



# DAPHNE HI TEMP OIL A

## 1. General

Daphne Hi Temp Oil A is martempering oil, refined by advanced hydro-treating process under meticulous care from selected paraffinic base crude, incorporated such additives as anti-oxidant agent and so on.

## 2. Application

Martempering (Variously know as marquenching, hot oil quenching and interrupted quenching) involves heated steel parts to above their transformation range and then quenching into a bath held at a temperature approximately equal to that of its Ms point (from 200 °F to as much as 450°F). The steel it's maintained in the hot bath until its temperature is essentially uniform and then is cooled in air.

Severe internal stresses develop in steel during hardening. Steel contracts during cooling but undergoes a marked expansion when the austenite transforms to martensite. Since the quenched steel must cool from the surface inward, various portions transform at different times. The steel is thus subjected to a variety of differential expansions and contractions, resulting in considerable internal stress. The martempering process reduces these internal stresses by equalizing the temperature throughout the section before transformation takes place, and then cooling slowly through the martensite (Ms-Mf) range.

## 3. Characteristic

1. Improves the brightness. Recommended to keep oil temperature in range from 100 to 130 °C
2. Obtains the high hardness.
3. Adequate viscosity enables to decrease the oil consumption.
4. Less sludge formation and good stability prove to minimize change of cooling characteristic.
5. Easily emulsified with water contamination enables to ease the treatment default flushing.
6. Can be used for vacuum quenching, the oil temperature above 100°C.



#### 4. Recommendation

Short service life and sludge formation are two principal problems encountered in hot oil quenching or martempering. However, these problems are minimized when Daphne Hi Temp Oil A (Martempering) oil is used in the bath.

The selection of an appropriate grade of Daphne Hi Temp Oil will be determined by the composition of the material, the size shape and volume of the load, and the quench system used.

#### 5. Typical Specification

<b>Density</b>	@ 15 °C	g/cm <sup>3</sup>	<b>0.8976</b>	D-1298
<b>Color</b>	ASTM		<b>L 3.5</b>	D-1500
<b>Flash Point</b>	C.O.C.	°C	<b>270</b>	D-92
	C.O.C.	°F	<b>558</b>	
<b>Viscosity</b>	@ 40 °C	mm <sup>2</sup> /s	<b>201.6</b>	D-445
	@ 100 °C	mm <sup>2</sup> /s	<b>18.93</b>	
<b>Viscosity Index</b>			<b>105</b>	D-2270
<b>Pour Point</b>		°C	<b>-15</b>	D-97
		°F	<b>5</b>	D-97
<b>Total Acid Number</b>		mgKOH/g	<b>0.34</b>	D-974
<b>Carbon Residue</b>		wt%	<b>0.50</b>	D-189
<b>Copper Corrosion</b>	100 °C x 3 Hrs.		<b>1</b>	D-130