RECOMMENDED USE: A UNIQUE COST-SAVING FLUID FORMULATED TO SPEED-UP
HOLE-COLLARING, REDUCE COLLAR SLOUGHING AND STABILIZE THE BOREHOLE
DESCRIPTION:

HOLE CONTROL can be used with air-rotary tri-cone, down the hole hammers and all types of
top hammer drills (surface and underground).

HOLE CONTROL reduces RE-DRILLS (the re-drilling of a borehole, due to hole collapse)

HOLE CONTROL eliminates regrinding of cuttings, thus creating bigger chips for sampling purposes
and increasing penetration rates.

HOLE CONTROL leaves a sticky, neatly stacked cuttings pile that is not prone to sloughing
prior to loading the hole.

HOLE CONTROL acts as a dust suppressant and reduces wind blown fines.

HOLE CONTROL allows blast holes to be fully loaded, helping to optimize blasting operations
and creating a clean smooth floor.

HOLE CONTROL speeds up borehole collaring, thereby increasing production.

HOLE CONTROL is added to the water line on the discharge side of the water injection pump.

*Product will separate slightly over time. The buckets need to be shaken vigorously before each use.*

Inject Hole Control using the Matex Fluid Injector.

Environmental data and chemical properties are available upon request.

**For specific information, or difficult drilling conditions, please contact your Mincon sales rep.**
RECOMMENDED USE: HIGH PERFORMANCE FOAM

DESCRIPTION:
FOAMER ES is an environmentally acceptable foaming agent to be used in mineral exploration, oil and gas exploration and water well drilling operations.

FOAMER ES has been used as a drilling aid for monitoring wells.

FOAMER ES has an excellent half-life comparable to the leading foams on the market.

FOAMER ES gives immediate tight foam (compact bubbles) with good lifting characteristics.

FOAMER ES can be enhanced by the addition of Matex Hole Control or Ultravis to create significantly stiffer foam if required.

Below is a biodegradability chart comparing FOAMER ES to a common foaming agent. The biodegradability of the FOAMER ES is 99.9% after 2 to 3 days.

Sample Percent Biodegradation
- AOS 2-S 99.99
- AOS 4-S 100.0
- AOS 4-S 99.8
- AOS 8-S 99.9
- SDA C, LAS (Standard) 94.0

SUGGESTED DOSAGE:
Normal Drilling Conditions: 0.5% – 1.0% by volume Excessive Water Influx: 2.0% – 3.0% by volume
Dosages will depend on chemical make-up of the drilling water, volume of water used, and the depth of the hole.

**For specific information, or difficult drilling conditions, please contact your Mincon sales rep.**
RECOMMENDED USE: Lubricant specifically formulated for blasthole drilling using rotary drills.

TRILUBE is an environmentally safe, high lubricity, water soluble lubricant, designed to extend the life of air bearing roller stabilizers, drill steel and rotary three-cone drill bits.

TRILUBE increases rate of penetration by keeping the bearings aligned maintaining a properly engineered cutting pattern

TRILUBE extends bit life by lubricating the bearings and shirt tails.

TRILUBE extends life of air bearing roller stabilizers.

TRILUBE reduces downhole torque allowing joints to be broken easier, thus extending the life of the drill steel.

TRILUBE prevents corrosion of tanks and lubricates injection pumps, seals and hoses even in acidic or saline environments.

TRILUBE assists in dust suppression.

Dosage: Use 1.5 litres of TRILUBE per hour depending upon drilling conditions.

Application: Inject into the air or water line.

**For specific information, or difficult drilling conditions, please contact your Mincon sales rep.**
ENVIRONMENTAL AND SAFETY INFORMATION SHEET

RECOMMENDED USE: ENVIROSAFE RDO is a high performance, environmentally safe rock drill oil.

ENVIROSAFE RDO is a unique lubricant developed for all sizes of Mincon hammers, to reduce wear and improve performance. ENVIROSAFE RDO can be used in all in-line lubricators.

ENVIROSAFE RDO reduces the potential of surface or groundwater environmental concerns during mining production, mineral exploration, horizontal directional drilling, quarrying, and water well drilling.

ENVIROSAFE RDO has proprietary lubricating compounds that are resistant to being washed off in acidic water, salt water, and foam environments, thus reducing rust on the internal and external parts of the hammer even after the equipment is not in use.

ENVIROSAFE RDO creates a lubricant film on the internal parts that prevents piston scuffing and heat build up. Wear of internal hammer parts is reduced dramatically increasing the life of your hammer and rate of penetration which increases your profitability.

ENVIROSAFE RDO has a viscosity that allows the lubricant to flow freely to areas requiring lubrication. Lubrication can be better controlled and consumption reduced when using ENVIROSAFE RDO.

ENVIROSAFE RDO is an environmentally safe product that lubricates more efficiently than conventional Rock Drill Oils while reducing contamination of surface and groundwater. Particularly suited for drilling uncontaminated WATER WELLS AND MONITOR WELLS in sensitive areas such as adjacent to streams and lakes, or where groundwater protection is important.

SPECIFICATIONS:

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viscosity @ 100°C</td>
<td>8.42 Cst.</td>
</tr>
<tr>
<td>Viscosity @ 40°C</td>
<td>46.0 Cst</td>
</tr>
<tr>
<td>Specific Gravity @ 25°C</td>
<td>0.907</td>
</tr>
<tr>
<td>VI</td>
<td>214</td>
</tr>
<tr>
<td>Pour Point</td>
<td>-36°C</td>
</tr>
<tr>
<td>Flash Point</td>
<td>292°C</td>
</tr>
<tr>
<td>Heavy Metals</td>
<td>none</td>
</tr>
<tr>
<td>LC50</td>
<td>10,000 ppm+</td>
</tr>
<tr>
<td>Active Ingredients</td>
<td>5 –10 %</td>
</tr>
</tbody>
</table>

Environmental data and chemical properties are available upon request.

SUGGESTED DOSAGE: Use as per Hammer Manufacturers Specifications.

**For specific information, or difficult drilling conditions, please contact your Mincon sales rep.**
**CASE STUDY RESULTS**

**COPPER MINE - CHILE**

**CASE STUDY 1**

CONVENTIONAL HAMMER OIL vs MINCON ENVIROSAFE RDO

---

**Conventional Hammer Oil**

- Total Meters: 6355.3
- Number of Shifts: 44
- Meters per Hour: 25.43
- Total Hours Drilling: 243.25

**Matex RDO 302 ES**

- Total Meters: 6395.7
- Number of Shifts: 39
- Meters per Hour: 29.25
- Total Hours Drilling: 220

**ENVIROSAFE RDO**

- SAVED 5 SHIFTS!
- IS 3.82 METERS PER HOUR FASTER
- SAVED 23.25 HOURS

---

**ESTIMATED RIG COSTS PER HOUR - $240.00**

**TOTAL SAVINGS IN RIG COSTS ALONE - $5,580.00**

SPECIFICS AVAILABLE UPON REQUEST

---

Mincon International

Smithstown Industrial Estate, Shannon, Co. Clare, Ireland

Tel: +353 (61) 361-099 www.mincon.com
PENETRATION RATE COMPARISON

HAMMER USING ENVIROSAFE RDO

HAMMER USING OTHER LUBRICANT

AVERAGE METERS PER HOUR

TOTAL METERS DRILLED

6395 METERS

6355 METERS
MINCON ENVIROSAFE RDO
VISCOSITY / TEMPERATURE GRAPH

Legend:
Blue   - ISO 46 Mincon Envirosafe RDO viscosity/temperature relationship
Red    - ISO 68 viscosity/temperature relationship
Orange - ISO 46 viscosity/temperature relationship
Purple - ISO 32 viscosity/temperature relationship
### TECHNICAL DATA COMPARISON

<table>
<thead>
<tr>
<th></th>
<th>Mobil Almo 527</th>
<th>Shell Torcula 100</th>
<th>Chevron Aries 100</th>
<th>Mincon ENVIROSAFE RDO</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO grade</td>
<td>not listed</td>
<td>100</td>
<td>100</td>
<td>46</td>
</tr>
<tr>
<td>Viscosity @ 40 °C</td>
<td>22,9</td>
<td>100,0</td>
<td>95,0</td>
<td>46,0</td>
</tr>
<tr>
<td>Viscosity @ 100 °C</td>
<td>11,4</td>
<td>11,6</td>
<td>10,9</td>
<td>8,9</td>
</tr>
<tr>
<td>Viscosity index</td>
<td>91</td>
<td>104</td>
<td>98</td>
<td>&gt;230</td>
</tr>
<tr>
<td>Pour point °C</td>
<td>~30</td>
<td>~33</td>
<td>~31</td>
<td>~35</td>
</tr>
<tr>
<td>Flash point °C</td>
<td>204</td>
<td>263</td>
<td>230</td>
<td>&gt;279</td>
</tr>
<tr>
<td>Timken OK load</td>
<td>not listed</td>
<td>23 kg</td>
<td>30 kg</td>
<td>35 kg</td>
</tr>
<tr>
<td>Falex E.P.</td>
<td>not listed</td>
<td>not listed</td>
<td>3200</td>
<td>&gt;10,000</td>
</tr>
<tr>
<td>Biodegradability</td>
<td>Environmentally persistent</td>
<td>Environmentally persistent</td>
<td>Environmentally persistent</td>
<td>&gt;99%</td>
</tr>
</tbody>
</table>