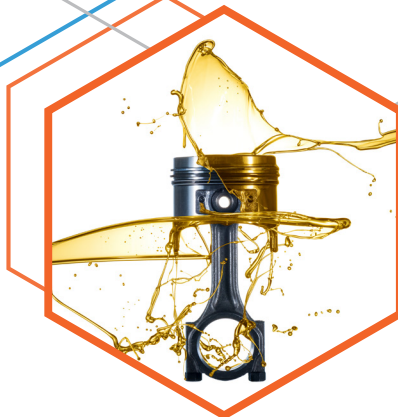
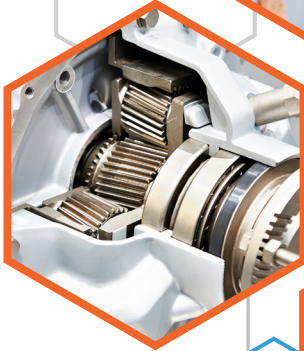
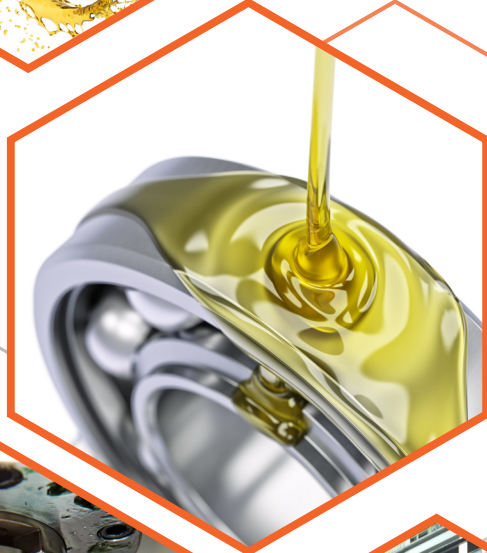




**LUBRICANT  
ADDITIVES**







## COMPANY PROFILE

**Yasho Industries Limited** was incorporated in the year 1985, and commenced operation in 1993 for the manufacture of specialty organic chemicals. Subsequently the company started to manufacture various Lube Chemicals developed in their own R&D.

Lubricant Additives from Yasho Industries are marketed under the registered trade mark **YALUB** and **YAPOX**.

Yasho Industries has production units with state of the art technology. Sustained R&D and process development work has enabled the company to achieve phenomenal growth in production volumes, quality improvement and customer satisfaction.

Yasho Industries takes great pride in contributing to community welfare and address all environmental concerns.

Yasho has lubricants additives for a wide range of applications like Antimony free & Lead free lubricants, Automotive engine oils, Aviation diesel, Compressor oils, Diesel Engine oils, Friction Reducer, Fuel, Gas engine services, Gasoline engine oils, Gear oils, Hydraulic oils, Industrial oils, Lubricating greases both as an oxidation inhibitor and metal deactivator, Metal working fluids, Petrol engine oils, Transmission fluids and Turbine oils.



## RESEARCH & DEVELOPMENT AND QUALITY CONTROL

Quality Control and Research & Development is our core strength. **Continuous Innovation, Process Upgradation and Product Enhancement** complement our vast experience of over two decades in manufacturing of organic chemicals. Investments in R & D are an integral part of our progress.

Endorsed by **Bureau Veritas**, our quality assurance meets the most stringent ISO **9001:2015** norms.

Our products find wide acceptance across the globe.

Our **In-house testing facility** & the **state-of-the-art laboratory** uses modern quality control methods and sophisticated instrumentation such as:

- AAS(Atomic Absorption Spectrophotometer)
- CHNS Analyzer
- Differential Scanning Calorimeter (DSC)
- FTIR (Fourier Transforms Infrared Spectrophotometer)
- GC (Gas Chromatography)
- HPLC (High-Performance Liquid Chromatography)
- UV Spectrophotometer



# TESTING CAPABILITIES

RPVOT – ASTM D 2272

PDSC – ASTM D 6186 & ASTM D 5483

Four Ball Tester – ASTM D2266/2596/4172/2783 & D 5183

Oxygen Stability Bath – ASTM D 942 & D 943

Copper Corrosion Test – ASTM D 130 & D 4048

Rust Prevention Tester – ASTM B 665

Drop Point Tester – ASTM D 566

Flash Point Tester – ASTM D 92 & D 93

Kinetic Viscosity Bath – ASTM D 445

Thermal Stability – ASTM D 2070

Hydraulic Stability – ASTM D 2619

Demulsibility Bath – ASTM D 1401



## ANTIOXIDANTS

Product Name	Molecular Formula	Application & Uses	Chemical Composition	Physical State	Color	Density, gm/cm <sup>3</sup>
YALUB®BODPA*	Proprietary	General purpose antioxidant for lubricants & greases NSF® Certified HX-1, 148724	Mixed octylated and butylated diphenylamines	Liquid	Pale yellow to reddish brown	0.970 - 0.980 @ 25°C
YALUB®DND*	Proprietary	It is used as an antioxidant in mineral & synthetic oils. Its liquid form allows easy handling & blending.	Dinonylated Diphenylamine	Liquid	Dark Brown viscous	0.930 - 0.970 @ 25°C
YALUB®DODPA*	C <sub>28</sub> H <sub>43</sub> N	General purpose: Ashless antioxidant for all types of lubricating oils at high temperatures (200 - 260°C). Especially used in hydraulic fluids, industrial oils, automatic transmission fluids & engine oils. Used as antioxidant and corrosion inhibitor in silanes and synthetic lubricants (Fluids & Greases). NSF® Certified HX-1, 157492	Octylated Diphenylamine	Flakes / Powder	Off white to Light tan	
YALUB®NA 06*	C <sub>24</sub> H <sub>29</sub> N	It is an ashless antioxidant with low volatility. It is used for high temperature applications. NSF® Certified HX-1, 157493	Alkylated PANA	Solid, Powder	Cream to pinkish brown	
YALUB®PA 135*	Proprietary	It is general purpose, non-staining, high molecular weight liquid phenolic antioxidant that provides excellent stability to a wide range of automotive and industrial lubricants. It has excellent solubility in mineral oil & non - conventional base stocks. It is easy to handle and will not crystallize at low temp. It has low volatility provides superior protection against oxidation & deposit formation.	Butylated hydroxy-hydrocinnamate	Liquid	Viscous clear yellow to brownish	0.960 - 0.980 @ 20°C
YALUB®PA 15 S	C <sub>38</sub> H <sub>58</sub> O <sub>6</sub> S	It is high molecular phenolic antioxidant used in hydraulic fluids, metal working fluids, industrial gear oils, turbine oils, polyglycols, and use with natural & synthetic esters. NSF® Certified HX-1, 157494	High molecular weight phenolic antioxidant containing a thioether group	Powder	Crystalline white to yellow	
YALUB®SU 5727	C <sub>30</sub> H <sub>52</sub> O <sub>3</sub> S	It is a phenolic antioxidant used in lubricants, greases, release products, hydraulic fluids, metal working fluids. It is used also as an intermediate.	Acetic acid, [[[3,5-bis (1,1-dimethylethyl)-4-hydroxyphenyl]methyl]thio]-, C1014-isoalkyl esters	Liquid	Yellow to brown viscous	0.970 – 0.995 @ 20°C

\* REACH Registered Products



Viscosity, mm <sup>2</sup> /s	Melting Point °C	Solubility	Dosage % by weight
280 - 400 @ 40°C		Mineral oil > 5% Ester > 5% Water < 0.01%	Mineral oil base industrial lubricants: 0.1 - 0.5 Synthetic industrial lubricants & greases: 0.3 - 1.0 Engine Oils: 0.3 - 1.0
500 - 900 @ 40°C		Soluble in Petroleum and Synthetic Lubricant bases, Insoluble in water.	Hydraulic /Break Fluids: 0.2 - 0.5 Compressor and Circulating Oils : 0.2 - 0.8 Paper Machine Oils : 0.2 - 0.5 Industrial and Automotive Gear Oils: 0.2 - 0.5 Engine oils: 0.2 - 0.5 Greases : 0.2 - 0.6 Recycled base Oil : 0.1 - 0.6
	95 min.	Soluble in Petroleum and Synthetic Lubricant bases, Insoluble in water.	Hydraulic /Break Fluids: 0.2 - 0.5 Compressor and Circulating Oils : 0.2 - 0.8 Paper Machine Oils: 0.2 - 1 Greases: 0.2 - 0.5 Industrial and Automotive Gear Oils : 0.1 - 0.5 Turbine / Engine Oils / Thermic Fluids : 0.1 - 0.2 High Temperature Silicones/ATF : 0.5 - 2 Synthetic Esters: 0.2 - 1
	74 min.	Ester, mineral oil	Synthetic Lubricants : 2.0 - 3.0 General & Industrial Lubricants : 0.5 - 2.0
90 - 150 @ 40°C		Ester, mineral oil	Industrial Lubricants : 0.1 - 0.5 Transmission fluid : 0.1 - 0.8 Metal Working Fluid : 0.1 - 0.5
	63 - 74	Solubility in mineral oil is less than 0.5% and should be checked in finished fluids	PAO : 0.2 - 0.4 PAG : 0.1 - 0.5 Engine Oils : 0.5 - 1.0
210 - 390 @ 40°C		Soluble in petroleum ether	

## ANTIWEAR / FRICTION MODIFIER

Product Name	Molecular Formula	Application & Uses	Chemical Composition	Physical State	Color	Density, gm/cm <sup>3</sup>
YALUB®44 MBC*	$C_{19}H_{38}N_2S_4$	It is used as an excellent oil soluble ashless high temperature antioxidant with antiwear, antiscuff and extreme pressure properties. Synergizes with aminic antioxidant & organo-molybdenum antiwear additives & friction modifiers. NSF® Certified HX-1, HX-214-8725	Methylene bis (dibutyldithio carbamate)	Liquid	Dark Amber	1.050 - 1.070 @ 25°C
YALUB®3000 D*	Proprietary	Used as Friction reducer and antioxidant for petroleum products. It may also maintain or improve the anti-friction properties of engine oil while reducing the phosphorous content.	Molybdenum dithiocarbamate in oil	Liquid	Brown	1.030 - 1.070 @ 25°C
YALUB®85 M*	Proprietary	Used as a molybdenum ester/amide friction modifier & antioxidant in engine oils.	Organomolybdenum complex of organic amide	Liquid	Brown	1.050 - 1.100 @ 20°C
YALUB®525 S	Proprietary	It is used as friction reducer in diesel engine oil, gasoline engine oil, gear oil, metal working fluid, grease.	Molybdenum Dithiocarbamate	Liquid	Dark Brown	1.020 - 1.080 @ 15°C
YALUB®MDBC*	Proprietary	It is used as an antioxidant, friction modifier & extreme pressure additive for Greases.	Molybdenum di-n-butyldithiocarbamate	Powder	Yellow	1.590 @ 25°C
YALUB®ZDD	$C_{22}H_{44}N_2S_4Zn$	It is used in petroleum products as an oxidation inhibitor, a metal deactivator, an anti-wear agent and a bearing corrosion inhibitor.	Zinc Diamyldithiocarbamate in oil	Liquid	Amber	0.980 - 1.100 @ 25°C
YALUB®LA*	Proprietary	It is friction modifier for lubricants	Molybdenum di (2-ethylhexyl) phosphorodithioate	Liquid	Dark Green	1.075 - 1.085 @ 15.6°C

\*REACH Registered Products





Viscosity, mm <sup>2</sup> /s	Melting Point °C	Solubility	Dosage % by weight
340 - 400 @ 40°C		Soluble in petroleum and lubricant base oils. Insoluble in water.	Heavy Metal - Free Greases : 2.5 - 5 Industrial Gear oils : 0.8 - 1.5 Hydraulic / Break Fluids : 0.5 - 1.0 EP - Turbine Oils : 0.5 - 1.0 Metal Working Fluid : 1.5 - 5 Compressor Oil : 0.5 - 1.5
50 - 75 @ 100°C		Soluble in petroleum products. Insoluble in water.	0.15 - 1.0
60 - 100 @ 100°C		Soluble in petroleum products. Insoluble in water.	0.1 - 1.0
400 - 1500 @ 40°C		Soluble in petroleum products. Insoluble in water.	0.3 - 1.0
	258 min.	Slightly soluble in aromatic hydrocarbons. Insoluble in water	2.0 - 4.0
8 - 15 @ 100°C		Soluble in synthetic lubricant bases & Petroleum. Insoluble in water.	0.2 - 4.5
6 - 10 @ 100°C		Soluble in petroleum oils & greases, aliphatic & aromatic solvents and in various synthetic lubricants bases. Insoluble in water.	0.2 - 2.5



## CORROSION INHIBITOR / METAL DEACTIVATOR

Product Name	Molecular Formula	Application & Uses	Chemical Composition	Physical State	Color	Density, gm/cm <sup>3</sup>
YALUB®TT 33*	Proprietary	It is a premium ashless metal deactivator and corrosion inhibitor which is soluble in mineral & synthetic base stocks. Industrial and Automotive lubricants, greases, corrosion inhibitor for ethanol blended fuels and metal working fluid. NSF® Certified HX-1, 157495	Tolytriazole derivatives	Liquid	Clear yellowish to brown	0.940 - 0.960 @ 25°C
YALUB®DM 86	C <sub>18</sub> H <sub>34</sub> N <sub>2</sub> S <sub>5</sub>	It is used as corrosion inhibitor for lubricants & greases	2,5-dimercapto-1,3,4-thiadiazole derivative	Liquid	Clear amber	1.020 - 1.050 @ 20°C
YALUB®DM 89	C <sub>4</sub> H <sub>2</sub> N <sub>4</sub> S <sub>6</sub>	It is used as an extreme pressure additive for greases NSF® Certified HX-2, 157491	1,3,4-thiadiazole-2(3H)-thione, 5, 5-dithiobis	Powder	Yellow	1.50 – 2.09 @ 25°C
YALUB®DMTD*	C <sub>2</sub> H <sub>2</sub> N <sub>2</sub> S <sub>3</sub>	It has Industrial use in Lubricants and greases. It is also used as Chemical and Pharmaceutical Intermediate.	2,5-Dimercapto-1,3,4-thiadiazole	Powder	Tan	1.790 @ 25°C
YALUB®NATD	Proprietary	It is a corrosion inhibitor and metal deactivator for nonferrous metals in aqueous systems.	Disodium 2,5-dimercapto-1,3,4-thiadiazole, 36% aqueous solution	Liquid	Pale yellow to Amber	1.200 - 1.240 @ 25°C
YAPOX®BZT	C <sub>6</sub> H <sub>5</sub> N <sub>3</sub>	It acts as a Corrosion Inhibitor for Lubricants, Petroleum Fuels, Hydraulic Fluids, Cutting Oils, Engine Coolants, Paints & Ink, Copper Processing, Plating Bath, Heating & Cooling System, Industrial Water Cooling and for Water Treatment Chemicals.	Benzotriazole	Powder	Off white crystalline	
YAPOX®TTZ	C <sub>7</sub> H <sub>7</sub> N <sub>3</sub>	It acts as Corrosion Inhibitor for Lubricants, Petroleum Fuels, Hydraulic Fluids, Cutting Oils, Engine Coolants, Paints & Ink, Copper Processing, Plating Bath, Heating & Cooling System, Industrial Water Cooling & for Water Treatment Chemicals.	Tolytriazole	Granular / powder	Pale yellow	

\*REACH Registered Products





Viscosity, mm <sup>2</sup> /s	Melting Point °C	Solubility	Dosage % by weight
20 - 90 @ 40°C, 4 - 6 @ 100°C		Soluble in petroleum products and synthetic base oils. Insoluble in water.	0.05 - 0.2
2.0 - 4.0 @ 100°C		Soluble in petroleum & synthetic oils	0.1 - 0.6
	160 min.	Dispersible in grease. Insoluble in petroleum oils and water	1.0 - 3.0
	151 - 163	Soluble in water, ethanol, acetone and diesters. Slightly soluble in petroleum lubricant bases, hexane, petroleum ethers, chloroform and toluene	1.0 - 3.0
		Soluble in water	0.1 - 0.3
	95 - 98	Soluble in methanol	0.1 - 0.5
	82 - 89	Soluble in acetone	0.1 - 0.5





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**Plant Unit II :**

Plot no. 1713, Phase III  
GIDC , Vapi - 396 195 , Gujarat, INDIA

**Plant Unit III :**

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