FUNCTIONAL PRODUCTS INC.

Innovative Chemistry for Lubricants

Food Machinery Additives

NSF

Nonfood Compounds Program Listed
Category Code: HX-1
Registration No. ######

Tackifiers

Tackifiers impart anti-fling and anti-mist behavior to improve product retention on high speed equipment.

Product	Diluent Oil	Chemistry	Viscosity, @ 100°C, cSt	Typical Color	Shear Stability	String Length	Ecolabel LuSC?
V-422	H1 White Oil	PIB	3000	Colorless	Good	53	No
V-475	H1 White Oil	PIB	1650	Colorless	Fair	82	No
V-425	H1 White Oil	OCP	3000	Colorless	Best	15	No
V-188P2	PAO	OCP	9250	Colorless	Best	20	Yes
V-584	Veg Oil	Proprietary	2500 at 40°C	Orange	Good	10	Yes
V-802	Water/Glycol	Proprietary	60000 at 40°C	White	Good	20	No

No maximum treat rate for NSF H1 – use minimum wt% to achieve technical effect.

FUNCTIONAL V-422 and **V-475** are polyisobutylene (PIB) tackifiers in white oil used to provide tack. Both tackifiers offer clear burn-off at high temperature and low varnish which makes them ideal for ovens.
FUNCTIONAL V-425 and **V-188P2** are shear stable olefin copolymer (OCP) tackifiers which provide the most durable source of tack. OCP tackifiers withstand shear and heat which makes the best choice for gear oils.
FUNCTIONAL V-584 is a biobased tackifier for H1 vegetable oils and synthetic esters.
FUNCTIONAL V-802 is a water based tackifier for aqueous lubricants.

Viscosity Modifiers

Viscosity modifiers can be used to tune the viscosity and viscosity index of lubricants and greases.

Product	Viscosity, @ 100°C, cSt	PSSI, D6278	Chemistry	Base Oil	Color	Use With	Ecolabel LuSC?
V-460	3000	25	OCP	White Oil	Colorless	H1 Hydrocarbon	No
V-160P2	1000	22	OCP	PAO	White	H1 Hydrocarbon	No
V-739	62,000	3	EPO	None	Yellow	H1 Hydrocarbon	No
V-732	2000	0	EPO	None	Yellow	H1 Petroleum, PAO, Ester	Yes
V-731	1100	0	EPO	None	Yellow	H1 Petroleum, PAO, Ester	Yes
V-736	600	0	EPO	None	Yellow	H1 Petroleum, PAO, Ester	No
V-508	1250	29	Proprietary	Veg Oil	Yellow	Veg Oil, Synthetic Ester	Yes
V-508M	2500	29	Proprietary	Veg Oil	Yellow	Veg Oil, Synthetic Ester	Yes

No maximum treat rate for NSF H1 – use minimum wt% to achieve technical effect.

FUNCTIONAL V-460 and **V-160P2** are standard OCP viscosity modifiers (22-25 SSI) in white oil or PAO, respectively. **FUNCTIONAL V-460** is MOAH-free and **V-160P2** is MOAH- and MOSH-free.

FUNCTIONAL V-730 Series products are low molecular weight liquid ethylene-propylene oligomers (EPO) with excellent shear stabilities and no MOAH or MOSH content. **FUNCTIONAL V-739** is an effective NSF HX-1 registered alternative to bright stock, polybutenes, and shear stable styrene copolymers or "star" polymers. **FUNCTIONAL V-732, V-731,** and **V-736** offer very high shear stability in H1 hydraulic fluids and gear oils with SSI by KRL rated from 6 – 15.

FUNCTIONAL V-508 and **V-508M** are biobased viscosity modifiers (29 SSI) in vegetable oil.

Pour Point Depressants

PPDs extend the operating temperature of base fluids by suppressing waxy gelation at low temperature.

Product	Role	Suggested wt%	Chemistry	Use With	Max NSF wt%
PD-440	PPD	1.1%	Proprietary	Light white oil (up to ISO 22)	Any
PD-574	PPD	1.1%	Proprietary	Vegetable oils	Any

No maximum treat rate for NSF H1 – use minimum wt% to achieve technical effect.

FUNCTIONAL PD-440 is a proprietary NSF HX-1 pour point depressant designed for low viscosity white oils and performs best in oils up to 100 SUS (ISO 22).

FUNCTIONAL PD-574 is a biobased alternative with no petroleum oil content for “oil-free” NSF formulations.

Corrosion Inhibitors

Corrosion inhibitors for corrosion of iron, steel, and other ferrous metals.

Product	Role	Chemistry	Diluent Oil	Application Notes	Max NSF wt%
CI-426	AW/EP/CI	Amine Phosphate	None	Multipurpose rust and wear protection	0.5%
CI-427	AW/EP/CI	Amine Phosphate	None	Legacy amine phosphate chemistry	0.5%
CI-428	AW/EP/CI	Amine Phosphate	None	Amine phosphate with extra alkalinity (TBN)	0.5%
CI-498	AW/CI	Proprietary	Water	Water corrosion	Any

FUNCTIONAL CI-426 and **CI-427** are neutral amine phosphate corrosion inhibitors which provide rust protection against water and salt water. Amine phosphates also provide good antiwear and extreme pressure protection. **FUNCTIONAL CI-428** is a high pH, basic amine phosphate providing additional reserve alkalinity and vapor phase corrosion to protect the headspace of sumps and tanks.

FUNCTIONAL CI-498 is recommended at 0.1wt% for rust protection in aqueous lubricants.

Antiwear and Extreme Pressure

Functional Products Inc. manufactures a wide range of multifunctional ashless antiwear/EP additives for use as the primary antiwear chemistry in a formulation or as a top treat to boost wear performance.

Product	Role	Chemistry	Diluent Oil	Application Notes	Max NSF wt%
GA-400	HF/Gear Package	Proprietary	White Oil	Hydraulic, gear	1.1%
AW-116	AW/EP	Amine Phosphate	None	Gear oil, grease	0.65%
CI-426EP	AW/EP/CI	Amine Phosphate	Veg Oil	Chain oils, grease	2.0%

FUNCTIONAL GA-400 is an ashless additive package for hydraulic fluid and light duty gear oil. **FUNCTIONAL GA-400** requires the formulator to add demulsifier and defoamer as needed for the specific base oil used.

FUNCTIONAL AW-116 is a mildly acidic multifunctional amine phosphate corrosion inhibitor, antiwear, and extreme pressure additive. Higher phosphorus content than neutral amine phosphate corrosion inhibitors.

FUNCTIONAL CI-426EP is an enhanced neutral amine phosphate for improved lubricity in extreme pressure conditions which is popular in both industrial and NSF H1 lubricants.

Demulsifiers and Defoamers

Demulsification and defoaming are critical to the success of industrial and specialty lubricants.

Product	Role	Suggested wt%	Chemistry	Use With	Max NSF wt%	Ecolabel LuSC?
DM-400	Demulsifier	0.20%	Sulfonate	Petroleum oils, synthetics, esters	Any	Yes
DM-410	Demulsifier	0.20%	PAG	Petroleum oils, synthetics, esters	Any	No
DF-400	Defoamer	0.10%	Silicone	Petroleum oils, synthetics, esters	Any	Yes

FUNCTIONAL DM-400 is a versatile demulsifier for industrial, NSF H1, and Ecolabel base stocks in ASTM D1401 and ASTM D2711 water separability tests. **FUNCTIONAL DM-400** is not ashless and contains 0.7 TBN. **FUNCTIONAL DM-410** is a highly effective ashless alternative to **DM-400** and provides exceptional water separation. **FUNCTIONAL DF-400** is a silicone-based defoamer which is compatible and effective in most base stocks.

Grease Polymers

Grease polymers are used to provide water resistance, tack, mechanical strength, and improved yield to grease. These products help to overcome the technical limits of H1 calcium sulfonate, calcium sulfonate complex, aluminum complex, clay, and silica greases.

Product	Suggested wt%	Form	Polymer Type	Recommended Use
V-211	0.5wt%	Flake	Temp. Sensitive	Industrial grease; H1 greases (white oil, Gr. III)
V-4064	2wt%	Pellet	Temp. Sensitive	H1 greases (PAO, mPAO)

No maximum treat rate for NSF H1 – use minimum wt% to achieve technical effect.

FUNCTIONAL V-211 is a styrene olefin copolymer which offers water washout and water spray-off improvement. **FUNCTIONAL V-4064** is best suited for improving low solvency PAO grease for NSF H1.

CERAMAX

CERAMAX products utilize boron nitride, a low color ceramic material able to withstand extreme conditions.

Product	Suggested wt%	Form	Role	Recommended Use
CERAMAX	1wt%	Powder	Extreme pressure (EP)	Micronized boron nitride; high temp. solid EP
CERAMAX PASTE	5wt%	Paste	Extreme pressure (EP)	Convenient paste form; extra lubricity
CERAMAX PASTE AF	5wt%	Paste	Extreme pressure (EP)	Animal-free version of **CERAMAX PASTE**

FUNCTIONAL CERAMAX is a highly durable extreme pressure and solid lubricant additive for improving the EP properties of greases, coatings, metal forming lubricants, and anti-seize compounds. The **FUNCTIONAL CERAMAX PASTE** products contain 20wt% boron nitride powder suspended in an ester-based gellant; the ester adds additional antiwear and friction reduction benefits to foundry lubricants, greases, and more.

Not finding exactly what you need?
We can help you navigate your options –
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