HYVAC PRODUCTS, INC.

MAIL: P.O. BOX 389 • PHOENIXVILLE, PA • 19460-0389 • U.S.A. PLANT: 201 NORTH 5TH AVENUE • ROYERSFORD, PA • 19468 • U.S.A.

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HyVac[®] Direct Drive Vacuum Pump Oil Technical Data Sheet

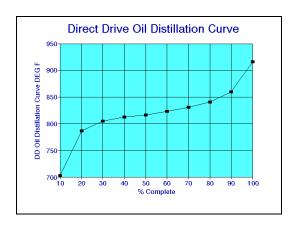
HyVac Direct Drive Oil is a high quality, high boiling range, straight cut, mineral oil of approximately 200 SUS at 100° F. Its low vapor pressure and other unique characteristics make it especially suitable for use in most high vacuum pumps including Welch, Precision and of course, the best, the HyVac Pumps.

HyVac Direct Drive Oil is refined from specially selected mid-continent solvent refined paraffinic crude oils. Among some of the prime benefits of HyVac Direct Drive oil are its inherently high oxidation resistance and low chemical reactivity. These benefits allow for maximum pump oil life and oil regeneration capabilities through use of the gas ballast valve present on many vacuum pumps. Because of the high viscosity index of all HyVac oils, they can be expected to maintain proper viscosity over a wide temperature range allowing for excellent pump bearing lubrication, long seal life and maximum pump durability. Meets requirements of MIL-L-83767B Type I.

Special handling during packaging assures absence of contaminates that would adversely affect vapor pressure performance of the pump oil. The following chart details the boiling point curve of the HyVac Direct Drive Oil.

Direct Drive Oil Distillation Range and Curve

| Initial Boiling Point | 703° F |
|-----------------------|--------|
| 10% | 787° F |
| 20% | 798° F |
| 30% | 805° F |
| 40% | 812° F |
| 50% | 816° F |
| 60% | 823° F |
| 70% | 831° F |
| 80% | 841° F |
| 90% | 860° F |
| End Point | 916° F |
| Recovered | 99.5% |



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| Catalog/Product Number | - | 93051 |
|------------------------------|---|-----------------------|
| ISO Grade | _ | 39 |
| Gravity, API | - | 30.5 |
| Pounds per Gallon | - | 7.27 |
| Pour Point,° F | - | 10 |
| Flash Point,° F | - | 420 |
| Fire Point,° F | - | 480 |
| Viscosity, SUS at 100° F | - | 207 |
| Viscosity, SUS at 210° F | - | 46 |
| Viscosity, cSt at 40° C | - | 39 |
| Viscosity, cSt at 100° C | - | 6.1 |
| Color ASTM D-1500 | - | 1.0 max |
| Viscosity Index, Min. | - | 95 |
| Neutralization Number | - | 0.05 |
| Copper Strip Corrosion, Max. | - | 1.0 |
| Carbon Residue, Conradson, % | - | <.01 |
| Vapor Pressure, Max. | | |
| at 25° C | | 10 ⁻⁶ Torr |
| at 75° F | - | 10 1011 |

HyVac Direct Drive oil should be employed where direct drive pumps are used such as the Leybold-Heraeus, Edwards, and Alcatel vacuum pumps.

HyVac Direct Drive Oil is available in a number of packages including quart and gallon containers and cases of 12 x 1 quart and 4 x 1 gallon sizes. It is also available in bulk quantities of 5 gallon plastic pails and 55 gallon steel drums.

Other HyVac Vacuum oils include HyVac Flushing Oil, HyVac Pump Oil and Heavy Pump Oil.