



LE PRODUCTS
MANUFACTURED
UNDER AN ISO
9001:2000
CERTIFIED
QUALITY SYSTEM

4023-4024-4025 QUINPLEX® FOOD MACHINERY LUBRICANT

The NSF Registered and USDA Authorized "H1" heavy-duty, semi-synthetic, extreme pressure lubricant that won't wash out, pound out or melt and run under the severe conditions encountered in food processing operations.

LE's 4023-4024-4025 QUINPLEX® Food Machinery Lubricants combat the harsh conditions that continually plague food processing plants. These products:

Won't wash out, or emulsify when coming in contact with moisture. In addition, LE's QUINPLEX® Food Machinery Lubricants prevent rusting, whether from water or steam. Moisture is an ever-present enemy of effective lubrication. It can wash grease from the bearing areas, cause greases to emulsify and break down, and promote rust and corrosion.

Withstand prolonged attack by high temperatures...generated by cooking and drying operations. This also applies when steam is used in cleaning, which can cause ordinary greases to melt and run from bearings, thus promoting rapid oxidation, which greatly shortens lubricant life.

Resist "pound-out" and "sling-off" in high impact application...where grease is actually pounded from the bearing area, leaving nothing to lubricate metal surfaces. This also applies when greases are literally thrown out or off because they lack sufficient tackiness (clingability) to adhere to the metal, and cohesion (ability to hold together). Has superior EP load carrying capabilities.

Last long. This is important since many machines are required to run virtually around-the-clock, seven days a week. Many greases actually shear down, become liquid, or harden when "worked" for long periods of time. The end results are loss of lubricants and dry bearings.

Are NSF registered and USDA H1 authorized. Perhaps the most critical requirement imposed on food machinery lubrication is the demand for purity...safety.



TYPICAL APPLICATIONS:

Recommended for use in bakeries, bottling plants, dairies, canneries, hospitals, meat packing plants, frozen food and other food processing plants.

- Blenders
- Sifters
- Mixers
- Dividers
- Molders
- Proofers
- Labelers
- Electric Motors
- Cookers
- Extractors
- Packaging Machinery
- Slides
- Slicers
- Food Carts
- Wrappers
- Conveyors
- Bottle Washers
- Filling Machines
- Crowners
- Carbonators
- Cams
- O-Rings
- De-hairing Machine
- Feather Pickers
- Saws
- Slicing Machines
- Knives

Literally hundreds of other grease-lubricated applications in food processing areas.

**LUBRICATION
ENGINEERS,® Inc.**

Leaders in Lubricants



BENEFITS

- LE Less downtime.
 - LE Much longer lubricant life.
 - LE Specially selected and refined pure synthetic and white oil stocks combined with organic thickeners.
 - LE True extreme pressure performance.
 - LE Greatly extended machinery life.
 - LE Increased productivity.
 - LE Less lubricant consumed.
 - LE Lower maintenance expense.
 - LE Assured compliance with highest standards for cleanliness and safety.
 - LE Versatility... one grease for many different applications.
 - LE Contains QUINPLEX, LE's exclusive additive for stability, water resistance, impact resistance, and rust and corrosion protection.
 - LE Antimicrobial agent prevents the growth of microorganisms.
 - LE Excellent rating on bearing corrosion tests.
 - LE Protects from rust.
 - LE Gives excellent service at moderately high temperatures.
 - LE Can be used where mild acid or alkali conditions prevail.
 - LE Clean, pleasant for service personnel to use.
 - LE NSF Registered and H1 authorized for use under USDA Inspection and Grading Programs.
 - LE Excellent mechanical stability.
 - LE Excellent oxidation resistance.
 - LE Excellent water resistance.
 - LE Tacky body stays in and seals bearings.
- 4025 is also available in an aerosol spray which contains no chlorofluorocarbons.
- LE These lubricants conform to CFR Title 21, Part 178, Section 178.3570 as published by the FDA.



4023-4024-4025

A HEAVY DUTY, FOUR-PART FORMULA WHICH INCLUDES:

SPECIAL ALUMINUM COMPLEX BASE. Chosen because it performs in a superior manner in the following areas: broad operating temperature range; water resistant; mechanical stability (resistance to hardening or softening in service); "reversibility" (ability to maintain its original consistency after being heated and cooled repeatedly).

QUINPLEX®. LE undertook an extensive search for the "building block ingredients" necessary to establish an entirely new set of performance standards, in the field of food machinery greases.

LE's own R&D staff took the research work that has been done in Europe to develop the basic QUINPLEX material and adapted it to lubrication technology. Thus the QUINPLEX additive produces yet another in a long series of unique LE contributions to the field of lubrication.

QUINPLEX imparts these five important characteristics to 4023-4024-4025: (1) Water resistance, (2) Tackiness (clingability), (3) Ensures thorough coupling of oil with grease base, (4) Forms a barrier against corrosion, and (5) Enhances mechanical stability (ability to perform for long periods without softening or hardening).

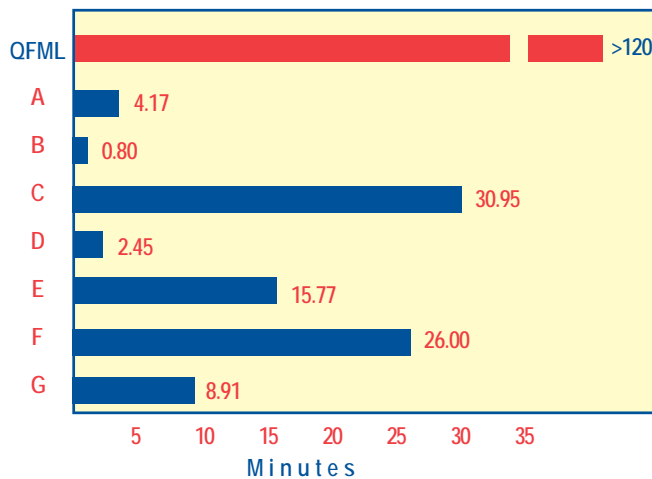
PURE FOOD GRADE BASE OIL. Carefully selected for optimum performance, consistent with purity. 4023-4024-4025 contains a heavier oil than found in other food grade greases, for maximum moisture resistance and stability.

RUST AND OXIDATION INHIBITOR. Supplements the excellent natural rust protection afforded by the complex base, QUINPLEX and the highly refined food grade oil. This extra step ensures more effective rust and corrosion protection for metal parts, especially during extended periods when machinery is idle.

QUINPLEX Food Machinery Lubricant vs. Competitive Food Grade Lubes

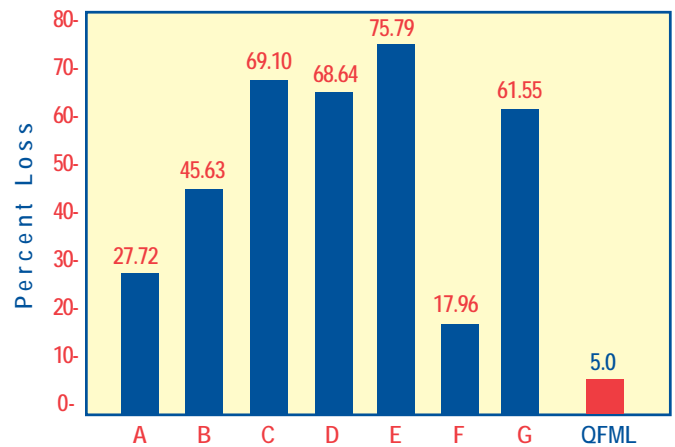
4025 QUINPLEX Food Machinery Lubricant = QFML

Oxidation Stability, PDSC, ASTM D-5483



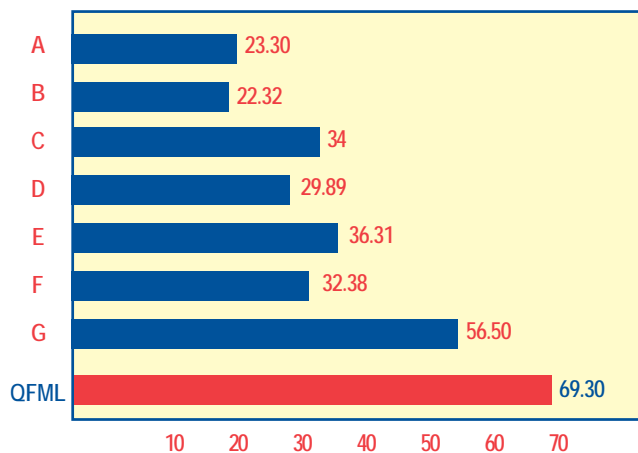
The minutes to onset of oxidation of LE's QUINPLEX® Food Machinery Lubricant is four times that of the nearest competitor tested.

Resistance To Water Spray Off, ASTM D-4049



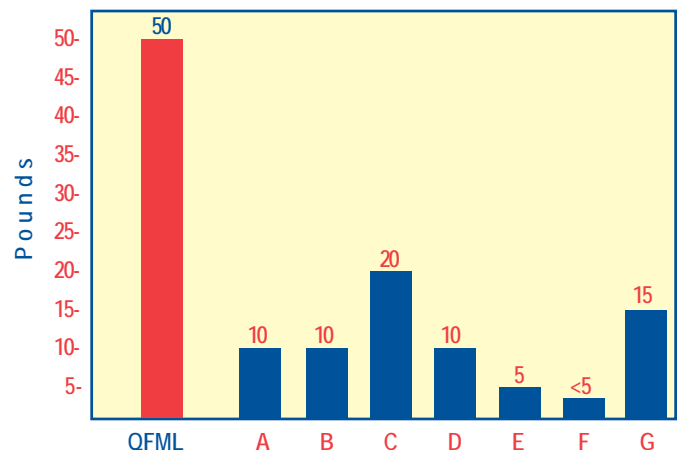
The lower percent loss in the Water Spray Off test proves that QUINPLEX Food Machinery Lubricant outperforms the competitors in resisting water.

Load Wear Index (LWI) ASTM D-2596



Load Wear Index (LWI) is a measure of lubricant's ability to carry a load and minimize wear. The higher the value, the better the job the lubricant does in preventing wear.

Timken OK Load ASTM D-2509



The higher Timken load carried shows QFML has superior EP load carrying capability over the competitors.

Key to Identifying Competitive Products

Competitive Product (NLGI-2)

- A Lubriplate ACL-2
- B Mobil Grease FM 102
- C Jax Magna Plate 36-2
- D Keysonte Nevastane 2 Plus
- E Bel-Ray No Tox HD Grease #2
- F Petro Canada Purity FG Grease
- G Chevron FM Grease EP



TECHNICAL DATA

PHYSICAL CHARACTERISTICS—TYPICAL:

	<u>4023</u>	<u>4024</u>	<u>4025</u>
NLGI Grade	0	1	2
USDA Rating	H1	H1	H1
Thickener Type	Aluminum Complex	Aluminum Complex	Aluminum Complex
Worked Penetration, ASTM D217	355-385	310-340	265-295
Texture	Smooth w/Tack	Smooth w/Tack	Smooth w/Tack
Color	White	White	White
Dropping Point, °F. (°C.)	417 (214)	450 (232)	493 (256)

TEST RESULTS – TYPICAL:

Oxidation Stability			
ASTM D942, psi drop @ 100 hrs.	5	5	5
ASTM D-5483, PDSC onset point, min.	>120	>120	>120
Rust Prevention Rating, with distilled water,			
ASTM D-1743	Pass	Pass	Pass
SRV EP Test Load, Newtons	1200	1200	1200
Resistance to Water Spray,			
ASTM D-4049, % Loss	—	—	5.0 Typical
Timken OK Load			
ASTM D-2509, lbs	40	40	50
4-Ball Wear			
ASTM D-2266, Scar Diameter, mm	0.49	0.48	0.39
4-Ball EP, ASTM D-2596			
Weld Point, Kg	400	400	400
LWI	60.32	62.71	69.30

APPLICATION:

NSF registered and authorized for use in USDA Inspection and Grading Program plants. All food equipment where a water resistant, clean lubricant is required, and of course, many others where long life and retention in bearings is important.

RECOMMENDATION:

	NLGI Grade	Operating Temperature	Maximum Bearing Speeds (rpm)
4023	0	-15 to 300°F (-26 to 149°C)	6,000
4024	1	0 to 350°F (-18 to 177°C)	6,000
4025	2	30 to 400°F (-1 to 204°C)	3,000

4025 also available in an aerosol spray which contains no chlorofluorocarbons.



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