

Aquasol 2000-1

Water soluble polymer quenchant

Description

Castrol Aquasol 2000-1 is a premium polymer quenchant for induction hardening of metals. It is an aqueous solution of synthetic water-soluble polymers of high molecular weights plus an antifoam agent and nitrite free corrosion inhibitors.

Application

Aquasol 2000-1 has been developed for quenching of metal components in induction or flame hardening applications to reduce the occurrence of warping or cracks.

Typical components treated are crankshafts, gear parts, axles, transmission shafts, bearing components, saw blades, rolling mill cylinders, rocker arms and push rods.

Aquasol 2000-1 offers a rate of quench which is intermediate between water and mineral oil based quenchants, which can be varied by altering the concentration.

Conditions of Use

Temperature of bath:		20 - 45 °C
Typical concentrations:	- Carbon steel and low alloy steel	5 - 10%
	- Medium alloy steel	10 - 15%
	- High alloy steel	15 - 25%
	- Austenitic sheet metals, pipes, profiles	5 - 10%
	- Hardenable aluminium alloys	10 - 25%

The quenching result is affected by many parameters, such as the metal alloy and the geometry of the part, the required depth of effective quenching and the method of application.

It is recommended to perform preliminary tests on the unit under consideration for optimising the process parameters.

Advantages

- Minimises the creation of a stable insulating water vapor layer (Leidenfrost phenomenon) and hence reduces the risk of soft spots and cracks
- Controlable quenching speed helps reducing the scrap rate
- Water-based heat treatment fluid provides a safer working environment reducing the fire hazard risk
- Excellent in-process corrosion protection
- Low foaming formulation
- Improved conditions of work - offers considerable reduction and in some cases elimination of deposits on handling machines and quenched work
- Improved cleanliness of components as the quenchant is water based and easily removed
- Reduced drag out and residue formation

Typical Characteristics

Description	Test Method	Unit	Value
Concentrate			
Appearance	Visual	-	Yellow fluid
Density @ 15 °C	ASTM D4052	g/ml	1.07
Kinematic Viscosity @ 20 °C	ASTM D445	mm ² /s	140
Dilution			
Appearance	Visual	-	Clear fluid
Kinematic Viscosity @ 20 °C (20% in Distilled Water)	ASTM D445	mm ² /s	7
pH (10% in Distilled Water)	ASTM E70/97	-	9.3
Cast Iron Corrosion (10% in Distilled Water)	DIN 51 360/2	-	0

Concentration Control

BY REFRACTOMETER:

The concentration of the Aquasol 2000-1 can be easily measured on site with a hand held refractometer. It is important to realise that refractometer readings are dependent upon the type of refractometer and water used.

Certain rules should be observed:

- The sample should be clean and filtered, if necessary.
- The refractometer must be zeroed.
- Concentration Aquasol 2000-1 in % = refractometer reading x factor **2.3**

(It is recommended to verify this on new standard solutions made at several concentrations with the water used to prepare the bath).

User Advice

Significant contaminations of approx. more than 2% can substantially affect the quenching performance. Hence it is strongly recommended to minimise the drag-in of soils, such as quenching salts, coolants, corrosion preventive agents and hydraulic oils (particularly HLP-D) as best as possible.

A possible option to minimise the negative effect of a possible contamination through mineral oil based hydraulic fluid is to use an HF-C type water-glycol hydraulic fluid, such as Castrol Anvol WG 46. Its chemistry is compatible with Aquasol 2000-1 which allows higher contamination rates before quenching performance is affected.

Storage

To avoid product deterioration always keep the container/drum tightly sealed. Store the product in a cool, dry place away from direct sunlight. Prevent exposure to frost and avoid water ingress. For optimum product stability, it is preferable to store the product indoors between 5°C and 45 °C / 41°F and 113°F.

For more details, please refer the product safety data sheet.

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Castrol Industrial, Technology Centre , Whitchurch Hill , Pangbourne , Reading , RG8 7QR , United Kingdom

www.castrol.com/industrial