

### FUNCTIONAL PD-440

#### NSF HX-1 Pour Point Depressant for Light H1 White Oils

##### APPLICATION:

**FUNCTIONAL PD-440** is a unique pour point depressant (PPD) used to improve the cold flow properties of low viscosity white oils in H1 applications. It is effective under both rapid-cooling conditions and extended cold storage conditions. **FUNCTIONAL PD-440** is effective white oil base stocks up to 100 SUS / ISO 22 to make low temperature H1 lubricants at a fraction of the price of synthetic PAOs. Base oil viscosity can then be built up with polyisobutylenes or more effectively with viscosity modifiers like **FUNCTIONAL V-460**.

##### COMPOSITION:

**FUNCTIONAL PD-440** is a proprietary polymer in H1 white oil.

Typical Properties	
Appearance	Clear Viscous Liquid
Color	Colorless to Slight Yellow
Specific Gravity	0.93 Typical
Flash Point	>430°F/221°C
Kinematic Viscosity	500 cSt at 40°C

##### TREATMENT LEVEL:

Recommended treat rate is 1.1wt% to obtain the lowest pour point but **FUNCTIONAL PD-440** can be used at lower treat rates for intermediate pour points as needed.

##### Performance in 100 SUS White Oils

Treat Rate	Refinery K	Refinery R
0.0wt%	-21°C	-24°C
1.1wt%	-42°C	-42°C

##### HANDLING:

Any convenient technique may be used for blending. Safe handling precautions are the same as those used with base oils; see the current Safety Data Sheet.

Nonfood Compounds Program Listed  
Category Codes: HX-1 and HX-2  
Registration No. 170598

This Technical Data Sheet and the Safety Data Sheet contain information believed to be accurate and reliable. No warranty is made, however, to information beyond the control of FUNCTIONAL PRODUCTS INC. The engineering and management personnel of the user are responsible for determining the suitability of this or any product for any specific application, and this information is offered to them for that purpose.

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# FUNCTIONAL PRODUCTS INC.

Innovative Chemistry for Lubricants

## Technical Data Sheet

### FORMULATION GUIDE:

FUNCTIONAL PD-440 Performance in H1 White Oils				
<i>Formula by wt%</i>	ISO 46	ISO 100	ISO 220	ISO 460
<b>100N White Oil</b>	90.4	82.9	74.9	66.9
<b>FUNCTIONAL V-460</b>	8.5	16	24	32
<b>FUNCTIONAL PD-440</b>	1.1	1.1	1.1	1.1
Color, ASTM D1500	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5
Viscosity Index	176	188	199	208
Pour Point, ASTM D97	-39C	-39C	-36C	-30C

Additives like **FUNCTIONAL GA-400** (light duty gear/HF package), **CI-426EP** (multifunctional AW/EP/CI package), and **FUNCTIONAL V-422** tackifier are recommend to make a complete lubricant depending on the intended application.

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