

Meeting today's lubrication needs and tomorrow's demands

# LUPROMAX®

Using revolutionary LUPROMAX's HAT (Heat Activated Technology) technology

## THE NEXT GENERATION LUBRICANT TECHNOLOGY

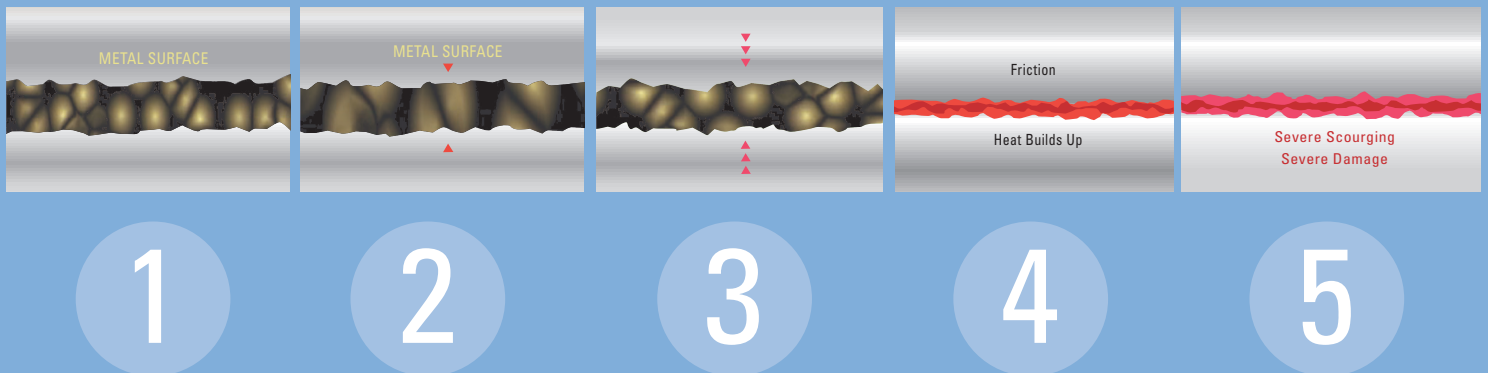


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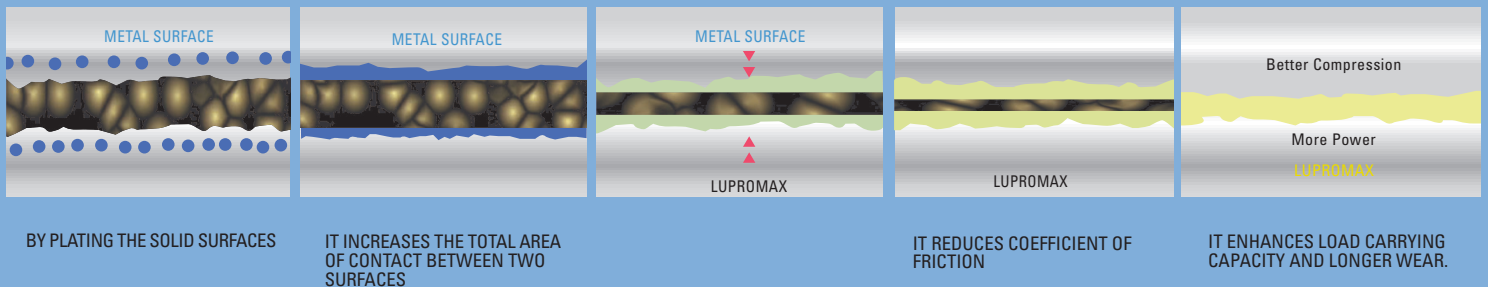
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# REVOLUTIONARY LUPROMAX'S HEAT ACTIVATED TECHNOLOGY

## WITHOUT LUPROMAX



## WITH LUPROMAX HAT TECHNOLOGY



## BENEFITS

- ✓ REDUCES ENGINE WEAR UP TO 50%
- ✓ REDUCES FUEL CONSUMPTION ( 6-10%)
- ✓ REDUCES ELECTRIC AMPERAGE ON DRIVE MOTORS
- ✓ MAXIMIZES ENGINE POWER
- ✓ REDUCES CARBON EMISSION
- ✓ EXTENDS ENGINE LIFE
- ✓ REPAIRS BY PLATING INTO MINOR SCRATCHES AND SURFACE IMPERFECTIONS
- ✓ RESTORES COMPRESSION
- ✓ STABILIZES COMPRESSION
- ✓ NON-PARTICULATE METAL CONDITIONER
- ✓ EXTEND OIL DRAIN INTERVALS ( 25,000 Km)
- ✓ REDUCES NOISE LEVEL OF ENGINE
- ✓ FORTIFIES WITH ACID NEUTRALIZER



# Extensive R&D research on high performance biodegradable lubrication technology

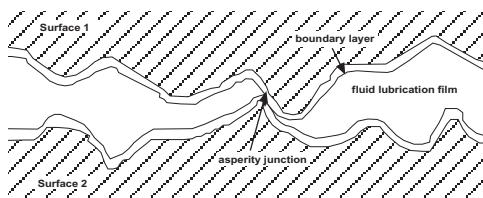


## Overview

The success of conventional lubricating oils is predicated upon maintaining a high film strength oil barrier between two surfaces moving relative to each other. Resistance to the movement of these surfaces is defined as friction, which can be either sliding or rolling, or which can be caused by the shearing action of a lubricant attempting to separate the two surfaces. Hydrodynamic, hydrostatic, and boundary lubrication typically occur in some combination in virtually all mechanisms which require lubrication, and most commercial lubricants are reasonably capable of doing the job for which they are intended. Lupromax is a proprietary lubricant which takes normal lubrication a step further, in that it not only has a superior film strength but also appears to impregnate the steel itself, metallurgically, at the friction surfaces.

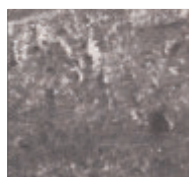
## Types of Lubricant

The majority of lubricants are either mineral (paraffin, naphthene, asphalt), synthetic (esters, polymers), solids (graphite, molybdenum disulfide, Teflon), or greases (oils with various organic or inorganic thickeners). Several additives are available for these products which serve as corrosion inhibitors, rust inhibitors, etc. Modern engine oils, for example, usually contain 8 – 10 different additives, accounting for 10 – 20% of the volume in a container of oil, the balance being refined petroleum or synthetic oil.



Several products are available with solid particle additives (graphite, moly, Teflon) in an effort to add extreme pressure capability to the lubricant. Lupromax lubricants contain only pure petroleum and petroleum additives, and perform without the negatives associated with solid particle additives. Lupromax blends easily with other lubricants, and is most useful at a 15% mix.

ENGINE CYLINDER WALL MAGNIFIED 1500X



UNTREATED WALL



TREATED WITH LUPROMAX

## MAGNA INTERNATIONAL PTE LTD

Magna International Pte Ltd, an innovative chemical company that manufactures specialty chemical products, was incorporated in September 1992.

Our specialty chemical products are represented in 25 countries in the Asia Pacific Region and Europe.

## Our Vision

Building a global business through innovations, strategic alliances and quick adaptability to customers' expectations.

## Our Belief

In a cleaner, greener, better tomorrow. We manufacture environmentally friendly, biodegradable chemical products.

## Our Strength

Magna's proven value-adding technology has enhanced its customers' existing product lines bringing to fruition mutually profitable endeavors earning it's reputation as "Your Partner In Chemical Innovation".

## Our Culture

To develop a symbiotic relationship with our customers, suppliers and associates across the globe.

The main product lines of Magna International are:

- Vapro VCI Products
- Viscopro Specialty Surfactants
- Corpro Essential Base Products
- Lupromax Specialty Lubricants, Metal working fluids and Additives
- Baczyme Enzymatic Chemicals
- Magna Specialty Chemicals

"Our company's key strengths lies in the simplicity of technological approach to meet industry's demands and continual product innovation and research."

Mr. Nelson Cheng, President and CEO  
Magna International Pte Ltd



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## MAGNA ADVISORY BOARD

**Mr. Patrick Moe, M. Sc (Environmental Engineering), B.Sc (Industrial Chemistry)  
Researcher, Technical Manager at Magna International Singapore**

Mr. Patrick Moe is the Technical Manager and Researcher with Magna International since 1994, prior to joining Magna, he was a Research Manager with an alcohol manufacturing company.

With over 20 years of research experience in industrial chemicals, his wealth of knowledge and experience has contributed much to Magna group.

**Dr Hauw Tio Lam, Ph.D, MSNIC, ARCS**

Dr Hauw is the retired Chemist of Shell Eastern Petroleum, one of Singapore's largest foreign investors, where he had held the position for the last 10 years.

Prior to that, since 1971 when he pursued his career with Shell, he had worked respectively as technologist in charge of process operation, environment control, and product quality.

Dr Hauw completed his secondary education from Chinese High School in 1961 and proceeded to study Chemistry in Imperial College of University of London. He graduated with a B. Sc. Honour and ARCS (Associate of Royal College of Science) in 1967. Following the postgraduate study and research in Organo-metallic compounds, he obtained a Ph.D. in Chemistry in 1971 from University of Western Ontario, Canada.

We are proud to have Dr Hauw on board and are eager to tap on his wealth of experience.

**Mr. Philip Tan, Professional Engineer  
M.Sc (Aston) MIES P Eng, Consulting Engineer**

Mr. Philip Tan, an exceptional professional engineer with over 30 years of experience in mechanical engineering to our Advisory Board. His illustrious portfolio includes being the Head, Construction Branch, Ministry of Labour; Chairman of Advisory Committee on accident prevention in the Shipbuilding and Repairing Industry; Chairman of SISIR; UNI-ILO (International Labour Organisation) consultant to Indonesia and Thailand on Construction Safety; and Consultant Engineer in various local mechanical projects.

**Dr. Colin Chong, Ph.D (National College of Rubber Technology)  
B.Sc (Hons. Chemistry), Chartered Chemist**

Dr. Colin Chong obtained his B.Sc. degree(Hons. 2nd Upper) in Chemistry in 1972. He was then awarded a government scholarship to pursue his postgraduate studies in London on Polymer Science, specializing on Rubber Vulcanization. His research work was done in a London Rubber Producers' Research Association and his studies in the National College of Rubber Technology which led to the award of his Ph.D. in 1977. He spent 3 years as a Research Fellow in the Unit on Oxidation & Degradation of Polymers in the City University London. As Research Manager of London Rubber Company(London), he as involved in the developments of contraceptives, gloves and other rubber products. He returned to Singapore to take up appointments as R&D and Production Manager in a large plastic company. Later, he joined Metal Box Singapore as Research Manager. Next, he was appointed Regional Technical Manager of a multi-national corporation of household products.

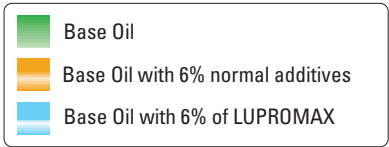
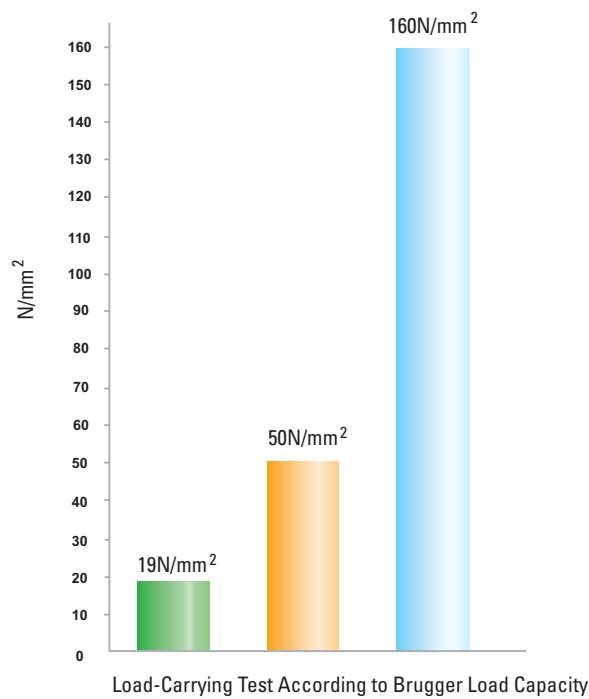
Dr Colin Chong was an honorary secretary of Plastic & Rubber Institute(Singapore). He is a Chartered Chemist and a Member of Royal Society of Chemistry (MRSC) of UK, and a Member of Singapore National Institute of Chemistry(SNIC). He has served as Chairmen of Technical Committee of Productivity and Standards Board in Singapore.



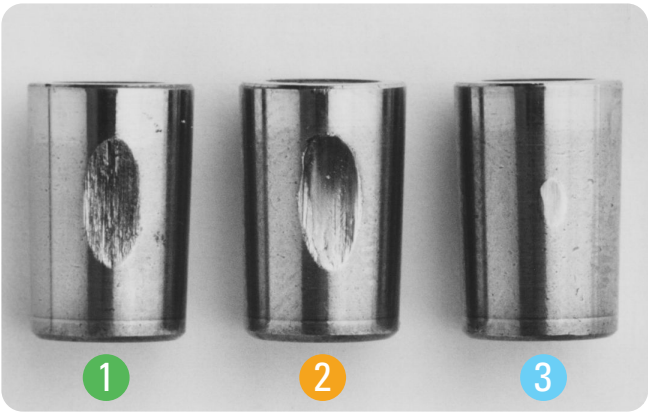
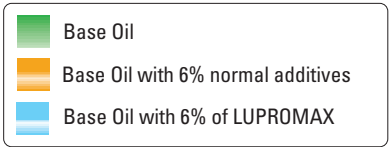
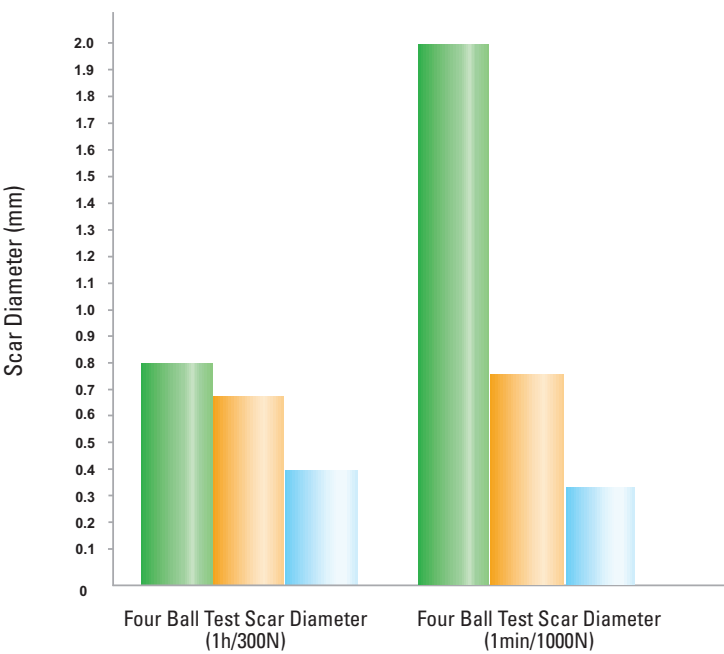
# LUPROMAX-EA

Revolutionary LUPROMAX's HAT(Heat Activated Technology) technology for Engine Oil Additives

Load Carrying Test



Four Ball Test Scar Diameter

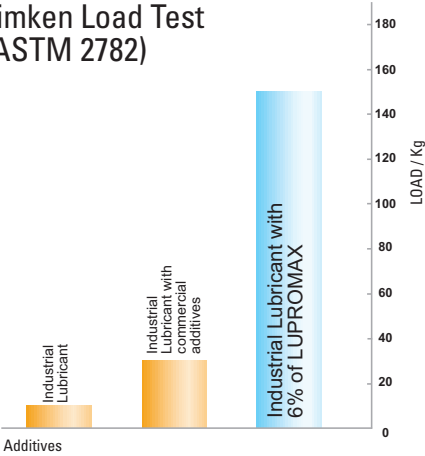


Base Oil

Base Oil with 6% normal additives

Base Oil with 6% of LUPROMAX

Timken Load Test (ASTM 2782)



NATO STOCK NO. 9150-32-078-8661

# LUPROMAX-EA

PREMIUM QUALITY ENGINE OIL WITH METAL  
CONDITIONER ADDITIVE

LUPROMAX<sup>®</sup>-EA is a proprietary metal and engine oil conditioner. It was originally designed for use in gear boxes and crank cases.

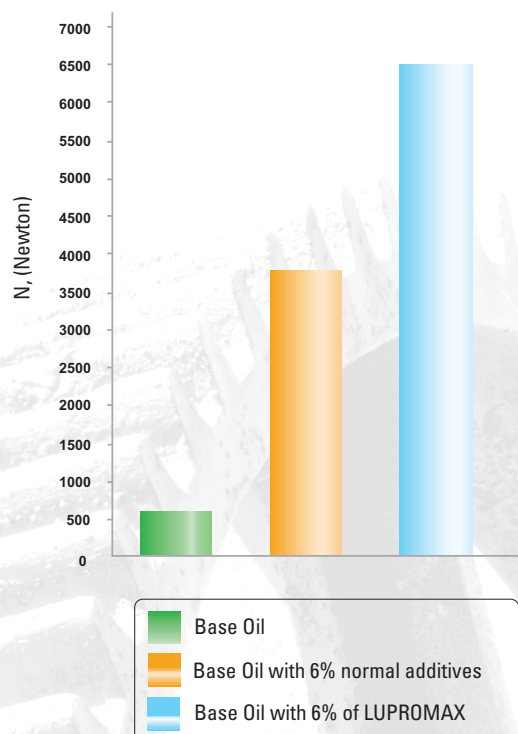
However LUPROMAX<sup>®</sup>-EA concentrate demigrates numerous properties when mixed with lubrication fluids, making it a very versatile additive for numerous lubrication applications. It is a non-particulate, non-harmful environmentally friendly metal conditioner, thus, eliminating the fear of clogging your oil-filter.

## SPECIFICATIONS

### PHYSICAL PROPERTIES

Appearance	Amber
Colour ASTM D-1500	Type 1.5
Flash Point ASTM D-92	176°C
Viscosity @ 40°C ASTM D-445	39.45 cSt
Specific Gravity ASTM D-4052	1.019
Copper Corrosion ASTM D-130 (6% weight of LUPROMAX-EA in a white oil, 3hr/100°C)	1a Class

Four Ball Test



## APPLICATIONS

LUPROMAX<sup>®</sup>-EA can be used in high compression performance cars, trucks, tractors, excavators, compressors, buses, gear boxes, crank cases and other industrial applications.


### Free of metallic content

	Unit	Method	Results
Arensic(As)	ppm	ICP	Not detected
Lead(Pb)	ppm	ICP	Not detected
Mercury(Ag)	ppm	ICP	Not detected

Tested by SGS Testing & Control Services Singapore Pte Ltd



# LUPROMAX TEST REPORTS



## TEST REPORT

LAB NO. : (6607)303-0071  
DATE : November 2, 2007  
PAGE : 1 OF 4

**APPLICANT** : Magna International Pte Ltd  
Blk 9005 Tampines Street 93, #02-242 Tampines Industrial Park A, Singapore 528839.

**CONTACT PERSON** : Nelson Cheng

**DATE OF SUBMISSION** : October 30, 2007

**TEST PERIOD** : October 30, 2007 to November 2, 2007

**NO. OF WORKING DAY(S)** : 4

**SAMPLE DESCRIPTION** : Lupromax EA (amber)  
Country of Origin: Singapore  
Country of Destination: Singapore  
Manufacturer name: Magna International Pte Ltd


SUMMARY OF TEST RESULTS			
TEST REQUESTED	PASS	FAIL	REMARK
Restriction of Hazardous Substances Directive (RoHS), 2002/95/EC	X		

**REMARK**  
If there are questions or concerns on this report, please contact the following persons:  
General enquiry and invoicing: Ms. Vivian Gu  
(021) 64893130\*2042 / (021) 64898790  
Vivian.gu@cn.bureauveritas.com  
Technical enquiry: Mr. Matthias Chan  
(021) 24081918  
Matthias.chan@cn.bureauveritas.com

BUREAU VERITAS  
CONSUMER PRODUCTS SERVICES DIVISION (SHANGHAI)

PREPARED BY : Nancy  
Matthias Chan  
CHEMICAL MANAGER (CHEMICAL DIVISION)

RW/2007



## OIL, GAS & CHEMICALS

Lab Order No : JMC/10005351/04  
Product : Lupromax-EA  
Company : Magna International Pte Ltd  
Blk 9005 Tampines Street 93  
#02-242 Tampines Industrial Park A  
Singapore 528839

Sample Recd. Date : 25-08-04  
Date Tested : 25-08-04  
Date Reported : 31-08-04

### ANALYSIS REPORT

Product : Lupromax-EA

On testing, the following results were obtained :

Test	Unit	Method	Results
Arsenic (As)	ppm	ICP	Not Detected
Lead (Pb)	ppm	ICP	Not Detected
Mercury (Hg)	ppm	ICP	Not Detected

Remarks : Detection Limit 0.1ppm.


SGS Testing & Control Services Singapore Pte Ltd  
Zainal Abidin  
Assistant Manager

1) Tests performed in accordance with the latest issue of relevant test method unless otherwise indicated.  
2) Unless specified, above results relate only to the items tested.  
3) Precision parameters apply in the determination of the above results. Also refer to latest ASTM D3244, IP 367 & Appendix E of IP Standard Methods for analysis & testing, for utilization of test data to determine conformance with specifications.  
4) This report shall not be reproduced except in full, without the written approval of the laboratory.

Page 1 of 1

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Member of the SGS Group

All business is carried out and reported in accordance with our General Conditions of Business (see overleaf) unless otherwise agreed in a written contract.



## ANALYSIS RESULT

**PRODUCT** : LUPROMAX E.A


**TEST** : EXTREME PRESSURE AND LUBRICITY TEST

**METHOD** : SGS-SP-112

**EQUIPMENT USED** : FALEX / TIMKEN TEST MACHINE

### COMPARISON DATA

PRODUCT	Temp	BATH	LOAD	TIME	SCAR SIZE (length)
Normal Engine oil	Ambient	Full	210 kg (463 lb)	Immediate Failure	5.26 mm
Normal engine oil with 8% Lupromax EA additive	Ambient	Full	210 kg (463 lb)	1 minute	Tiny polish mark
Normal engine oil with 8% Lupromax EA additive	Ambient	Full	456 kg (1005 lb)	1 minute	2.48 mm
Normal engine oil with 8% Lupromax EA additive with water and sand added	Ambient	Full	456 kg (1005 lb)	1 minute	2.48 mm
Normal engine oil with 8% Lupromax EA additive with water and sand added	With heat apply by means a Gas burner 500°C	Full	456 kg (1005 lb)	10 seconds	4.77 mm
Normal engine oil with 8% Lupromax EA additive with water and sand added	With heat apply by means a Gas burner 500°C	Empty	456 kg (1005 lb)	10 seconds	4.77 mm



## TO TEST THE EFFECT OF LUPROMAX EA ON ENGINE OIL

**OBSERVATION** : On testing, the following observations were noted.


The normal engine lube oil under a load weight of 210 kg (using Compound Leverage Principle) will cause the rotating bearing to seize. A scar mark was observed on the Timken bearing. The length of the scar mark was **5.26 mm**.

Lupromax EA was added to the same engine oil, which was then subjected to the same load weight. It was observed that the bearing proceeded with rotation and did not seize, a tiny polished marked was observed on the Timken bearing. Rotation continued even with a full load of 456 kg. The scar mark was found to be **2.48 mm**.

When water and sand was added to the engine oil containing Lupromax EA, with the application of heat by means of the burner for 30 seconds, no seizure was observed. The scar mark was found to be **4.77 mm**.

Subsequently the bath was removed from the Falex machine and the bearings were subjected to loads of 456 kg for 30 seconds. No seizure was observed. A scar mark of 4.77 mm was recorded.

**REMARK**: The said test shows that Lupromax EA enhances the lubricity and extreme pressure of common lubricating oil using **fusion / heat activated lubrication technology**.



Meeting today's lubrication needs and tomorrow's demands

# LUPROMAX®

Lubricates • Protects • Maximizes

## www.lupromax.com



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For more information about **LUPROMAX**, please request for **LUPROMAX PRODUCT GUIDE** from any **LUPROMAX** representative.

Please contact our distributor or reseller for more information:



**RoHS COMPLIANT**  
EUROPEAN COMMUNITY  
DIRECTIVE 2002/95/EC



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