiveness** through our lubrication expertise in your industry sector.

### **Optimize** the maintenance of rolling mill equipment with the TIG XP5 software

TOTAL has developed the TIG XP5 software to manage the lubrication and maintenance of your facilities.

TIG XP5 helps you to:

- **plan** preventive maintenance operations,
- **manage** oil analyses and predictive maintenance,
- **control** critical lubrication points,
- **reference** the documents and certificates required for quality and safety audits.



### **Monitor** your machines through in-service oils analyses

The expertise of our laboratories enables, through sampling of in-service oils, to:

- **monitor** the mechanical condition of your machines without dismantling or shutdown,
- **reduce** operating costs by decreasing breakdowns and production stops,
- **lengthen** oil drain intervals.

### **Train** your team

TOTAL provides you with training sessions dedicated to your industrial sector, on controlling lubrication, safety and the environment. A lubricant used under the best conditions enhances the performance and the equipment life cycle, secures your facilities, and protects the human health and the environment.

# 4 goods reasons for choosing TOTAL

## A major player

The Total Group is the world's fourth largest integrated oil and gas company\* and employs around 96,000 people in the five continents. TOTAL lubricants and fluids are produced and marketed in more than 160 countries.

## Safety and environment

Our products are formulated to reduce the toxicity risks and VOC emissions. Our rolling fluids are produced in a plant dedicated to the production of hydrotreated solvent, ISO 9001-2000 and ISO 14001 certified.

## Innovation

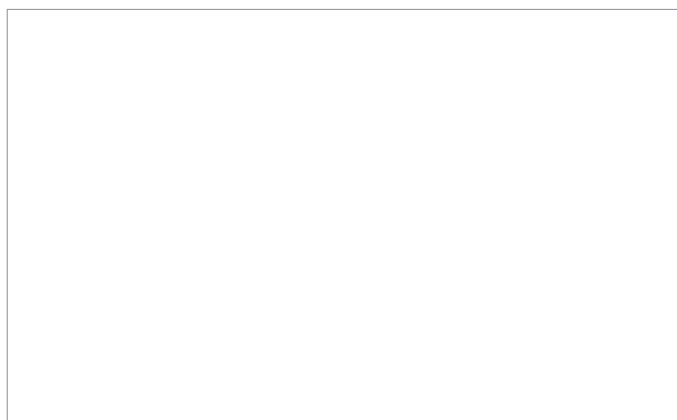
Thanks to important investments in R&D and to solid relations with main players of the aluminium rolling industry as well as with health and safety organisms, TOTAL fluids and lubricants are high technology reliable products.

## Partnership

When choosing TOTAL, you can trust our expert teams in lubrication solutions to optimize the quality and efficiency of your production. The large variety of our products ranges allows you to cover all your needs for rollings fluids and maintenance lubricants.

*\* Based on market capitalization in dollars at June 30, 2008.*

Safety Data Sheets are available at [www.quickfds.com](http://www.quickfds.com)



[www.lubricants.total.com](http://www.lubricants.total.com)



The right choice in lubricants

**TOTAL**