



Idemitsu Apollo (Thailand) Co., Ltd.

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DAPHNE HI TEMP OIL A

High Performance Heat Treating Oil

1. General

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

2. Application

Martempering (Variously know as marquenching, hot oil quenching and interrupted quenching) involves heating steel parts to above their transformation range and then quenching in to a bath held at a temperature approximately equal to that of its M_s point (from 200 °F to as much as 450°F). The steel is 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 coiling slowly through the martensite (M_s - M_f) range.

3. Characteristics

1. Improves the brightness. Recommended to keep oil temperature in range from 100 to 130 °C
2. Obtain the high hardness.
3. Adequate viscosity enables to decrease the oil consumption.
4. Less sludge formation and good stability proves 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 oil 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 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.

- Based on available information, this product is not expected to produce adverse effects on health when used for the intended application and the recommendations provide in the Safety Data Sheet (SDS) are followed.
- SDS is available upon request through your sales contract office, or E-Mail : order@apollothai.com
- Due to continual product research and development, the information contained herein is subject to change without notification.



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5. Typical Specification

Specific Gravity	15/4 °C		0.8794	D-1298
Color	ASTM		L 3.5	D-1500
Flash Point	C.O.C.	°C	292	D-92
	C.O.C.	°F	558	
Viscosity	@ 40 °C	cSt	201.6	D-445
	@ 100 °C	cSt	19.21	
Viscosity Index			105	D-2270
Pour Point		°C	-15	D-97
		°F	5	D-97
Total Acid Number		mgKOH/g	0.13	D-974
Carbon Residue		wt%	0.10	D-189
Copper Corrosion	100 °C x 3 Hrs.		1	D-130

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