# RENOLIN MR 310, 520, 1030

## Multi-purpose oils for bearings, transmissions and hydraulic systems with excellent viscosity-temperature behaviour

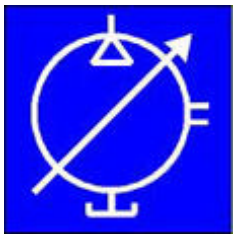
### Description

Lubricating and hydraulic oils with excellent low-temperature flowability and/or viscosity properties independent from the temperature should be used in machines and aggregates which have a wide operating temperature range or viscosity-sensitive hydraulic control units. RENOLIN MR 310, 520 and 1030 meet all requirements made on these types of HV hydraulic oils, also known as high VI hydraulic oils. RENOLIN MR 310, 520 and 1030 show an excellent viscosity-temperature behaviour. Due to their extremely high viscosity index, the products can cover several ISO viscosity classes. Selected base oils together with synergistic additives guarantee excellent cold-flow- / low-temperature properties.

RENOLIN MR 310, 520 and 1030 stand out due to the same multi-functional properties as our RENOLIN MR multi-purpose lubricating oils. RENOLIN MR oils are high-performance, multi-purpose oils based on selected base oils. Additives improve their ageing resistance and guarantee excellent corrosion protection. Selected anti-wear- (AW-) and extreme-pressure- (EP-) additives improve the performance of the oils under mixed friction conditions, they reduce wear and increase the load carrying capacity. The anti-wear-components reduce energy consumption and friction and prevent the machine components from wear and stick-slip phenomena. Selected detergent / dispersant (DD) additives guarantee excellent cleaning properties and sludge carrying capacity. The oils of the RENOLIN MR-series show a very good filterability. Electrostatic phenomena are avoided.

### Benefits / Advantages

- **Very high viscosity index**
- **Wide operating temperature range**
- **Excellent low-temperature properties**
- **Excellent cleaning properties, high detergent / dispersant (DD) level**
- **Excellent corrosion protection**
- **Avoid electrostatic phenomena**
- **High ageing resistance**
- **Good air release**
- **Low foaming**







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### Application

RENOLIN MR 310, 520 and 1030 are recommended for use as high performance VI multi-purpose lubricating oils when machines and aggregates are exposed to changing temperatures, operated at low temperatures or when they are sensitive to variations in viscosity. They are especially vital when excellent corrosion protection is required. The high level of selected DD-additives gives excellent cleaning properties and avoids the formation of sludge and carbon residues. Surface-active substances form lubrication layers which avoid wear and stick-slip phenomena.

RENOLIN MR 310, 520 and 1030 are recommended for sensitive hydraulic systems which are exposed to extreme temperature changes (e.g. in ski resorts, fire brigade technical units, etc.).

### Specifications

RENOLIN MR 310, 520 and 1030 fulfil and surpass the specifications:

- DIN 51 524-3: HVLP(D)
- ISO 6743-4: HV (with detergent / dispersant properties)
- ISO 11158: HR (with detergent / dispersant properties)

The RENOLIN MR oils are produced with zinc-containing additive systems.





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**Typical data:**

| **Product name** | | **MR 310** | **MR 520** | **MR 1030** | |
|---|---|---|---|---|---|
| **Properties** | **Unit** | | | | **Test method** |
| ISO VG | | 15 | 32 | 68 | DIN 51 519 |
| Kinematic viscosity | | | | | DIN EN ISO 3104 |
| at –20°C | $mm^2/s$ | 104 | 984 | 6711 | |
| at 0°C | $mm^2/s$ | 43 | 156 | 619 | |
| at 40°C | $mm^2/s$ | 15 | 32 | 68 | |
| at 100°C | $mm^2/s$ | 5.5 | 9 | 11 | |
| Viscosity index | - | 370 | 270 | 154 | DIN ISO 2909 |
| Density at 15°C | kg/m³ | 855 | 867 | 871 | DIN 51 757 |
| Flashpoint, Cleveland open cup | °C | 120 | 170 | 214 | DIN ISO 2592 |
| Pour point | °C | -48 | -60 | -36 | DIN ISO 3016 |
| Neutralisation number | mgKOH/g | 0.5 | 0.5 | 0.5 | DIN 51 558-1 |
| Air release at 50°C | Minutes | 3 | 7 | 8 | DIN ISO 9120 |
| Foaming, Sequ. I - III | | | | | ASTM D 892 |
| 24°C, immed./after 10 min | ml | 5/0 | 5/0 | 5/0 | |
| 93,5°C, immed./after 10 min | ml | 10/0 | 40/0 | 30/0 | |
| 24 after 93,5°C immed./after 10 min | ml | 0/0 | 0/0 | 0/0 | |
| Copper corrosion, 100A24 | Degree of corr. | 1 | 1 | 1 | DIN EN ISO 2160 |
| Steel corrosion, procedures A and B | Degree of corr. | 0 | 0 | 0 | DIN ISO 7120 |
| FZG mechanical gear test rig | Failure load stage | 11 | 11 | 11 | DIN ISO 14635-1 |
| Effect on SRE-NBR 1 sealing material at 100°C ± 1°C after 7 days ± 2h | | | | | DIN 53 521 and DIN 53 505 |
| Relative volume change | % | +16,2 | +12,9 | +8,6 | |
| Change in shore A hardness | Units | -8 | -7 | -4 | |
| Electrical conductivity at –22°C | pS/m | 12000 | 12000 | 12000 | FUCHS Inhouse Test |





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