



LUBRICANTS  
TECHNOLOGY  
GERMANY

## TECHNICAL DATA SHEET

# GT Cutting oil 1225

Water-soluble cutting oil

## 1. DESCRIPTION

GT Cutting Oil 1225 is a water-soluble cutting fluid concentrate, formulated from selected mineral base oils, high-grade emulsifiers, and biocide additives to enhance antibacterial and odor-resistant properties. The product forms a milky white emulsion, is stable, and suitable for various cutting, turning, milling, and drilling operations on steel and non-ferrous metals.

## 2. PRODUCT APPLICATIONS

- Machining on carbon steel, alloy steel, and cast iron.
- Machining of aluminum and aluminum alloys (7075, 2024, etc.) – without blackening or staining the surface.
- Machining of copper, brass, and bronze – smooth machining, bright surface finish.
- Machining of zinc and galvanized steel – minimizes yellowing.

### For use with the following machines:

- CNC machines, machining centers.
- Lathes, milling machines, planers, drills, taps.
- Grinding machines (at lower concentrations).



## 3. KEY FEATURES

- Excellent emulsification with soft to medium water; milky white, stable solution.
- Superior rust protection for parts and machinery.
- Compatible with non-ferrous metals: aluminum, copper, zinc – reduces staining and tarnishing.
- Good antibacterial properties thanks to biocide → reduces odor, extends solution lifespan.
- Low foaming, suitable for high-speed circulating systems.
- Nitrite-free, phenol-free, and boron-free – more environmentally friendly and operator-friendly.

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## 4. TYPICAL TECHNICAL SPECIFICATIONS (\*) – CONCENTRATED OIL

*(\*Reference value, subject to adjustment depending on production batch.)*

Target	Method	Typical value
Status	Observe	A light brown, clear liquid, free of foreign matter.
Density @ 20°C	ASTM D4052	~0,88 g/ml
Kinematic viscosity @ 40°C	ASTM D445	35 – 50 mm <sup>2</sup> /s
Closed cup flash point	ASTM D93	> 170°C
pH of 5% solution (DI water)	DIN 51369	8,8 – 9,4
5% emulsion form	Observe	Trắng sữa, đồng nhất, không tách lớp
Rust protection (chip/filter paper test, 3%)	Internal	Grade 0 – rust-free
Refractometer factor (RF)	Internal	~1.1 (for reference)

## 5. INSTRUCTIONS FOR USE & MIXING

### 5.1 Recommended concentration:

Application	Solution concentration (with water)
Grind, lightly cut	3 – 4%
Conventional turning, milling, and drilling	4 – 6%
Heavy machining, tapping, boring	6 – 8%
Aluminum and copper machining requires a high-quality surface finish.	5 – 7%

### 5.2 How to mix correctly

- ALWAYS pour the oil into the water, never the other way around.
- Use RO/DI water or water with a hardness of  $\leq 150$  ppm CaCO<sub>3</sub>.
- Add the oil while stirring/circulating vigorously until a smooth emulsion is formed.
- Brix formula:
- Refractometer factor RF  $\approx$  1.1 (applicable to GT Cutting oil 1225).
- Concentration (%)  $\approx$  Brix  $\times$  1.1.

### 5.3 Managing solutions during operation.

#### Check Brix and pH weekly:

- Brix at target concentration.

- Ideal pH: 8.5 – 9.5.

- Regularly remove tramp oil and debris.

#### Regularly clean the tank and pipes, and replace all the cleaning solution when:

- pH  $<$  8
- Foul odor, separation of layers, excessive sediment.



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## 6. MATERIAL COMPATIBILITY

- Compatible with most common metal materials: steel, cast iron, aluminum, copper, zinc.
- Safe for most gaskets, seals, and paints used in cutting fluid circulation systems (NBR, FKM, EPDM, etc.) when used at the correct concentration.
- When using with special paints or special resins, a small patch test should be performed first.

## 7. HEALTH, SAFETY & ENVIRONMENT

- Avoid prolonged contact with skin – wear gloves and safety glasses.
- If contact with eyes occurs: rinse immediately with plenty of clean water for at least 15 minutes.
- Do not drink; if swallowed, contact a medical facility.
- Waste oil and used solutions must be collected and disposed of according to hazardous waste regulations; do not discharge directly into the environment.
- The product does not contain nitrite, phenol, or boron – reducing the risk of nitrosamine formation.

## 8. STORAGE

- Store in original, tightly sealed packaging in a cool, dry place.
- Suitable storage temperature: 10–30°C.
- Avoid direct sunlight and high heat sources.
- Recommended shelf life: 12 months from the date of manufacture when in original packaging.

## 9. PACKAGING & TECHNICAL SERVICES

### Standard packaging:

- 200 L steel drum
- 18 L plastic container.
- The packaging clearly shows: product name, production batch, production date, and recommended dilution concentration.

### The GT-66 technical team is ready:

- Consultation on selecting optimal concentrations for each stage.
- Assistance with Brix and pH testing, and evaluation of the solutions currently in use.
- Provision of SDS, MSDS, and training materials to customers.

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