



304 & 310 CUTTING OILS (Formerly Transparent Cutting Oils)

Transparent cutting oils are light colored oils that are suitable for a wide variety of machining requirements while other cutting oils may be dark

CUTTING OIL 304 is not transparent. It is a non-staining dark oil designed for both ferrous and non-ferrous cutting applications. It contains special extreme pressure and lubricity additives to produce heavy-duty capability without active sulfur. **CUTTING OIL 304** effectively controls tool wear while providing superior surface finish.

CUTTING OIL 304 is also considered an ISO VG 32 tri-purpose machine-tool lubricant since it can be used as a cutting oil, hydraulic oil or way oil. This makes **CUTTING OIL 304** ideal for automatic screw machines where a single oil is used for all three purposes.

CUTTING OIL 310 is transparent. It contains active sulfur. Hence it is recommended for difficult machining operations of ferrous metals or where staining is not important.

CUTTING OIL 310 is a light-colored, heavy-duty cutting oil containing active sulfur. It is recommended for tough machining processes such as broaching, tapping and threading of carbon, stainless and chrome steels.

The superior extreme pressure characteristics of **CUTTING OIL 310** reduces heat buildup and provides maximum tool life. In addition, it improves surface finish, reducing rejects.

BENEFITS:

- MAXIMIZES TOOL LIFE
- MULTI-PURPOSE CAPABILITY
REDUCES INVENTORY
- IMPROVES SURFACE FINISH
- CONTAINS NO CHLORINE

APPLICATIONS:

CUTTING OILS 304 and 310 are recommended for a wide variety of machining operations and alloys.

CUTTING OIL 304 is designed for a general-purpose machine-tool lubricant and may be used as a cutting oil, hydraulic oil or way oil.

CUTTING OIL 304 may be used for machining applications such as turning, boring, threading, tapping, milling, gear cutting of non-ferrous metals (aluminum, copper, magnesium, etc.) and their alloys. It can also be used for light to medium duty machining of iron and steel alloys.

CUTTING OIL 310 is recommended for heavy duty machining of all types of steels. It is especially useful in tough machining applications such as broaching, tapping and threading of less machinable metals. **CUTTING OIL 310** contains active sulfur additives and will stain nonferrous metals.



304 and 310 CUTTING OILS (Formerly Transparent Cutting Oils)

TYPICAL CHARACTERISTICS

Grade	304	310
Product Code	16801	16802
API Gravity (ASTM D-1298)	24.0	23.5
Appearance	Dark	Light
Color, ASTM D 1500	8.0	L 2.0
Viscosity (ASTM D-445):		
cSt @ 40°C	34	45
cSt @ 100°C	5.1	5.3
SUS @ 100°F	177	230
Pour Point (ASTM D-97) °F (°C)	-20 (-29)	-15 (-26)
Flash Point (ASTM D-92) °F (°C)	350 (177)	395 (202)
Total Sulfur, %	0.6	4.4
Active Sulfur, %	Nil	4.2
Fat Content, %	Nil	5.0
Tapping torque Test (1020 HR Steel) % Efficiency	96	120
Pipe Threading torque Test (Black Pipe) % Efficiency	99	-

CUTTING OIL SELECTION CHART

Material Operation	Ferrous Easy ¹	Ferrous Moderate ²	Ferrous Difficult ³	Nonferrous Metals ⁴
Broaching	304 or 310	310	310	304
Treading	304 or 310	304 or 310	310	304
Tapping	304 or 310	304 or 310	310	304
Reaming	304 or 310	304 or 310	304 or 310	304
Milling	304 or 310	304 or 310	304 or 310	304
Drilling	304 or 310	304 or 310	304 or 310	304
Auto. Screw Machine	304 or 310	310	310	304

¹ Carbon and alloy steels with a machinability rating above 70%.

² Carbon and alloy steels with a machinability rating between 50 and 70%.

³ Carbon and alloy steels with a machinability rating below 50%.

⁴ Aluminum, brass, zinc, magnesium.

The above data is subject to usual manufacturing variation. For more information and availability, call 1-800-442-LUBE.
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