



**Microlubrication** which is also named **minimum quantity lubrication (MQL)** is a means to bring **accurate quantity of liquid** in a process.

## Applications

### General remarks

Microlubrication is used:

- To bring an amount of liquid at a moment (instantaneous lubrication system)
- generate a flow all along the time (continuous lubrication system)

The liquid may be:

- put down at a point by a tube drop by drop
- used to soak a felt
- thrown by a nozzle at a point
- spread on an area by a nozzle.

### Machining operations

Microlubrication is used in place of coolant for machining operations. There are two methods:

	External lubrication		Internal lubrication
Method	Lubrication of the outside of the tool generally:		Lubrication by the centre of the spindle
	with a specific nozzle	with a rigid or flexible nozzle	
Operations	band sawing circular sawing	broaching turning engraving countersinking	deep drilling
			drilling tapping boring milling

It is possible to lubricate the turning tools by their lubrication hole when they have.

External nozzles may be attached by magnets.

External and internal lubrications have advantages and drawbacks:

	Lubrication of the outside of the tool	Lubrication by the centre of the tool
<b>Advantages</b>	- accurate deposit of the lubricant - easy to set up - the lubrication does not generate mist	is able to lubricate tools which are not reachable does not require to adjust the position of the nozzle or to use several nozzles when the length of the tool is modified
<b>Drawbacks</b>	The tool must be reachable.	It generates mist and often requires a suction device.

# Cutting, punching and stamping operations

Lubrication of:	sheet metal			tools
	narrow	medium	wide	
Principle use	microlubrication		spraying	microlubrication
	a standard nozzle (*)	a flat jet nozzle (*)	- a nozzle (*) - a rack of nozzles (*)	- rigid nozzles - flexible nozzles with attachment magnets
Sometimes used	spraying		microlubrication	spraying
	a nozzle (*)		a rack of nozzles (*)	nozzles

(\*) by side

## Bending and forming operations

Microlubrication is used to lubricate:

- inside of tubes on CNC tube bending machines
- tubes in forming operations
- parts or tools in forming operations
- roll forming operations

## Application of products

Microlubrication and spraying are used to:

- spray **release agents** in moulds
- spray **anti-corrosion** agents on parts
- water on food products
- ...

## Lubrication of mechanical components

Microlubrication is used to lubricate:

- bearings
- gears
- chains
- wire ropes
- conveyors
- ...

## Lubrication of assembly operations

Several assembly operations require a lubricant or a product:

- the fitting of rubber damping blocks
- the mounting of hose fittings
- ....

Microlubrication is also used to put amounts of oil or other liquids at several points.