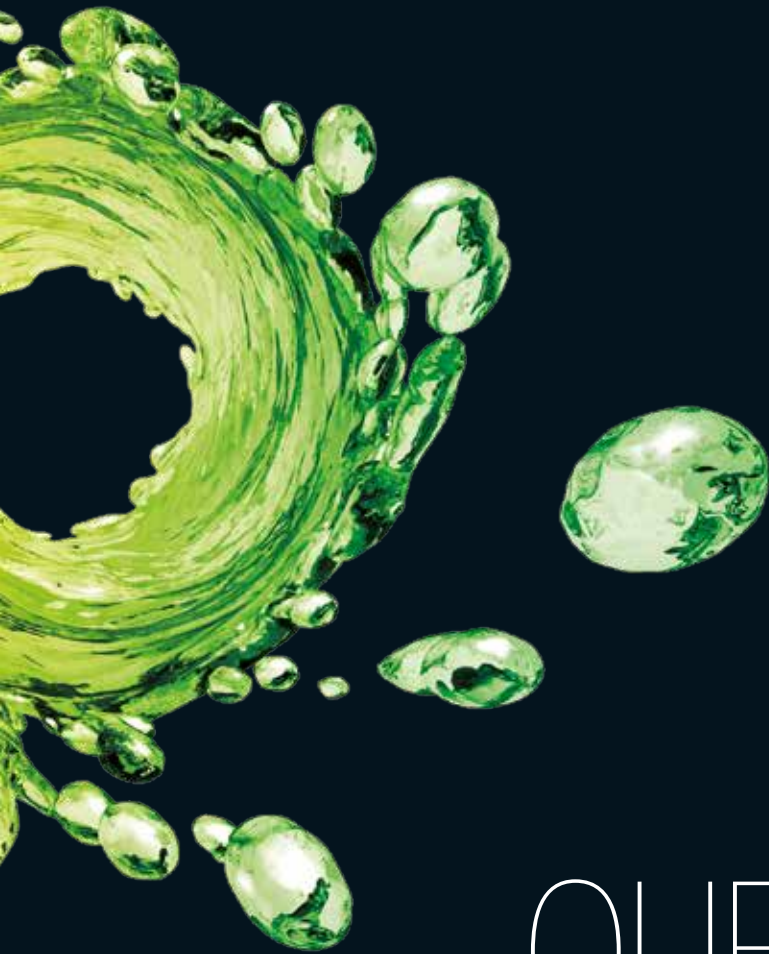


QUENCHING OILS
WATERMISCIBLE POLYMER QUENCHANTS
SALT BATHS
CARBURISING PROTECTIVE PASTES

QUENCHANTS




QUENCHANTS

Modern heat-treatment processes are forever making new demands on quenching fluids. PETROFER's extensive development programs ensure that our product technology is more than capable of meeting these new industry advances. We are constantly screening new materials for their suitability in our formulations, and our existing product range is reviewed continually to ensure that the best available technology is used.

Our customer partnership approach in Heat Treatment results in: their increased profitability, process efficiency, operation simplification, energy saving and environmental acceptance. We provide the customer with a complete product portfolio for the whole range of heattreatment processes.

A QUENCHING OILS

Accelerated quenching oils with a short vapour phase for quenching of unalloyed or alloyed quench and temper steels, also carburising steels for achieving maximum hardening depth, resp. through-hardening, viscous hot quenching oils with high quenching rates for such as gear parts to reduce the high risk of distortion, and simple quenching oils for high alloyed tool steels.

TYPE	PRODUCT	APPLICATION	VISCOSITY AT 40 °C	USUAL APPLICATION TEMPERATURE
high-speed, low-viscosity quenching oil	ISOMAX 166 / 169	<ul style="list-style-type: none"> – quenching of high-strength fasteners – hardening and tempering of forged pieces – including large section items – quenching directly after the forging process – quenching of flat- and coil-springs 	12,5/ 14,0 mm ² /s	40–70 °C
high-speed quenching oil with excellent evaporation stability	ISORAPID 221	<ul style="list-style-type: none"> – applied in closed chamber furnaces – carburising steels, quench- and temper steels, tool-steels where required – optimal products for the complete process range in commercial heat treatment shops 	21 mm ² /s	50–80 °C
	ISORAPID 277 / 277 HM		24/25 mm ² /s	50–80 °C (max. 130 °C)
	ISORAPID 455 / 459		50/49 mm ² /s	50–100 °C (max. 150 °C)
high performance hot-quenching oil	MARQUENCH 722 / 729	<ul style="list-style-type: none"> – reduced distortion of gears, shafts, ball- and roller bearings, a quench oil range with the highest aging resistance 	78/75 mm ² /s	60–150 °C (max. 180 °C)
	MARQUENCH 849		156 mm ² /s	70–150 °C (max. 180 °C)
	MARQUENCH 875		110 mm ² /s	70–160 °C (max. 200 °C)
hot-quenching oil	MARQUENCH 3500	<ul style="list-style-type: none"> – used as sealer cup oil for rotary hearth furnaces and pit furnaces 	480 mm ² /s	150–250 °C (max. 265 °C)
vacuum quenching oil	VACUQUENCH B 244	<ul style="list-style-type: none"> – quenching oil for vacuum furnaces – selection depending on hardenability of the steel 	28 mm ² /s	30–70 °C
	VACUQUENCH 305		30 mm ² /s	40–80 °C
	VACUQUENCH 605		55 mm ² /s	50–150 °C
normal quenching oil	ISODUR 220	<ul style="list-style-type: none"> – low final quenching rate, primarily determined by the viscosity – quenching of high-alloyed steels 	19 mm ² /s	50–80 °C
	ISODUR 350		38 mm ² /s	60–90 °C
	MARQUENCH 600		58 mm ² /s	60–150 °C
	MARQUENCH 1400		260 mm ² /s	100–180 °C (max. 200 °C)
high-speed, low-viscosity quenching oil	ISOMAX 150 / 170	<ul style="list-style-type: none"> – new development of the well-known product series – based on latest GTL-base oil technology* 	13/12 mm ² /s	40–70 °C
high-speed quenching oil with excellent evaporation stability	ISORAPID 280	<ul style="list-style-type: none"> – extremely short vapour phase and from this a uniform and low-emission cooling with the highest quenching stability 	23 mm ² /s	50–80 °C (max. 130 °C)
vacuum quenching oil	VACUQUENCH B 255		28 mm ² /s	30–80 °C

*PETROFER GTL-inside technology: latest base oils from the gas-to-liquid-technology: extreme evaporation stability, low-odour and extremely high flash points – safe and economic in use



B WATERMISCIBLE POLYMER QUENCHANTS

Polymer quenchants are used as addition to the quenching water. An insulating film is built up on the hot metal surface – the thickness is in relation to the concentration, and provides targeted reduction of the heat transfer coefficient of water. The solution is incombustible due to the high water content with low emissions of mostly water vapour.

AQUATENSID / AQUACOOOL

PRODUCT	APPLICATION	USUAL APPLICATION CONC.	QUENCHING CHARACTERISTIC + PROPERTIES
AQUATENSID BW 3 AQUATENSID BW-3-FF FRB-free*	induction- and flame hardening (spray-application), open quenchbaths quenching of unalloyed, low-alloyed and alloyed steels	3–8 %	fast and uniform vapour-phase reduced quenching rate in the martensite formation temperature-range (convection-phase) very good corrosion protection
AQUATENSID BW AQUATENSID BW-FF FRB-free*	induction- and flame hardening (spray-application), open quenchbaths quenching of unalloyed and alloyed steels heat treatment of aluminum alloys	5–20 %	fast and uniform vapour-phase reduced quenching rate in the martensite formation temperature-range (convection-phase)
AQUATENSID D according to AMS 3025	heat treatment of aluminum alloys aerospace and automotive lightweight construction components	5–30 %	for quenching of heat treatable Al-alloys after solution annealing to minimise pre-precipitations thus avoiding distortion
AQUACOOOL VSL AQUACOOOL VSL-FF FRB-free*	induction- and flame hardening (spray-application), open quenchbaths partly as substitute of quenching oil quenching of alloyed and high-alloyed steels	5–20 %	fast and uniform vapour-phase considerably reduced quenching rate in the martensite formation temperature-range (convection-phase)

*FRB-free: free from formaldehyde releasing biocides

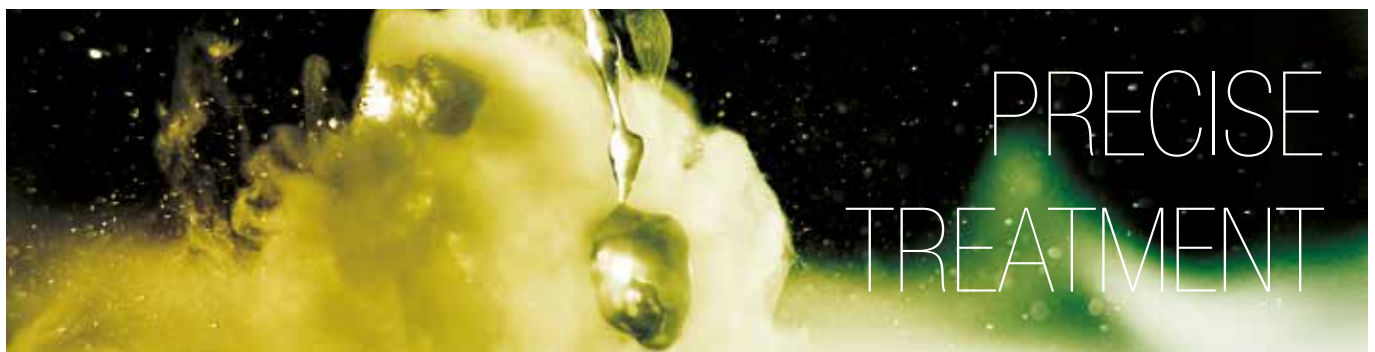
FEROQUENCH

FEROQUENCH 2000	big open quenchbaths as substitute for quenching oil quenching of alloyed and high-alloyed steels, which are sensitive to cracking (hot working steel, carburised and stainless steels, forged and cast steel parts, steel cylinders, railway points and rail quenching)	5–20 %	fast and uniform vapour-phase, oil-like reduced quenching rate in the martensite formation temperature-range (convection-phase) as substitute of oils in quench baths with volumes more than 500 m ³ - highly economic, efficient and superior workpiece-properties in big open quench tanks, keeps an outstanding performance over many years, confirmed by decades of practical experience
FEROQUENCH AP-2	adjustment of special microstructures quenching of low-alloyed and alloyed steels	10–25 %	a significantly longer vapour phase and a relatively slow cooling rate in the liquid boiling phase, by the reduced cooling conditions at high temperatures, bainitic microstructures can be achieved
FEROQUENCH HQ-RS	induction- and flame hardening (spray-application), open quenchbaths quenching of unalloyed and low-alloyed steels	5–8 %	attainment of highest hardness and avoiding of soft spots by a fast and uniform vapour phase excellent corrosion prevention properties ideally suited in steel mills and multi tank applications where cross contamination into Feroquench 2000 baths may occur, due to its compatibility

C SALT BATHS

Wide range of salts to suit baths for many heat treatment processes. Essential advantages are: high flexibility, very uniform temperature spread and short holding time. Special salts available for quenching, carburising, heat transfer or cleaning baths.

PRODUCT	APPLICATION
HS hardening bath	salt baths for austenising of structural-, case-hardening- and quench and temper steels, as well as for pre-heating stages for hardening of high-speed steels
NEUTROSAL	regenerator for hardening salt baths to prevent decarburisation
SINOXAL high speed steel bath	salts for high-speed steels for high temperature stages, with exceptional protection against decarburisation
CARBOGEN CARBORAPID CARBOMAX carburising bath	stable, one-and two salt carburising baths, easy to operate and particularly economical
CARBOTECH	special carbon-coating for carburisation - and cyanide hardening baths
AS quenching salt	nitrite-free and nitrite-containing high temperature salts for quenching, for treatment in the bainitic stages and for tempering of steel. Also for solution annealing of aluminum alloys, available with different melting points
GS quenching salt	high temperature salt for quenching and annealing of high-speed steels and tool steels
SFS 500-E / SFS blackening bath	oxidising quenching bath with following nitrocarburising treatment with outstanding corrosion and wear protection
BLACKY NF burnishing bath	burnishing baths for iron and steel components, with operating temperatures around 150 °C. Nitrite-free versions are available
HEAT TRANSFER SALTS	nitrite-free and nitrite-containing versions for rubber vulcanisation and other heat transfer processes, available with different melting points
CLEANING SALTS	special salt formulations for cleaning of non-ferrous metal surfaces



D CARBURISING PROTECTIVE PASTES

Innovative water-based and conventional solvent-based protective pastes for protection against carburisation of steel components in a gas atmosphere. The residues of the protective pastes are removed easily following treatment: either in aqueous cleaning solutions or mechanically.

PRODUCT	APPLICATION	COMPOSITION	CLEANING
SURFATECT C-PS SURFATECT C-T for dip application	easily applied by brush quick drying adjustment of the viscosity by addition of SURFATECT-thinner	solvent-based	after carburisation easily removed with waterbased cleaners or mechanical processes
SURFATECT C-WL-PS	incombustible and easy to handle if necessary water-dilutable	water-based	residues remaining after heat-treatment are water-soluble



EFFECTIVE PRODUCTS FOR A
UNIFORM MICROSTRUCTURE
AND OPTIMUM HEAT
TREATMENT RESULTS



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