

# Industrial Additives and Packages



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## Way Oil Packages

**FUNCTIONAL WA-64** is a high performance way oil package for GM LS-2 way oils in Group I-IV oils.

**FUNCTIONAL WA-60SF** is sulfur-free alternative for reduced color and odor with better copper compatibility

Product	wt%	Type	Chemistry	Applications	Add-Ons
<b>WA-64</b>	1.75wt%	Ashless	S/P/N/B	Slideway lubes, way oils, general purpose machine oils	Tackifier *
<b>WA-60SF</b>	1.5wt%	Ashless	P/N	Sulfur-free way oils in presence of yellow metals	Tackifier *

\*DM-240 demulsifier sometimes used at 0.05-0.10wt% depending on coolant or tramp oil conditions.

## Gear Oil Packages

Gear oils are demanding extreme pressure lubricants that serve in a wide range of conditions from industrial gearboxes to automotive lubricants or even greases.

Product	wt%	Type	Chemistry	Applications	Add-Ons
<b>GA-360</b>	2wt%	Zinc-Free	S/Ca	EP industrial gear, US Steel	DM-240, DF-110
<b>GA-360M</b>	2wt%	Zinc-Free	S/Ca	EP industrial gear, AGMA	DM-240, DF-110
<b>GA-614</b>	3wt%	Ashless	S/P/N	Top tier ashless EP lubricants and greases	None
<b>GA-400</b>	1.1wt%	Ashless	S/P/N	NSF HX-1 incidental food contact gear	DM-400, DF-400

**FUNCTIONAL GA-360** is a zinc-free gear oil package with excellent cost per treat in EP gear formulations.

**FUNCTIONAL GA-360M** is an enhanced version containing an industry standard micropitting resistance additive.

**FUNCTIONAL GA-614** is a top-tier ashless sulfur-phosphorus EP gear oil package for industrial and automotive lubricants. Available without defoamers and demulsifiers if needed.

**FUNCTIONAL GA-400** is an NSF HX-1 ashless hydraulic and light-duty gear package.

## Hydraulic Fluid Packages

Antiwear hydraulic fluids can be easily prepared using **FUNCTIONAL HF** packages and additional components. Higher performance 'high VI' hydraulic oils require viscosity modifiers, see the **Viscosity Modifier** brochure.

Product	wt%	Type	Chemistry	Applications	Add-Ons
<b>GA-400</b>	0.55wt%	Ashless	S/P/N	NSF HX-1 hydraulic and light duty gear package	DF-400, DM-400
<b>HF-580</b>	2.0wt%	Ashless	S/P/N	Top tier ashless hydraulic package; variable wt%	None
<b>HF-595</b>	2.2wt%	Ashless	S/P/N	Ecolabel LuSC-listed hydraulic package	DF-500, DM-400

**FUNCTIONAL GA-400** also performs well as an ashless antiwear (AW) hydraulic fluid package at 0.55wt%.

**FUNCTIONAL GA-400** requires added defoamer and demulsifier depending on base oil type.

**FUNCTIONAL HF-580** is a top-tier ashless AW hydraulic fluid package. The product can be downtreated from 2.5wt% to 2.0wt% or 1.5wt% as desired for improved economy.

**FUNCTIONAL HF-595** is an Ecolabel-listed ashless AW hydraulic fluid package. **FUNCTIONAL HF-595** requires added defoamer and demulsifier to suit the many different base oil options available.

## Bar & Chain Oil Packages

Product	wt%	Type	Chemistry	Applications	Add-Ons
<b>BC-10</b>	1.5wt%	Ashless	S/P/N	All season bar and chain package for petroleum oil	Tackifier
<b>BC-15</b>	1.5wt%	Ashless	S/P/N	All season bar and chain package for biobased oils	Tackifier

Bar & chain oil packages are designed for high speed sliding wear of the chain with mild shock loading. **FUNCTIONAL BC-10** and **BC-15** are low cost, streamlined packages for producing top-tier bar & chain oils. These packages include antiwear, mild EP additives, corrosion inhibitors, and pour point depressant.

## Rock Drill Oil Packages

Product	wt%	Type	Chemistry	Applications	Add-Ons
<b>RD-540</b>	2.2wt%	Ashless	S/P/N	EP rock drill package – emulsifying type	Tackifier
<b>RD-540CP</b>	2.4wt%	Ashless	S/P/N	EP rock drill package – demulsifying type	Tackifier

Rock drill packages are designed for high shock loads to operate the hammering and drilling functions from heavy duty rock drill equipment down to pneumatic air tools. **FUNCTIONAL RD-540** and **RD-540CP** contain high levels of severe extreme pressure additives, corrosion inhibitors, and either an emulsifying or demulsifying agent.

## Saw Guide Oil Packages

Product	wt%	Type	Chemistry	Applications	Add-Ons
<b>SGP-567</b>	1.5wt%	Ashless	S/P/N	Multipurpose saw guide and forestry oil package	Tackifier
<b>SGP-563</b>	1.5wt%	Ashless	Ca	Ecolabel-listed extra-low friction package	Tackifier

Saw guide oil packages are designed for low friction and heat buildup. **FUNCTIONAL SGP-567** is a versatile package built around ashless friction modifiers. **FUNCTIONAL SGP-563** is an Ecolabel-listed alternative with greatly reduced coefficient of friction for negligible heat generation during use.

## Pour Point Depressants for Petroleum Oils

**FUNCTIONAL PD-600** series pour point depressants (PPDs) are engineered to selectively treat the different types of wax profiles found in petroleum oils from Group I, II, or III. Some heavy naphthenic oils may also be improved. Different catalysts, extractions, and hydrogenating conditions in the petroleum refining process produce different species of wax.

**FUNCTIONAL PD-610**, **PD-620**, and **PD-630** are highly versatile polymethacrylate-based pour point depressants which are notable for their versatility in specific API Groups or viscosity ranges.

Product	wt%	Chemistry	Application Note
<b>PD-610</b>	0.3wt%	PMA	Group I/II paraffinic oils above 220 SUS (ISO 46); heavy naphthenic oils
<b>PD-620</b>	0.3wt%	PMA	Light Group I/II/III oils; 150 SUS (ISO 32) and below
<b>PD-630</b>	0.3wt%	PMA	Light to heavy Group III oils (4/6/8 cSt Group III)

Exact recommendation may depend on: the base oil manufacturer's production conditions and catalyst; use of viscosity modifiers or heavy base stocks; and the additive package.

See the **Biobased Additives** brochure for pour point depressants for vegetable oils and EAL products.

# Components and Chemistries

Functional Products Inc. manufactures a wide variety of components to target specific problems in your application – here's our most versatile options to get started.

## Corrosion Inhibitors

Corrosion inhibitors prevent ferrous rust in methods like ASTM D665 and can provide extra functionality.

Product	wt%	Chemistry	Applications	Use With
CI-426	0.2wt%	P/N	Our standard amine phosphate for corrosion and wear; NSF HX-1	Hydrocarbons, Ester, PAG
CI-427	0.2wt%	P/N	Alternate amine phosphate, CAS# 80939-62-4; NSF HX-1	
CI-408	0.5wt%	Proprietary	Ferrous corrosion inhibitor for glycol/water blends	Glycol/Water
CI-498	0.2wt%	Proprietary	Ferrous corrosion inhibitor for aqueous lubricants; NSF HX-1	Water

## Antiwear and Extreme Pressure

Antiwear and EP additives modify the wear and friction occurring at various operating loads.

Product	wt%	Chemistry	Applications	Use With
AW-116	0.5wt%	P/N	Amine phosphate balanced for AW/EP performance; NSF HX-1	Hydrocarbons, Ester, PAG
CI-426EP	2.0wt%	S/P/N	Enhanced amine phosphate for extra EP protection; NSF HX-1	
AW-487	0.5wt%	Na	Aqueous anti-wear and lubricity additive	Water

## Demulsifiers

Demulsifiers improve the separation of oil and water and are tested by ASTM D1401, ASTM D2711, etc.

Product	wt%	Chemistry	Applications	Use With
DM-240	0.1wt%	PAG	Highly effective industrial PAG-based demulsifier	Hydrocarbons, Ester, PAG
DM-400	0.1wt%	Sulfonate	Versatile sulfonate-based demulsifier; NSF HX-1	
DM-410	0.2wt%	PAG	Effective food machinery demulsifier; NSF HX-1	Water and water-glycol
DM-810	0.2wt%	PAG	Separates oil from water-based lubricants	

## Defoamers

Defoamers reduce the formation and stability of foam in methods like ASTM D892.

Product	wt%	Chemistry	Applications	Use With
DF-110	0.1wt%	Silicone	Silicone defoamer balanced for synthetic oils	Hydrocarbons, Ester, PAG
DF-130	0.1wt%	Silicone	Silicone defoamer tuned for high temperature foam	
DF-400	0.1wt%	Silicone	Versatile silicone-based defoamer; Ecolabel, NSF HX-1	Fatty Esters / Veg Oil
DF-500	0.1wt%	Acrylate	Acrylate-based defoamer for vegetable oils; Ecolabel	

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