

ISORAPID 277 HM

HIGH-SPEED QUENCHING OIL WITH EXCELLENT EVAPORATION STABILITY

APPLICATION

ISORAPID 277 HM is a high speed quenching oil with extremely high evaporation stability which makes it the most widely applied oil in batch-type or pusher-type furnaces, in which work is quenched under protective or carburizing gas atmosphere.

The product is applied in the manufacturing industry as well as in commercial heat treatment shops.

BENEFITS

- extremely high evaporation stability
- short vapour phase
- high cooling rate
- especially suitable for batch-quenching

Due to its short vapour phase, it can be used for quenching alloyed as well as low-alloyed or plain carbon steel. Some typical applications are quenching of:

- All kinds of gears and shafts
- Piston pins, chain barrels etc.
- Steel nails and pins
- Bearing rings, rolls and balls
- Springs

ISORAPID 277 HM may also be used to quench work from all kinds of salt baths. ISORAPID 277 HM is also available as ISORAPID 277 HM E-version, which contains surface-active ingredients and can easily be removed with pure water after quenching.

PHYSICAL DATA

Appearance	dark brown
Density/20 °C (DIN 51757)	0,867 g/cm ³
Flash point (EN ISO 2592)	>190 °C
Fire point (EN ISO 2592)	235 °C
Viscosity/20 °C (DIN 51562/1)	65,5 mm ² /s
Viscosity/40 °C (DIN 51562/1)	27,0 mm ² /s

QUENCHING PROPERTIES

ISORAPID 277 HM is a fast quenching oil. The short vapour phase provides a high rate of cooling in the initial stage of quenching. This means a fast and uniform cooling of the complete work surface by preventing the formation of stable vapour blankets. The result is a high and uniform yield hardness and minimum distortion. These cooling properties in combination with its excellent evaporation stability prevent moreover the formation of stable vapour pockets inside densely packed batches of small workpieces so that also here uniform cooling conditions will be achieved and different hardness will be avoided.

The cooling rate of ISORAPID 277 HM in the liquid convection phase at lower temperatures is still high which provides a good "penetration".

EVAPORATION STABILITY

Due to its excellent evaporation stability ISORAPID 277 HM 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.

ISORAPID 277 HM may also be applied in open quenching tanks e.g. at pit furnaces because fire and smoke are reduced as well as oil consumption.

Only valid in combination with EC Safety Data Sheet

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AGING STABILITY AND SERVICE LIFE

ISORAPID 277 HM possesses an extraordinarily good aging and oxidation stability. It forms no sludge after extensive use and the quenching speed remains stable.

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/cm².

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 277 HM is mostly applied, are usually equipped with washing machines.

Residues from ISORAPID 277 HM can easily be removed in soaking or spray washing machines with aqueous hot cleaners (e.g. FEROCLEAN N-SF). It can also be removed with all kinds of solvents.

If the ISORAPID 277 HM E-version is applied, it can be washed off with pure water. Ask for special information on E-quenching oils.

CONTROL

The recommended temperature range for ISORAPID 277 HM is 50 - 80°C. It may be applied at temperatures up to 130°C under protective atmosphere. If constantly high temperatures are required, the application of a MARQUENCH hot-quenching oil is preferable.

Oil temperatures below 30°C and above 130°C should be avoided.

Take care: Keep the oil always free from water!

HANDLING AND STORAGE

Always observe the recommended use by date on the container.