



SALES SPECIFICATION OF ULTRA-S BASE OILS

Date : May / 27 / '2003

This specification shall be applied for the sales of S-Oil's Ultra-S Base Oils.

| Item | Test Method | Ultra-S 2 | | Ultra-S 3 | | Ultra-S 4 | | Ultra-S 8 | |
|---------------------------------|-------------|---------------|---------|---------------|-------------|---------------|---------|---------------|---------|
| | | Specification | Typical | Specification | Typical | Specification | Typical | Specification | Typical |
| Appearance (Room Temp) | Visual | B & C | B & C | B & C | B & C | B & C | B & C | B & C | B & C |
| API @60° | ASTM D-1298 | Report | 40.1 | Report | 39.0 | Report | 37.7 | Report | 35.5 |
| Specific Gravity @15/4°C | ASTM D-1298 | Report | 0.825 | Report | 0.830 | Report | 0.836 | Report | 0.847 |
| Color, Saybolt | ASTM D-156 | Min +25 | +30 | Min +25 | +30 | Min +25 | +30 | Min +25 | +30 |
| Kinematic Viscosity @40°C, cSt | ASTM D-445 | Report | 7.269 | Report | 13.20 | Report | 19.64 | Report | 43.89 |
| Kinematic Viscosity @100°C, cSt | ASTM D-445 | 1.9~2.4 | 2.201 | 3.0~3.5 | 3.260 | 4.0~4.4 | 4.250 | 7.0~7.5 | 7.234 |
| Viscosity Index | ASTM D-2270 | Min 100 | 109 | Min 100 | 116 | Min 120 | 123 | Min 125 | 127 |
| Pour Point, °C | ASTM D-97 | Max -25 | -37.5 | Max -20 | -25 | Max -15 | -20 | Max -10 | -15 |
| Flash Point, COC, °C | ASTM D-92 | Min 150 | 164 | Min 170 | 204 | Min 200 | 220 | Min 240 | 256 |
| Sulfur, ppm | ASTM D-129 | Max 10 | L1.0 | Max 10 | L1.0 | Max 10 | L1.0 | Max 10 | L1.0 |
| Copper Corrosion | ASTM D-130 | Max 1 | 1a | Max 1 | 1a | Max 1 | 1a | Max 1 | 1a |
| Total Acid No., mg KOH/g | ASTM D-974 | Max 0.02 | L0.01 | Max 0.02 | L0.01 | Max 0.02 | L0.01 | Max 0.02 | L0.01 |
| Con. Carbon Residue, wt% | ASTM D-189 | Max 0.05 | L0.01 | Max 0.05 | L0.01 | Max 0.05 | L0.01 | Max 0.05 | L0.01 |
| Noack Volatility, wt% | ASTM D-5800 | - | - | Report | 30.3 | Max 15.5 | 14.2 | - | - |
| CCS Viscosity @-25°C, cP | ASTM D-5293 | - | - | - | 600(@-30°C) | Report | 1,000 | - | - |