





Grease Fundamentals

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 11 Years of Selling Experience in the Lubricants Industry

Agenda



Grease Basics

Common Grease Laboratory Tests

North American Market Overview

Selling Grease & Customer Support



Grease Basics

60-98% Base Oil Thickener 2-40% 0-10% Additives

Thickener usually created by chemical reaction

Batch or continuous process **Base Oils**

Viscosity

Naphthenic & Paraffinic

Synthetics (Group III, PAO, Esters, etc.)

Low Viscosity for Low Temp

High Viscosity for Higher Loads

Synthetics for Extreme Temps



Thickeners

Additives

Lithium & Lithium Complex

Aluminum Complex

Anhydrous Calcium

Calcium Sulfonate

Polyurea

Other

Antioxidants

Rust & Corrosion Inhibitors

Extreme Pressure & Antiwear

Polymers

Solids

Dyes

Cone Penetration ASTM D217

Worked-60 Penetration

Depth (1/10th mm) that a standard cone sinks into the grease over 5 seconds Grease is worked for 60 up/down strokes



NLGI Grades

In

	NLGI Grade	Minimum	Maximum
	000	445	475
	00	400	430
	0	355	385
	1	310	340
	2	265	295
	3	220	250
	4	175	205
	0 5	130	160
	6	85	115
	Based on the worked-60 penetration		

Based on the worked-60 penetration



Soft

- Central Lubrication Systems
- Colder Applications

Hard

- High Speed
- Better Sealing
- Stays in Place

Dropping Point ASTM D2265 (Block) or D556 (Bath)





Common Grease Laboratory Tests

Common Grease Laboratory Tests



4-Ball Wear ASTM D2266

- 1,200 rpm for 1 hour @ 75°C with 40 kgf load
- Average diameter of 3 wear marks
- GC-LB < 0.6 mm



4-Ball Weld ASTM D2596

- 1,770 rpm for 10 seconds with certain applied load
- Weld Point Lowest applied load at which the balls seize and weld (or if scar > 4 mm)
- GC-LB ≥ 200 kgf

Oil Separation in Storage ASTM D1742

- Funnel sieve is filled with grease & weight of grease is determined
- 0.25 psi is applied from the top for 24 hours at 77°F
- Oil collected is weighed and % loss calculated



Low Temperature Torque (ASTM D4693/D1478 wheel/ball)

- Bearing is packed with grease and chilled
- Bearing is rotated at 1 rpm
- Torque required to prevent rotation of the hub is measured at 60 seconds (or later if max torque occurs later)
- GC-LB ≤ 15.5 N·m



US Steel Mobility

- Chilled in cylinder
- 150 psi applied & flow rate is determined in grams/sec
- Higher values indicate better flow

Other Grease Performance Tests







North American Grease Production Market Overview

North American Grease Production



Mystik /



Selling Grease & Customer Support

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Why is Grease Different?

Viscosity



Additives

Grease Lubricant

Thickener

Base Oil

Grease is Everywhere





FOODLINER®/QUEST LINER® EXTENDS FLEET SERVICE INTERVALS AFTER SWITCHING TO MYSTIK® JT-6[®] HEAVY DUTY SYNBLEND 460 #2 GREASE

MYSTIK® JT-6®

INDUSTRIAL ROBOT GREASE

assured

POWERING PRECISION.

SPEED, AND SMOOTH

OPERATIONS

chemical carriers in the United States - Foodliner/ Quest Liner - operates a fleet consisting of over 240 tractors and 400 specialized trailers to transport tractors and auto specialized traiters to transport products across North America. Extending regreasing intervals for their local, regional and long-haul intervals for then social, regional and long mass drivers, so that it better aligns with their increased oil

between oil changes.

drain intervals, is a top business priority. Always looking to improve customer maintenance goals, Mystik advised Foodliner/Quest Liner to "Just try* Mystik JT-6 Heavy Duty SynBlend 460 #2 Grease in a trial. After a couple of months of testing in the city and two extreme temperature ranges - a hot Houston

Foodliner | QUEST

Working with the Mystik team and their quality product has been a very enjoyable experience. I look forward to continuing my relationship and experiences down the road with them Tyler Neumann. General Manager, Cement Division, Quest Liner

Mystik

summer and subzero North Dakota winter, the Mystik grease still applied very easily and stayed in place or the fifth wheel, preventing exposure to road grime a salt and exhibiting no signs of rust or dry spots.

Following the exceptional trial results, Foodling Quest Liner made the switch to Mystik JT-6 H/ Duty SynBlend 460 #2 Grease for their Reets Foodliner/Quest Liner's local drivers were / into the shop as regularly to regrease the / and their regional and long-haul drivers d to regrease on the road as frequently eit

alignment of timing was ideal with the I



Helping the Consumer?

NLGI

Ask These Questions:

Are you using the right amount of grease?

Are you using the right quality?

Are you lubricating all the right places? Are you regreasing at the right time interval?

Moly

High Temp



Why Partner With Us?

Low Turnover Rate

Properly Trained Employees

Industry Certifications

 STLE CLS, STLE OMA-1, & NLGI CLGS

Industry Involvement

- STLE: Grease Course Instructor, Presenter at State Meetings
- NLGI: Advance Grease Course Instructor, Past President, Past Treasurer, Former Certification Mark, Editorial Review, CLGS, & Session Chair. Member of Shelf Life, Food Grade, Test Method, Grease Cleanliness, & Certification Committees
- ASTM (Grease Committee Chair)



ME



Please post your questions using the Q&A function.





Complete Heavy Duty Package Contest



Ever Wanted To Play With Construction Equipment?

- Who: Top 10 MSRs and your corresponding SAM
- When: January 1 July 1, 2024
- Prize: Get to play with Construction Equipment at a Construction Playground





Contact Us

Lubes Answer Line 800-248-4684

8:00 AM - 12:00 PM 1:00 PM - 5:00 PM CT Monday - Thursday

8:00 AM - 12:00 PM 1:00 PM - 4:30 PM CT Friday

lubeshelp@citgo.com



Future Webinars

January 26, 2024: Grease 201

March 22, 2024: Hydraulic Systems & Plastic Injection Molding

February 16, 2024: CITGARD On-Highway HDEO & Drivetrain



Thank You!

See you next time

