
Technical Material Specification: Way Lube Vactra No. 2 Equivalent

1.0 Material Overview & Common Uses

Way Lube Vactra No. 2 Equivalent is a high-viscosity, extreme-pressure (EP) lubricating oil specifically formulated for the lubrication of machine tool slideways, ways, and guides. It is designed to provide excellent adhesion, stick-slip prevention, and load-carrying capacity under boundary lubrication conditions. This specification covers equivalent formulations that meet or exceed the performance characteristics of the original Mobil Vactra Oil No. 2.

Primary applications include lubrication of horizontal and vertical slideways on milling machines, lathes, grinding machines, planers, and other precision machine tools. It is also used for lead screws, cross slides, and other sliding components where low friction and high film strength are required. The lubricant is typically applied via automatic lubrication systems, drip feeders, or manual oiling.

2.0 Core Technical Properties & Sizing

- Viscosity Grade: ISO VG 68 (equivalent to SAE 20W).
- Kinematic Viscosity at 40°C: 68 cSt (range: 61.2 – 74.8 cSt per ISO 3448).
- Kinematic Viscosity at 100°C: 8.5 cSt (typical).
- Viscosity Index: Minimum 95 (ASTM D2270).
- Flash Point (COC): Minimum 220°C (ASTM D92).
- Pour Point: Maximum -15°C (ASTM D97).
- Density at 15°C: 0.88 – 0.90 g/cm³ (ASTM D1298).
- Copper Corrosion (3 hr at 100°C): Maximum 1b (ASTM D130).
- Rust Prevention (Distilled Water): Pass (ASTM D665A).
- FZG Gear Test (A/8.3/90): Minimum Load Stage 10 (DIN 51354).
- Four-Ball Wear Test (1 hr, 40 kg, 75°C, 1200 rpm): Scar diameter maximum 0.6 mm (ASTM D4172).
- Stick-Slip Prevention: Coefficient of friction differential (static vs. dynamic) less than 0.05 under standard slideway test conditions.
- Standard Packaging: 20 L pail, 205 L drum, or bulk tanker.

3.0 Processing, Machinability & Application

Way Lube Vactra No. 2 Equivalent is not a machinable material but is applied as a lubricant. Proper application is critical to machine tool performance and longevity. The following guidelines apply to its use in lubrication systems.

- Application Temperature Range: -10°C to +80°C. For continuous operation below 0°C, consider a lower viscosity grade (e.g., ISO VG 46).
- Automatic Lubrication Systems: Use a positive displacement pump with a metering valve set to deliver 0.5–2.0 mL per cycle per slideway, depending on slide length and load.
- Drip Feeders: Set drip rate to 1–3 drops per minute per lubrication point for light-duty applications.

- **Manual Application:** Apply a thin, even film to clean slideways before each shift or after 8 hours of operation.
- **Compatibility:** Compatible with most elastomeric seals (NBR, FKM) and paints used in machine tool construction. Perform compatibility test if seal material is unknown.
- **Mixing:** Do not mix with other lubricants unless compatibility is verified. Incompatible additives may cause sludge formation or loss of EP properties.
- **Filtering:** Use a 25-micron or finer filter in the lubrication system to prevent particulate contamination from damaging slideways.

4.0 Common Defects & Quality Control

- Reject if viscosity at 40°C is outside the range 61.2 – 74.8 cSt.
- Reject if flash point is below 220°C (indicates contamination with low-boiling solvents).
- Reject if pour point is above -15°C (indicates poor low-temperature performance).
- Reject if copper corrosion rating exceeds 1b (indicates corrosive sulfur or active EP additives).
- Reject if rust prevention test fails (indicates inadequate anti-rust additive package).
- Reject if FZG load stage is below 10 (indicates insufficient EP performance).
- Reject if four-ball wear scar diameter exceeds 0.6 mm (indicates poor anti-wear properties).
- Reject if water content exceeds 0.1% by volume (ASTM D95) – water causes rust and reduces film strength.
- Reject if particulate contamination exceeds ISO 4406 cleanliness code 20/18/15.
- Reject if the lubricant exhibits visible separation, haziness, or sediment after 24 hours at room temperature.
- Reject if the coefficient of friction differential (static vs. dynamic) exceeds 0.05 under standard slideway test conditions.

5.0 Storage, Handling & WHMIS Guidelines

Way Lube Vactra No. 2 Equivalent is classified as a petroleum-based lubricant. Under WHMIS 2015, it is not classified as a dangerous good but may present hazards under specific conditions. The following guidelines apply to safe storage and handling.

- **WHMIS Classification:** Not classified as hazardous under WHMIS 2015 (may vary by supplier; always review Safety Data Sheet).
- **Hazard Statements:** H304 (May be fatal if swallowed and enters airways) – only if product contains base oil with viscosity < 100 cSt at 40°C. For Vactra No. 2 (68 cSt), H304 applies.
- **Precautionary Statements:** P301+P310 (IF SWALLOWED: Immediately call a POISON CENTER or doctor), P331 (Do NOT induce vomiting), P405 (Store locked up), P501 (Dispose of contents/container in accordance with local regulations).
- **Storage Temperature:** Store between 5°C and 40°C. Avoid prolonged exposure to temperatures above 50°C.
- **Shelf Life:** 24 months from date of manufacture when stored in original sealed containers under recommended conditions.
- **FIFO Protocol:** Use first-in, first-out inventory rotation. Mark containers with receipt date.
- **Container Integrity:** Keep containers tightly sealed when not in use. Do not store in open or damaged containers.
- **Spill Management:** Contain spills with inert absorbent material (e.g., sand, vermiculite). Dispose of absorbed material as hazardous waste if contaminated.
- **PPE:** Wear safety glasses and nitrile gloves during handling. Use chemical-resistant apron if splashing is possible.
- **Ventilation:** Use in well-ventilated areas. Avoid prolonged inhalation of oil mist.
- **Disposal:** Do not discharge into drains or waterways. Collect used oil for recycling or disposal by a licensed waste management company.

Regulatory Disclaimer: This document is a generic technical material specification provided for educational purposes. The end-user assumes all liability for reviewing, adapting, and validating all tolerances, properties, and safety protocols against specific OEM data sheets and local regulations before deployment.