



What Is Vacuum Pump Oil?

Every vacuum pump type has its own specific requirements for oil, and the oil needs to be inspected and periodically replaced. Vacuum pump oils come in hydrocarbon, silicone, PFPE, semi-synthetic, full synthetic and other varieties made for certain vacuum applications.

Vacuum pump oil works as a mechanical lubricant and a medium for trapping gas molecules. It is chemically stable, not reactive to most gases and materials and has a low vapor pressure.

All substances will boil or otherwise shed molecules into a vacuum. Over time, a pressure will build up, called vapor pressure, contaminating the vacuum. Substances like water will boil heavily into a vacuum. Other substances, like glass, will boil very little.

Mechanical Vacuum Pumps

A mechanical vacuum pump has valves and rotary parts designed to pump from atmospheric pressures and below. Mechanical pumps use a hydrocarbon oil to lubricate its parts and seal the vacuum.

Diffusion Vacuum Pumps

A diffusion vacuum pump collects gas molecules in a heated oil spray. It is meant to pump from only low pressures. This vacuum pump uses a silicone, hydrocarbon or perfluorinated polyether (PFPE) oil depending on the application.

The useful lifetime of a vacuum pump's oil depends on the kind of oil, how often it is used and the contaminants that result from use. A mechanical pump usually has an inspection window or sight glass to check the oil's condition. If it is a dark brown, the oil needs to be replaced.

A&J Vacuum Services carries a full line of vacuum pump oil designed for any need. We carry Cambridge Mills CMP oils which are made uniquely for specific applications. They can be used as an alternative to pump manufacturers brand oils (see chart below for compatibility).

| Manufacturer | Manufacturer Oil Type | Compatible CMP Oil Type |
|---------------------|----------------------------------|------------------------------------|
| Alcatel / Adixen | A100 | CMP 19 |
| Alcatel / Adixen | A102 | CMP 51 |
| Alcatel / Adixen | A111 | CMP 20 Ultra HT |
| Alcatel / Adixen | A119 | CMP 19 |
| Alcatel / Adixen | A120 | CMP 19 / CMP 67 |
| Alcatel / Adixen | A200 | CMP 20 |
| Alcatel / Adixen | A300 | CMP TW2 |
| Alcatel / Adixen | A214 | CMP 704 |
| Pfeiffer Vacuum | P3 | CMP TW2 |
| Pfeiffer Vacuum | TL 011 | CMP 500 |
| Busch | R 530 | CMP 51 |
| Busch | R 540 | CMP 61 |
| Busch | R 590 | CMP 20 Ultra HT |
| Edwards | Ultragrade 19 | CMP 19 Ultra HT |
| Edwards | Ultragrade 20 | CMP 20 Ultra HT |
| Edwards | Ultragrade 70 | CMP 70 Ultra HT |
| Edwards | TW | CMP TW2 |
| Edwards | Super Grade A | CMP 19 |
| Kinney | A | CMP 41 |
| Kinney | AX | CMP 41 |
| Kinney | KV 100 | CMP 51 |
| Kinney | Super X | CMP 19 |
| Oerlikon / Leybold | N 62 | CMP 57 / CMP 51 |
| Oerlikon / Leybold | GS 77 | CMP 41 |
| Oerlikon / Leybold | HE 100 | CMP 19 |
| Oerlikon / Leybold | HE 125 | CMP 41 |
| Oerlikon / Leybold | HE 150 | CMP 57 / CMP 51 |
| Oerlikon / Leybold | HE 175 | CMP 19 |
| Oerlikon / Leybold | HE 200 | CMP 20 |
| Oerlikon / Leybold | HE 400 | CMP TW2 |
| Oerlikon / Leybold | HE 700 | CMP 41 |
| Stokes | V Lube CD | CMP 70 Ultra HT |
| Stokes | V Lube F | CMP 57 / CMP 51 |
| Stokes | V Lube H | CMP 97 |
| Stokes | V Lube J | CMP 19 |
| Stokes | V Lube L | CMP 20 |
| Stokes | V Lube G | CMP 97 |
| Welch | Duo Seal | CMP 19 |
| Varian | GP | CMP 19 |
| Varian | CS | CMP 20 |