



VpCI® METALWORKING PRODUCTS



# M-528/ 528 L



## TYPICAL PROPERTIES

### M-528

Appearance	Clear yellowish to amber liquid
pH	8-9 (1% in water)
Density	8.5-8.7 lb/gal (1.02-1.03 kg/l)
Non-volatile (weight)	50-60% (M-528) 295°F (146°C)

### M-528L

Appearance	Clear yellowish to amber liquid
pH	7.5-8.5 (1% in water)
Density	8.6-8.8 lb/gal (1.03-1.06 kg/l)
Non-volatile (weight)	60-70% (M-528L)

## PRODUCT DESCRIPTION

M-528/528L are the additives for hydraulic fluids used in subsea production control systems and other water based process fluids.

They provide corrosion protection for steel, copper, brass, aluminum, bronze, galvanized steel, and other ferrous and non-ferrous metals and their alloys. M-528/528L prevent corrosion in both phases: contact and vapor.

M-528L contains an additional lubricant package.

## FEATURES

- Stable in aqueous systems at pH of 6 or above
- Soluble in water, glycols and alcohols; insoluble in hydrocarbon-based solvents; dispersible in oils
- Non-phenolic
- Seawater compatible
- Thermostable
- Was evaluated with good results in Ethylene Glycol/water blend according to IP287 with and without seawater addition
- Falex test data show that antiwear properties of Ethylene glycol/water based fluid containing M-528L are excellent
- Biodegradable
- Non-hazardous, environmentally friendly
- M-528 is in compliance with HOCNF (Harmonized Offshore Chemical Notification Format) environmental requirements

## APPLICATIONS

- Hydraulic fluids used in subsea production control systems
- Synthetic coolants and cutting fluids
- Industrial cooling towers
- Water based lubricants
- Aerosol formulations
- Alkaline metal cleaners
- Radiator fluid additive
- Water based drilling muds



## TEST RESULTS

Test Performed		Results
IP287	a. Liquid corrosion test on neat fluid	No Corrosion
	b. with 10% of seawater	No Corrosion
	c. with 2.5% of seawater	No Corrosion
IP125: Vapor phase corrosion test		Pass
10% by volume seawater contamination		Clear Fluid
Stability at	Room temperature	Clear Stable
	70°C	Clear Stable
	-20°C	Clear Stable

\*All tests were performed in the the solution

Ethylene Glycol/water=40:50 with added 10% of M-528 or M-528L

## Falex Lubricant Testing Ethylene Glycol/water 40:50 with 10% of M-528L

Load (lb) at (min)	Torque values (lb.in)
100(1)	6.3
200(1)	10.7
300(1)	13.3
400(1)	17.8
500(1)	21.3
500(30)	18.2
Number of tests	6
% Weight loss on pin	0.058%

**FOR INDUSTRIAL USE ONLY**  
**KEEP OUT OF REACH OF CHILDREN**  
**KEEP CONTAINER TIGHTLY CLOSED**  
**NOT FOR INTERNAL CONSUMPTION**  
**CONSULT SAFETY DATA SHEET FOR MORE INFORMATION**

## STANDARD TEST METHODS

OECD Method 301D	Biodegradable
ASTM D-4172	4-Ball Wear Test
ASTM D-130	Copper Strip Corrosion
ASTM D-665	Rust Preventing Characteristics
ASTM D-974	Acid/Base Number by Titration
ASTM D-1748	Humidity Testing
ASTM D-2196	Brookfield Viscometer

## PACKAGING AND STORAGE

M-528/528L are packaged in 5 gallon (19 liter) pails, 55 gallon (208 liter) drums, liquid totes, and bulk.

These products should be stored sealed in a heated warehouse to avoid freezing. M-528/528L have a shelf life of 24 months.

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