

## ISORAPID 566

*high-speed quenching oil with excellent evaporation stability*

### Application:

ISORAPID 566 is a true high performance and multi-purpose quenching oil developed by PETROFER. It can be used not only in the oil temperature range of 60-80 °C in cold oil, but also it can be used at 120 °C because of its extremely high flash point. The maximum operating temperature can reach 220 °C, which can be used as a graded quenching oil.

Compared with the traditional mineral oil-based quenching oil, ISORAPID 566 has the outstanding advantages of extremely excellent anti-gasification performance, and the extremely short vapour phase ensures uniform and rapid cooling of the quenched parts at high temperature.

At the beginning of cooling, it exhibits a shorter vapour phase, using the ISO9950-compliant Nickel-alloy probe test. The cooling curve shows that the rupture temperature of ISORAPID 566 vapour phase can reach above 800 °C. The temperature range of the conventional rapid quenching oil and the graded quenching oil is generally in the range of 680-720 °C. The extremely vapour phase is very close to the ideal cooling performance with little steam film, ensuring the ideal quenching effect of quenching parts to achieve uniform fast cooling at high temperatures.

Noah's thermal evaporation loss test shows that at the same high temperature, ISORAPID 566 can reduce the thermal volatilization loss by at least 40-50% compared with conventional quenching oil of similar viscosity, which can effectively reduce the total amount of smoke and smoke generated by quenching and cooling process, reduce pollution; greatly reduce the volatilization loss of quenching oil, thereby effectively reducing the use cost of quenching oil.

ISORAPID 566 still maintains the advantages of the slow cold speed of the traditional mineral oil quenched oil, which is beneficial to reduce the stress of the quenching and reduce the quenching distortion.

Another significant advantage of ISORAPID 566 is that PETROFER's unique compounding additive has an excellent long service life – even at 200 °C, it is not easy to produce asphaltation, resulting in short-term scrapping of quenching oil, greatly reduces the replacement cost of quenching oil, and its service life is much longer than traditional mineral oil.

ISORAPID 566 is more widely used and can be used in both protective atmospheres and open oil tanks.

It can be widely used for quenching alloyed as well as lean-alloyed or plain carbon steel, such as isothermal quenching of various saw blades and gears, bearing rings and other extremely high requirements distortion ( working temperature can be used in the extremely wide temperature range of 120-220°C); Other common parts such as dies, pins, sprockets, steel nails, pins, and parts including roller and ball springs can also be used for quenching and cooling.

ISORAPID 566 may also be used to quench work from all kinds of salt baths.

**Chemical and physical data:**

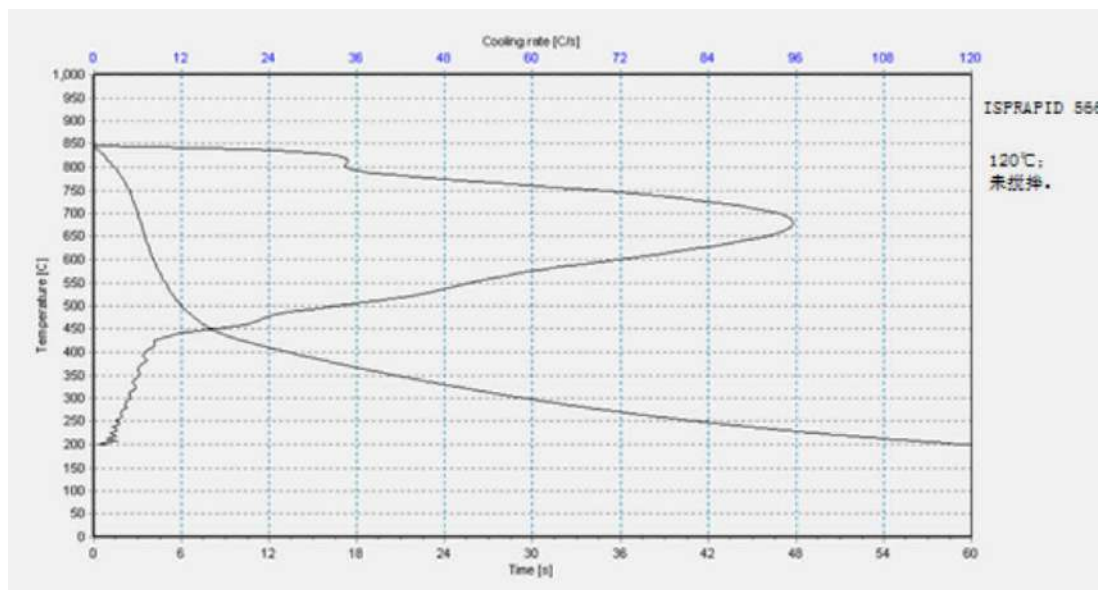
Appearance		Slightly yellow	
Density/20°C	DIN 51757	0.833	g/cm <sup>3</sup>
Flash point	EN ISO 2592	260	°C
Viscosity at 40°C	DIN 51562	50-70	mm <sup>2</sup> /s
Water (%)	GB/T 260-2004	none	%
Evaporation Loss (1h/250°C)	ASTM D5800	2.0	% m



Thermal oxidation stability:			
viscosity ratio	SH/T 0193	1.12	SH/T 0193
Cooling characteristics (oil temperature 120°C, no agitation)	ISO 9950	Tvp: approx.803°C Max. cooling rate: $\geq 90$ °C/s	

**Quenching properties:**

ISORAPID 566 is a fast quenching oil. The short vapor phase provides a high rate of cooling in the initial phase of quenching. This means a fast and uniform cooling of the complete work surface by preventing the formation of stable vapor blankets. The result is a high and uniform yield hardness and minimum distortion.



It has a fast cooling rate and maximum boiling cooling rate in the middle temperature phase, so it can ensure that the parts get enough hardness and hardening depth.

In the convective cooling phase at a lower temperature, the cooling rate is slow, so the quenching stress of the quenched workpiece can be reduced and the quenching distortion can be effectively reduced.

Due to its excellent evaporation stability ISORAPID 566 does not influence a protective or carburizing atmosphere i.e. it does not influence the gas composition, nor does it cause black carbon residues on the workpieces.

The quenched workpiece is heated under vacuum or a protective atmosphere and the parts are cleaned and brightened using ISORAPID 566 quenched and cooled.

#### **Aging stability and service life:**

ISORAPID 566 possesses an extraordinarily good aging and oxidation stability. It can ensure its long-term and stable cooling performance during long-term use.

Quenching oil has little residue on the surface of the parts, which greatly reduces production consumption.

To obtain maximum service life of the quenching bath, the following hints should be taken into account:

The volume of the bath should be in a proper relation to the weight of the quenched work. For sealed furnaces, the recommendable ratio is 7:1 (for open tanks 10:1) referring to the gross weight of one batch, respectively the amount of quenched work per hour.

Heating exchangers should not provide a strain of more than 1 W/cm<sup>2</sup>.

Do not use copper for the cooling components or other attachments in the bath, copper accelerates the aging speed of mineral oil products significantly.

Avoid incorporation of air by too vehement agitation.

### **Cleaning of workpieces after quenching:**

Furnaces as described above, in which ISORAPID 566 is mostly applied, are usually equipped with washing machines.

Residues from ISORAPID 566 can easily be removed in soaking or spray washing machines with aqueous hot cleaner (e.g. FEROCLEAN N-SF).

### **Control:**

The recommended temperature range for ISORAPID 566 is 60-200°C. If it is an open type quenching tank, it is suggested that the quenching oil temperature should be lowered to below 120 °C during shutdown, which can effectively prolong the service life of the quenching oil.

Take care: Keep the oil always free from water!

As a service for our customers we control the conditions of an oil bath by a sample which should be sent to our laboratory.

### **Packing:**

Net Weight: 180 kg/Drum Steel Drum ; 800kg/IBC

### **Storage temperature:**

5 °C -40 °C, sealed and stored in a cool, prevent exposure to the sun and rain.

Only valid in combination with EC-Safety-Data-Sheet.

### **Warranty**

The information given here is considered to be correct and is offered for your consideration, investigation and verification. No warranties are expressed or implied since the use of our products is beyond our control. Statements concerning the use of PETROFER-products are not to be constructed as recommending the infringement of any patent.