



'PRODUCT INFORMATION'

Vegetable oil based esters with selected compatible additives are trend setters as machine tool lubricants. Vegetable oil esters have exclusive properties, which help in reducing friction & temp. rise during machining operations, improving finish of the products & increasing tool life.

DIRGHAYU GREEN COOL CUT OILS HAVE FOLLOWING EXCLUSIVE PROPERTIES OVER PETRO /SYNTHETIC

- a) **Very High Lubricity** – Cool operation, long Tool life & long lasting settings. Fine finish & faster speed of operations.
- b) **Polar nature** – Provides adhesion of oil to cutting edges & excellent boundary layer lubrication. No separate EP additives.
- c) **High Flash point** – Easy to handle and no human problems in handling.
- d) **Low volatility & consumption** – Low vapors which are safe to operators.
- e) **Bio degradable & Non toxic** – Environment friendly. Protecting human health. No risk to operator on contact or vapor breathing.
- f) **Disposal** – Spent lubricants can be composted & develop compost of high organic carbon
- g) **Very Safe compared to Petro /Synthetic** - Dirghayu base oil is bio based & total biodegradable % is above 80%. It is non toxic. In case of synthetic or petro based cutting cooling oils, chlorinated paraffin's are used for EP properties. As per Osha standards, sulfurised or chlorinated compound are used. Unrefined mineral oils, nitrites & nitrites amines & many other compounds can cause cancer as per Osha standards. Dirghayu cutting cooling oils do not use any of these materials.
- h) **No Foaming** - Dirghayu Bio based oils do not cause foaming, while synthetic or petro based require specific processing to avoid foaming.
- i) **Cooling to Reduce Water evaporation** - Dirghayu oils with Anti Rust properties also provide cooling & reduce water evaporation. Though, normally water is used as cooling medium for water emulsion cutting cooling oils, the Neat oils do require cooling properties. In case of Neat oils, this is taken care of.

Dirghayu Green Cool Cut Oils are either **Water Emulsible Type** or **Neat Cutting Type** for using in High speed or high pressure machining on any materials, SS, MS, non ferrous- Allu., brass or their castings. They are free from Mineral oils, chlorinated additives of phenolic emulsifiers etc & their adverse effects.

DIRGHAYU GREEN COOL CUT OIL-WATER EMULSIBLE TYPE-

Dirghayu Green Cool Cut Oils are to be blended with water in proportion of 1:20 or 1:30, (as per application requirements) to form very stable emulsion with water. Special emulsifier is incorporated to ensure complete stable dispersion in water. The oil proportion with water can be reduced compared to Mineral or Synthetic to the extent of 20 to 40%. 5% to 10% Mineral or Synthetic can be replaced by 3 to 5% Veg. oil based Green Cool Cut oil. Thanks to exclusive properties of Very High Lubricity, Polar, High Viscosity Index etc. They reduce friction & heat generation during machining & simultaneously, resulting in good finish with less wear of tools at faster speeds.

Maintaining pH-

Additives are provided to prevent corrosion, rusting, avoid foaming & provide cooling properties. Unlike Petro / Synthetic, we have adopted a system of adding 0.1% CNC Additive to top up water separately. This maintains pH closely within the range of 9 to 9.2 (allowable is 8.5 to 9.5). Bacterial growth & bad smell will be avoided over a long period even up to 12 months. Thus, the total changeover of oil can be min. 6 months.

Maintaining Oil to Water proportion-

We add just reqd. Cool Cut oil to top up water, maintaining desired oil proportion in sump water. Water gets evaporated & hence need to be replaced with Biocide blended top up water. Oil does not evaporate due to high flash point, & gets wasted only with finished products & scrap. We check the oil content in the balance sump water & after adding oil emulsified top up water using refractory meter or mineral acid oil – laboratory method or titration.

INITIAL FILL UP & TOP UP-

After initial fill up with 1:20 or 1:30 proportion of oil & CNC Additive of 0.1% of sump water capacity, the machine can be started functioning. The heat generated during operation will cause loss of water due to evaporation & loss of oil due to adhesion with finished goods & scrap generated during process. **Top up** water with CNC additive at 0.1% will be added to the sump water with emulsified cool cut oil in desired proportion maintaining same oil to water proportion. Oil quantity will depend on oil loss to finished jobs & scrap. Hence, it will not be proportionate to qty of water being used as top up. This will reduce oil consumption. pH should be

tested before & after each top up by using strips or meter. This should be maintained between 8.5 to 9.5. If it goes below 8.5, pl call for additive – B to improve the pH.

If above discipline is maintained, you may use initial fill up to min. 4 - 6 months.

Dirghayu Cool Cut Oil is supreme in relation to consumption of oil, finish of the product, longer tool life, longer life of the batch, compared to mineral oil based or synthetic cutting cooling oils.

TRAMP OIL-

Oil used for machine lubrication gets mixed with Cutting Cooling oil & form layer at the top. This is reqd. to be removed for cleaning & sent for ETP as it cannot be disposed off directly being dangerous to the Environment. In case of Dirghayu Cutting cooling oil, you may select Dirghayu Bio based machine oil, so that, it will not contaminate with Dirghayu Cool cut & will not harm the operations. If reqd. layer can be removed or can be composted in garden or burnt with fuel.

SELECTION OF SUITABLE GRADE & PROPERTIES – WE TYPE

Considering application requirements of heavy duty or Anti Rust or combination, Dirghayu is developed in **4 grades** with specific properties. They are

- a) **Dirghayu Green Cool Cut 22 (IPe-WE-22)** - General Purpose.
- b) **Dirghayu Green Cool Cut AR 68 (IPe-WE-AR 68)** - For Heavy Duty Machining.
- c) **Dirghayu Green Cool Cut HD 68 (IPpe-WE-HD 68)** - For Cast Iron requiring Higher Anti Rust Properties.
- d) **Dirghayu Green Cool Cut HDAR 100 (IPpe-WE-HD/AR 100)** - Requiring Heavy Duty + Anti Rust properties. (C. I.)

DIRGHAYU GREEN COOL CUT OILS -

PROPERTIES	IPe-WE-22	IPe-WE-AR 68	IPpe-WE-HD 68	IPpe-WE-HD/AR 100
Appearance	Light Yellow Clear Liquid	Light Amber Clear liquid	Amber Clear liquid	Amber Clear liquid
Emulsion Color (Mixed with water)	Translucent to Milky White	Milky White	Milky White	Milky White
Density, Kg/m ³	880	880	885	900
Kinematic Viscosity @ 40 ⁰ C, cSt, min	20-24	61-75	61-75	90-100
Flash Point, COC, ⁰ C, min	≥ 170	≥ 170	≥ 180	≥ 180
PH (5% Emulsion)	9 -9.5	9-9.5	9 -9.5	9-9.5
Copper Corrosion Test ASTM D 4048	1a	1a	1a	1a
Cast Iron Corrosion Test DIN 51 360 Part 2 / IP 287	Breakpoint 2% to 1%	Breakpoint < 1%	Breakpoint 2% - 1%	Breakpoint < 1%
Four Ball Scar, mm, ASTM D 4172	0.6-0.65	0.65	0.55-0.57	0.55-0.6
Four Ball Weld Load, Kg, ASTM D 2783	≥ 340	≥ 350	≥ 450	≥ 450

PERFORMANCE STANDARDS-

Dirghayu Green Cool Cut Oils meets the following specification - *IS: 1115 -1986 (reaffirmed 1996)*



MANUFACTURED BY

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