



## Ultra-Clean Spindle Oil

Phillips 66® Ultra-Clean Spindle Oil is a premium quality spindle bearing oil developed primarily for use in high-speed CNC milling machines and other machine tools that require an ultra-clean spindle oil. It meets the performance requirements of leading manufacturers of high-speed CNC milling machines. It is also recommended for use in textile machinery.

Ultra-Clean Spindle Oil is formulated to provide excellent wear protection, protection against rust and corrosion, and resistance to foaming. It has excellent oxidation resistance and thermal stability at high temperatures to minimize deposits and provide long service life. It has excellent water-separating properties to minimize the formation of emulsions, and is resistant to excessive foam buildup. It has the added advantage of fine filtration to a typical ISO Cleanliness Code of 17/15/11 for use in hydraulic systems with tight tolerances where particle contamination can cause operational problems.

### Applications

- Horizontal, vertical, bed-type, knee-type, and turret-type CNC milling machines, especially where particle contamination can cause operational problems
- High-speed needle and spindle bearings in industrial, agricultural, and textile machinery
- Low-pressure hydraulic systems that require a low-viscosity oil

### Features/Benefits

- Excellent oxidation resistance and thermal stability
- Long service life for reduced operating and maintenance costs
- Protects against wear
- Excellent oiliness characteristics (ISO VG 2)
- Protects against rust and corrosion
- Excellent water-separating properties
- Excellent low-temperature performance
- Clear color
- Non-staining
- Quick foam release
- Meets ISO Cleanliness Code rating of 17/15/11<sup>(1)</sup>

<sup>(1)</sup> **Note:** Applies only to unopened packaged containers as delivered from Phillips 66® manufacturing plants. Particle counts may vary from lab to lab.

**Premium  
Spindle Bearing  
Oil; Meets ISO  
Cleanliness  
Code 17/15/11**





## Ultra-Clean Spindle Oil

Typical Properties			
ISO Grade	2	10	22
Specific Gravity @ 60°F	0.806	0.848	0.856
Density, lbs/gal @ 60°F	6.71	7.06	7.13
Color, ASTM D1500	0.5	0.5	0.5
Flash Point (COC), °C (°F)	99 (210)	171 (340)	188 (370)
Pour Point, °C (°F)	-40 (-40)	-36 (-33)	-37 (-35)
Viscosity			
cSt @ 40°C	2.1	10.0	22.1
cSt @ 100°C	1.0	2.6	4.4
SUS @ 100°F	33	61	115
SUS @ 210°F	29	35	41
Acid Number, ASTM D664, mg KOH/g	0.04	0.03	0.03
Copper Corrosion, ASTM D130	1a	1a	1a
Four-Ball Wear, ASTM D4172, Scar Diameter, mm	0.52	0.42	0.41
Rust Test, ASTM D665 A&B	Pass	Pass	Pass
Cleanliness Code, ISO 4406:1999	17/15/11	17/15/11	17/15/11

## Health & Safety Information

For recommendations on safe handling and use of this product, please refer to the Safety Data Sheet via <http://www.phillips66.com/EN/products/Pages/MSDS.aspx>.