Promotion Note

ULVAC

Introduction of Oil Rotary Vacuum Pump oil ULVOIL R-72 and R-42

In applications with high water content, water and oil are mixed and emulsified in a vacuum pump. Continued use of emulsified oil will reduce the performance of the vacuum pump and may cause a break down.
「ULVOIL R-72 and R-42」is an oil for vacuum pumps with excellent anti-emulsifying properties that prevents water and oil emulsification.

Oxidation stability test	Test item	ULVOIL R-7	ULVOIL R-72	ULVOIL R-4	ULVOIL R-42
New oil	Kinematic viscosity @40℃ mm2/s	69	68	45	46
	Acid value mgKOH/g	0.01	0.01	0.01	0.01
	RBOT min	378	259	830	252
After deterioration (150℃×24hr)	Kinematic viscosity @40℃ mm2/s	71	68	56	53
	Acid value mgKOH/g	0.75	0.03	4.82	1.88
	RBOT min	54	122	20	15
	Millipore mg/100ml	56	1.7	460	1.2

- **Oxidation stability test (IOT) :** Oil is heated to 150℃ and continuously stirred, for 24hrs. Then the kinematic viscosity, acid value and RBOT values are compared to the values prior to heat treatment, when oil was new.
  - **Kinematic viscosity :** Kinematic viscosity is a measure of a fluid's internal resistance to flow under gravitational forces, defined as the ratio between the dynamic viscosity μ and the density ρ of the fluid. Its value increases due to the deterioration of the oil. High Kinematic viscosity values, adversely affects the performance of the pump and its leak tightness.
    R-72, R-42 : Kinematic viscosity value after oil deterioration compared to R-7, R-4 is suppressed.
  - **Acid value :** The amount of acidic substance generated by oxidative deterioration. (Indicated by the amount of potassium hydroxide required for neutralization.) A higher value causes abrasion and sludge.
    R-72, R-42 : Oxidation value after oil deterioration compared to R-7, R-4 is suppressed.
  - **RBOT :** The degree of deterioration of the antioxidant and the base oil. It is the time (min) required for oxygen pressure to drop when pressurized oxygen is placed in a closed container.
    R-72, R-42 : Oxygen pressure value after oil deterioration compared to R-7, R-4 is suppressed.
  - **Millipore :** Filter with a 0.8 micron filter and measure the amount of foreign substances (oxides, etc.) contained in 100 ml. The higher the value, the greater the amount of sludge generated.
    R-72, R-42 : Amount of oxides generation after oil deterioration compared to R-7, R-4 is small.

Demulsification test	Test item	R-7	R-72	R-4	R-42
New oil 54℃	Demulsification test	39-38-3 (15)	40-37-3 (10)	40-38-2 (15)	41-39-0 (5)

- **Anti-emulsification test :** 40mL of oil and 40mL of pure water are heated to 54℃ and stirred for 5 minutes. The volume of the oil layer, the aqueous layer, and the emulsified layer of the emulsified test solution is recorded every 5 minutes, and the time until the emulsified layer becomes 3 mL or less is measured. The earlier the time, the higher the water separation performance.
  R-72 : 3ml (emulsified layer) in 10 minutes VS 15 minutes for R-7
  R-42 : 0ml (emulsified layer) in 5 minutes VS 2ml in 15minutes for R-4