

# MOLYKOTE® M Gear Oil Additive

Extreme-pressure lubrication additive for petroleum oils

## Features & benefits

- High load-carrying capacity at slow speeds
- Compatible with mineral oil gear oils
- Gears – Addition to oil-lubricated gears may provide:
  - Smoother surface finish of new or reworked gear sets following critical run-in
  - Healing of tooth surface damage with resultant reduction of pitting and wear debris (Figures 1 and 2)
  - Lower operating temperature, noise level and power usage due to reduction of friction
  - Longer service life of gear sets
- Bearings – Addition to oil-lubricated plain bearings may help:
  - Minimize wear at slow speeds and extreme pressures, especially during startups and under shock loading and vibration
- Machine tools – Addition to the oil reservoir may:
  - Minimize stick-slip
  - Promote smooth action
- Metalworking – Addition to metalworking fluids and cutting oils may:
  - Increase tool life by lowering friction and heat and metal pickup on work-contact areas
  - Reduce force required and improve the cutting action
  - Produce better surface finish

## Composition

- Dispersion of molybdenum disulfide in mineral oil

## Applications

MOLYKOTE® M Gear Oil Additive is primarily designed as an extreme-pressure lubrication additive for petroleum oils. Typical applications include:

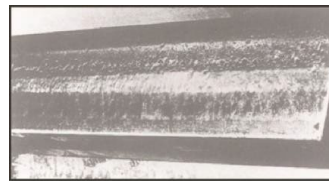
- Gears – Gears at slow speeds and extreme pressures.
- Bearings – Oil-lubricated plane bearings.
- Machine tools – Added to oil reservoir for machine ways, slides, screws, servo mechanisms, transmissions and power-feed systems. (For non-oil-lubricated components, use MOLYKOTE® G-n Metal Assembly Paste or Spray.)

## Typical properties

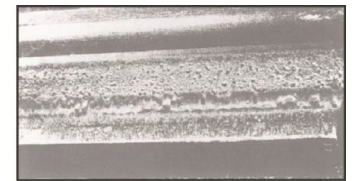
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| Standard <sup>(1)</sup> | Test                                       | Unit               | Result    |
|-------------------------|--|--------------------|-----------|
|                         | Physical form                              |                    | Liquid    |
|                         | Specific gravity at 25°C (77°F)            |                    | 0.90      |
| ASTM D92                | Flash point, open cup                      | °C (°F)            | 223 (443) |
| ASTM D88                | Viscosity at 38°C (100°F)                  | mm <sup>2</sup> /s | 59        |
| ASTM D88                | Viscosity at 99°C (210°F)                  | mm <sup>2</sup> /s | 7         |
| ASTM D97                | Pour point                                 | °C (°F)            | -29 (-20) |
| ASTM D972               | Evaporation after 22 hours at 99°C (210°F) | %                  | 0         |

<sup>(1)</sup>ASTM: American Society for Testing and Materials.



MOLYKOTE® M Gear Oil Additive reduces pitting on steel rolling mill gear.



**Figure 1.** Tooth flank of large steel rolling mill gear shows conspicuous seizure marks and heavy pitting before the addition of MOLYKOTE® M Gear Oil Additive.

**Figure 2.** Same gear tooth flank, 16 months after addition of 10% by volume MOLYKOTE® M Gear Oil Additive, shows the surface has become noticeably smoother.

- Metalworking – Useful in such operations as broaching, gear hobbing, drilling, tapping, cutting, stamping, punching, drawing, thread rolling and cold heading.

## Description

MOLYKOTE® M Gear Oil Additive is a stable dispersion of molybdenum disulfide, in a premium-grade mineral oil. It is compatible with most gear oils and has little effect on their viscosity or oxidation stability.

## How to use

### Application method

MOLYKOTE® M Gear Oil Additive may be easily dispersed in most petroleum oils with little or no mixing. Its addition to gear oils containing phosphorous, sulfur and chlorine EP agents can result in significant improvement in the load-carrying capacity of the oil. Addition to oils containing lead naphthenate, however, will not show this effect to the same degree.

The solid lubricant particles in MOLYKOTE® M Gear Oil Additive have an average size of 0.5 micron.

These solids will easily pass through most conventional oil filters that normally retain particles larger than 10 microns.

MOLYKOTE® M Gear Oil Additive is designed for use with oils in spray, mist or wick-type lubrication systems, as well as in oil reservoirs supplying splash, flood or drip-feed lubrication.

### Recommended concentrations

The optimum concentrations of MOLYKOTE® M Gear Oil Additive as an additive to petroleum-based lubricants varies in different applications. The following guidelines are suggested:

**Gears** – 5 to 10% by volume, depending on loads, speeds and condition of equipment. For best running-in results, MOLYKOTE® M Gear Oil Additive and MOLYKOTE® G-n Metal Assembly Spray or MOLYKOTE® G-n Metal Assembly Paste should be applied initially on the gear teeth before startup.

**Machine tools** – 3 to 10% by volume, depending on condition of equipment and loads on table ways.

**Cutting fluids** – 3 to 10% by volume, depending on material being machined and its tendency to weld to cutting tools. In severe applications, such as heading, tapping or hobbing MOLYKOTE® M Gear Oil Additive may be used as supplied or only slightly diluted with oil.

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## Usable life and storage

When stored below 32°C (90°F), MOLYKOTE® M Gear Oil Additive has a shelf life of 60 months from date of manufacture.

## Packaging

This product is available in different standard container sizes. Detailed container size information should be obtained from your nearest MOLYKOTE® sales office or MOLYKOTE® distributor.

## Limitations

MOLYKOTE® M Gear Oil Additive is not recommended for addition to nonflammable or fire-resistant hydraulic fluids, or other synthetic fluids such as polyglycols, diesters or silicones.

MOLYKOTE® M Gear Oil Additive should not be used in components that depend on friction for successful operation, such as friction clutches and certain gear reducers that incorporate friction-activated backstops to prevent gravity reversal in the event of power failure.

Experience has shown that excessive water contamination of oils containing MOLYKOTE® M Gear Oil Additive can be detrimental to the dispersion and cause settling of the solid lubricant.

MOLYKOTE® M Gear Oil Additive is not intended for addition to water-soluble cutting oils, although such applications have sometimes been successful.