

Safe handling of oil, oil mist and oil vapours



Expert Information from:

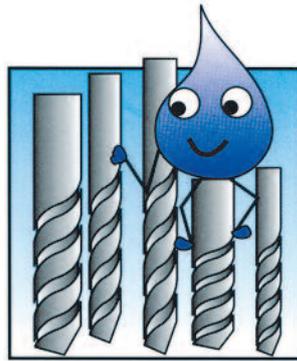
Ruwac
Industriesauger

What are oils and cooling lubricants?

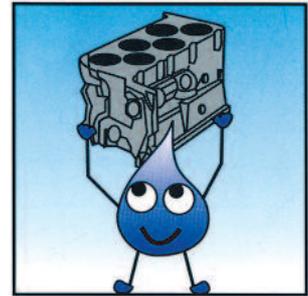
As a rule, **cooling lubricants** are used in the metal processing industry during machining processes, especially at high cutting speeds.

The **oils** they contain are mixtures of mineral and/or synthetic oils with additives.

The main purpose of cooling lubricants is to reduce the friction between the workpiece and the tool. At the same time they convey the heat that is generated away and transport cuttings away from the machining point.



Cooling and other lubricants used in metal machining

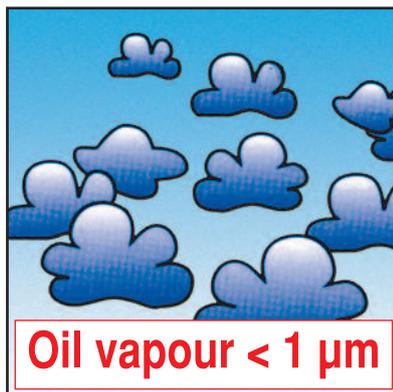
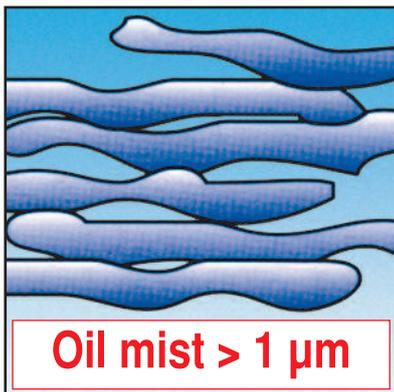


Lubricants in engines, gears and machine tools

What are oil mist and oil vapours?

Processing with machine tools produces not only the required manufactured product, but unfortunately also undesired substances, because high cutting speeds cause turbulence.

Oil mist is mainly produced when coolants are whirled up. When this air contaminated with oil particles evaporates further, **oil vapour** results.



Tiny drops in the air up to a diameter of approx. 1 µm are called **mist**. Anything with a smaller diameter is termed **vapour**.

Definition	Particle size	Formation
Oil mist "cold mist"	> 1,0 µm	- due to rotation and sliding of parts - oil particles are spun away
Oil vapour "hot vapour"	approx. 0.5 to 0.8 µm	- due to thermal effects (friction...) - due to spraying under pressure

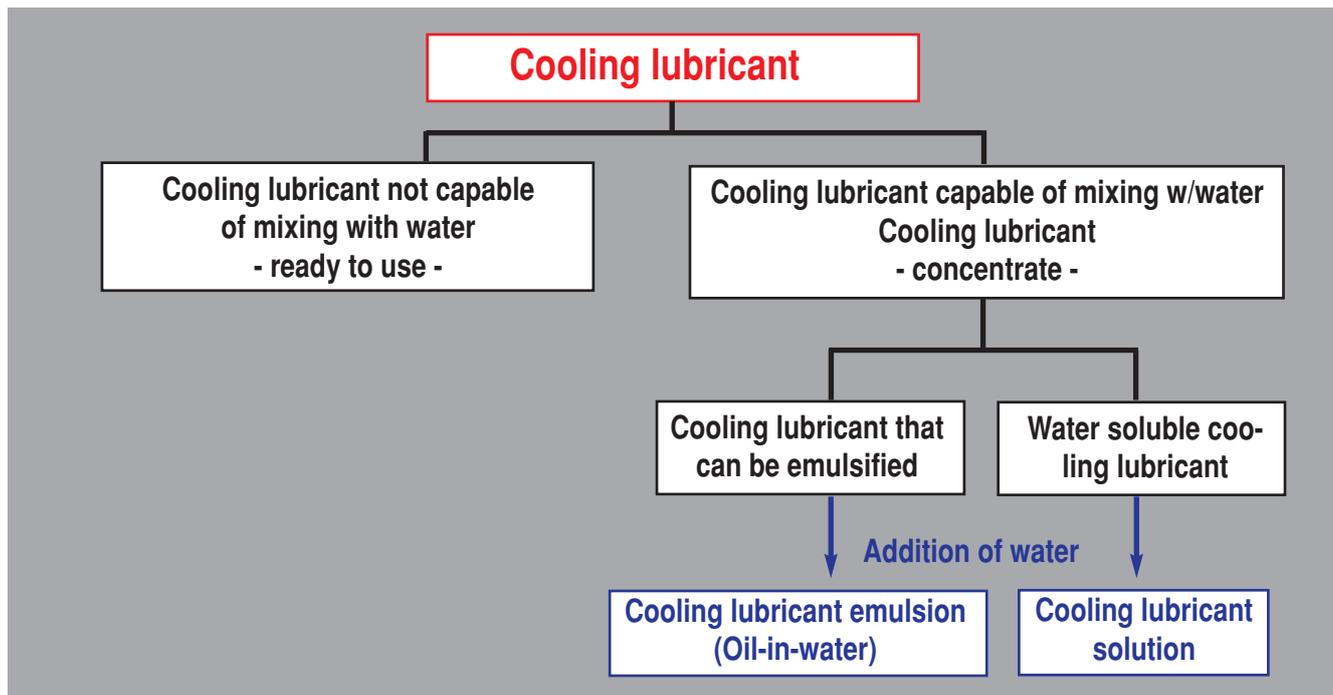
These oil particles are also what causes the typical smell in many metal processing factories.

Threshold values for cooling lubricants

Since March 1996 an air threshold value (MWC = maximum workplace concentration) of **10 mg/m³** applies for cooling lubricants that can and cannot be mixed with water with a flash point greater than 100°C.

This threshold value applies for the addition of oil mist and vapours.

Classification of cooling lubricant



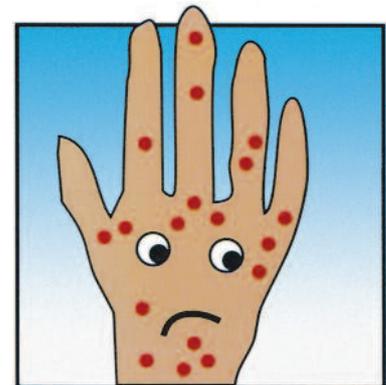
Harmful substance oil, oil mist or oil vapour

Oil mist and vapour can be harmful to the health of the operating personnel and damaging to equipment. Small particles of oil mist can contain carcinogenic substances that can enter the lungs and damage the lungs, skin or stomach.

Oil mist can destroy sensitive electronic systems – it also settles on equipment, machines and products.

Skin diseases:

- **Abrasive dermatitis** is caused by the drying effect in combination with skin-damaging substances
- **Allergic skin reactions** to certain substances contained such as nickel, chromium or cobalt (ions)
- **Oil acne** is caused mainly by lubricants not capable of mixing with water



Respiratory diseases:

- **Respiratory allergies** are caused by components in the cooling lubricants that trigger sensitivity, especially when the additives are inhaled.
- **Respiratory allergies due to microorganisms** present in the cooling lubricants as “unwanted additives”

Preventive measures:

- As aerosols are carriers of microorganisms and can be inhaled, cooling lubricant emissions should always be avoided – i.e. they must be extracted at the point where they occur.
- Regularly clean the system and change the cooling lubricant if possible before a non-operating shift.
- The operator must ensure that workpieces wet with cooling lubricant are not blown off with pressurised air.

Safely removing harmful substances

Ruwac special vacuum cleaners achieve **values below** the necessary MWC values.

All vacuum cleaners have been tested and certified by independent institutes (e.g. "Miljö Chemie").

They are ideal for easy removal of oils from machines and production plants and for simultaneously filtering oil mist through special filters.



Standard vacuum cleaner with dome-type cyclone filter with additional oil mist cartridges.



For removing and separating oily cuttings



Special model:
Oil mist extractor and processing oils in chain production

For information on existing directives and regulations, please contact: your work safety officer, the technical monitors of the professional associations or the industrial inspection authorities.

Practical advice and demonstration on site: