

# ACI's 2015 European Base Oils & Lubricants Summit

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Key account manager



## LLC "RU SIE AGRINOL"



# “AGRINOL” Industrial gear oils Industrial gear oils



- Trends
- Essential attributes of gear oils
- Challenges & Problem solving
- New Technologies



# "AGRINOL" Industrial gear oils



FROM 2000



FROM 2006

The control system of quality of the enterprise (manufacture of products of oil refining and special greasing materials) is certificated under the international standard

**DSTU ISO 9001:2009 (ISO 9001:2008)**



FROM 2009

A member of **ELGI**

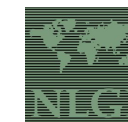
**European Lubricating Grease Institute**



FROM 2009

A member of **NLGI**

**National Lubricating Grease Institute**



FROM 2010

**REACH active**



## **MANUFACTURE**

- ▣ **OILS - more than 300 titles**
- ▣ **GREASES - more than 150 titles**
- ▣ **LCPT (Lubricating and Cooling Technological Liquids)**
- ▣ **METAL STEEL PACKAGE**

# “AGRINOL” Industrial gear oils

## EXPORT ZONES

### EUROPEAN UNION

-  Austria
-  Belgium
-  Bulgaria
-  Estonia
-  Italy
-  Lithuania
-  Latvia
-  Poland
-  Romania
-  Germany
-  Finland

### OTHER EUROPEAN COUNTRIES

-  Serbia



### CIS COUNTRIES

-  Armenia
-  Azerbaijan
-  Belarus
-  Georgia
-  Kazakhstan
-  Moldova
-  Russia
-  Tajikistan
-  Turkmenistan
-  Uzbekistan

### ASIA, NEAR and MIDDLE EAST

-  Iraq
-  Jordan
-  Lebanon
-  Mongolia
-  Turkey
-  Syria
-  Yemen

### AFRICA

-  Congo
-  Nigeria
-  Tunisia

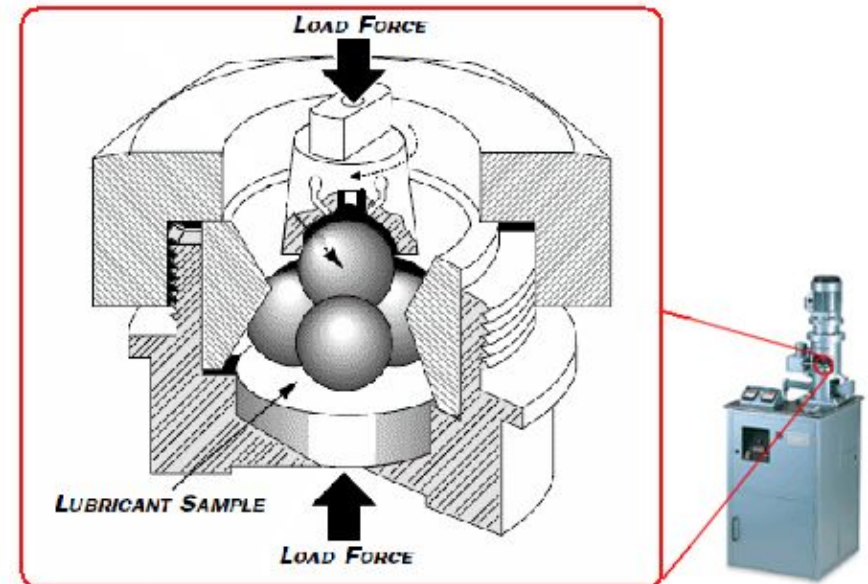
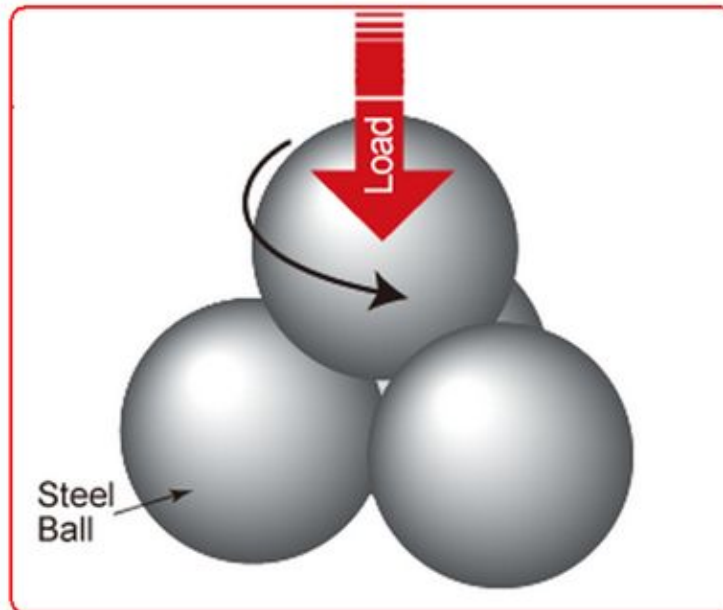
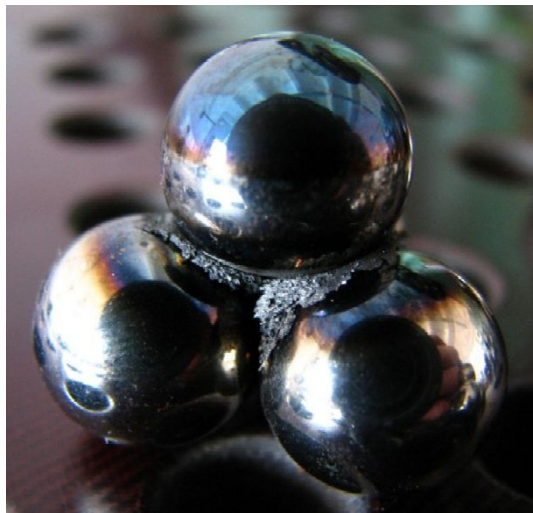
# “AGRINOL” Industrial gear oils

## Analytical laboratory «AGRINOL»

meets all the requirements on quality control of oil products and raw materials for lubricants.



- **Quality control of raw materials**
- **Control during manufacturing operations**
- **Certification of finished lubricants**
- **Analysis of experimental investigations**



# "AGRINOL" Industrial gear oils

## Trends in Industrial gear oils

### Specifications

- AGMA 9005-E02 EP (North America)
- DIN 51517-3 (Europe)
- SEBI 181 226 (Germany - steel)

### Gearbox changes

- New materials
- Smaller size
- Extreme conditions  
Higher loads  
Higher temperature  
Contamination



**Stringent performance standards**

# The essential attributes for industrial gear oils

Impact factors



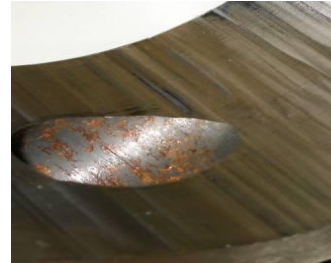
# Problem solving "AGRINOL" Industrial gear oils

## Challenge

## Solution

### Problem #1 Watering

Water inside the system leads to premature wear of all contiguous surfaces



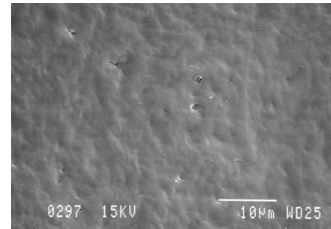
### Hydrolytic stability

Maintains high performance in the presence of water in the system, protects system components against chemical attack and corrosion.

### Problem #2 Contamination

#### finely dispersed contamination

A filter contaminated by the particles as a result of additives reaction



### Filterability

Excellent filterability allows to use ultra-filters even in the presence of water and chemical contaminants, that promotes high purity of the system

#### finely dispersed contamination

A piston of axial piston pump damaged due to oil contamination



### Problem #3 Wear

Undulation caused by the wear and sticking plate, insufficient antifoam, anti-wear and anti-corrosion properties



### Protection from wear

antifoam, anti-wear and anti-corrosion additives protect the system components, increasing service life.



# Problem solving "AGRINOL" Industrial gear oils

## Challenge

## Solution

### Problem #4 Oxidation

Varnish deposits on oil tank after exposure to high temperature



### Oil Oxidation Stability

Provides a longer service life of the working fluid and the system components.

### Problem #5 High temperature

Oils with low performance properties and poor thermal stability at high temperatures cause formation of varnish deposits

Varnish deposits and sludge on the slider as consequence of the low thermal stability of the oil used.



### Thermal stability

Provides high purity and extended service life of the working fluid and equipment under conditions of high temperature.

The consequences of decomposition after overheating are similar to oxidation :

- acidification;
- the formation of carbonaceous deposits;
- viscosity growth.

**Above 60 °C with increasing operating temperature for each 10 °C oil resource reduced by half (thermal and oxidative decomposition).**

# "AGRINOL" Industrial gear oils

## A few of the many "AGRINOL" industrial gear oils

Compliance with classifications	Special Oil ART						
ISO VG	68	100	150	220	320	460	680
DIN 51517.3	CLP	CLP	CLP	CLP	CLP	CLP	CLP
Kinematic viscosity at 40°C, mm <sup>2</sup> /s	61-75	90-110	140-160	200-240	300-340	430-490	650-710
Viscosity index, not less than	100						
Acid number, mg KOH/g, not more than	0,05						
Temperature, °C:	210	210	220	230	240	240	250
✓ Flash point in open crucible, not less than	-20	-20	-18	-18	-15	-15	-12
✓ Pour point, not more than							
Stability against oxidation:							
✓ Changes in viscosity at 40°C, %, not more than	3						
✓ Changes in acid number, mg KOH/g, not more than	0,15						
Tribological characteristics in 4 balls machine (20±5)°C							
✓ Scuff index, H, not less than	490						
✓ Index of wearout (196H), mm, not more than	0,45						
Compliance with classifications	Highrate XP M						
ISO VG	68	100	150	220	320	460	680
DIN 51517.3	CLP	CLP	CLP	CLP	CLP	CLP	CLP
Kinematic viscosity at 40°C, mm <sup>2</sup> /s	61-75	90-110	140-160	190-240	300-350	420-510	610-750
Viscosity index, not less than	100	100	97	94	92	90	90
Acid number, mg KOH/g, not more than	2						
Temperature, °C:	210	220	220	220	230	240	245
✓ Flash point in open crucible, not less than	-24	-24	-24	-18	-18	-12	-12
✓ Pour point, not more than							
Stability against oxidation:							
✓ Changes in viscosity at 40°C, %, not more than	3						
✓ Changes in acid number, mg KOH/g, not more than	0,15						
Tribological characteristics in 4 balls machine (20±5)°C							
✓ Scuff index, H, not less than	680	580	580	580	580	580	580
✓ Index of wearout (196H), mm, not more than	0,4	0,4	0,4	0,4	0,4	0,4	0,4
✓ Welding load, H, not less than	3920	3920	3920	3920	3920	3920	3920



low  
foaming



Extreme  
pressure



corrosion  
protection



high  
performance  
additives



heavy  
conditions



super  
water  
separation



MoS<sub>2</sub>

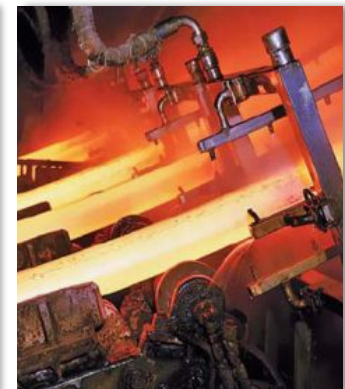
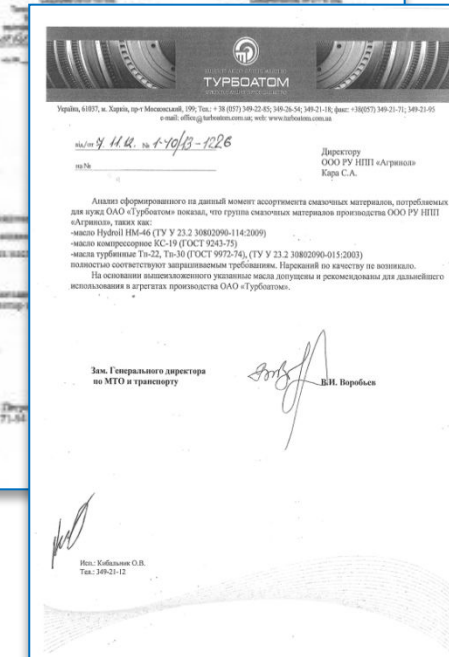
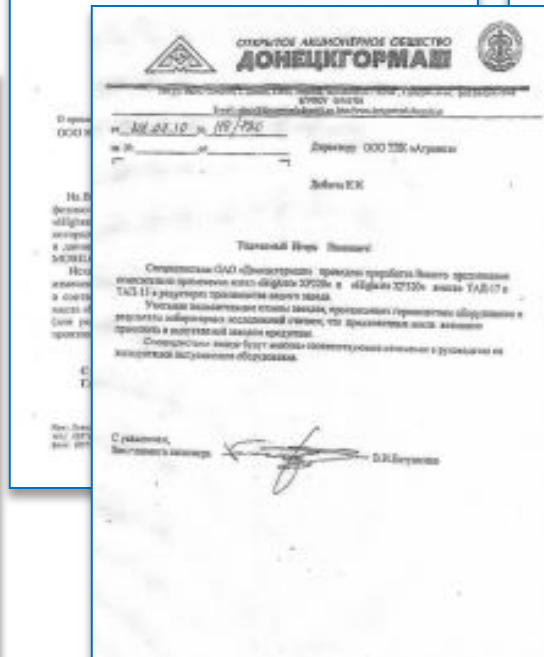


high  
load

# Approvals "AGRINOL" Industrial gear oils



Approved



# “AGRINOL” Industrial gear oils

## Composition of Gear oils



Base stock	Oxidation inhibitor	Anti-wear additive
Viscosity modifier	Corrosion inhibitor	EP agent
Friction modifier	De-foaming agent	Pour point dispersant

**Appropriate  
base fluid**



**High  
efficiency**



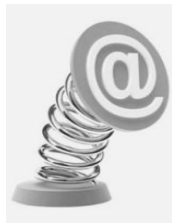
# Thank you for your attention!



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