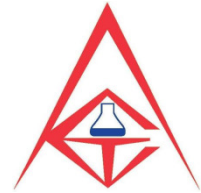

PRODUCT INFORMATION

A PRODUCT OF AMERICAN CHEMICAL TECHNOLOGIES, INC.



Neptune[®] Gear Lubricants

'No Sheen' Biodegradable High Performance Gear Lubricants for Worm Gears

DESCRIPTION:

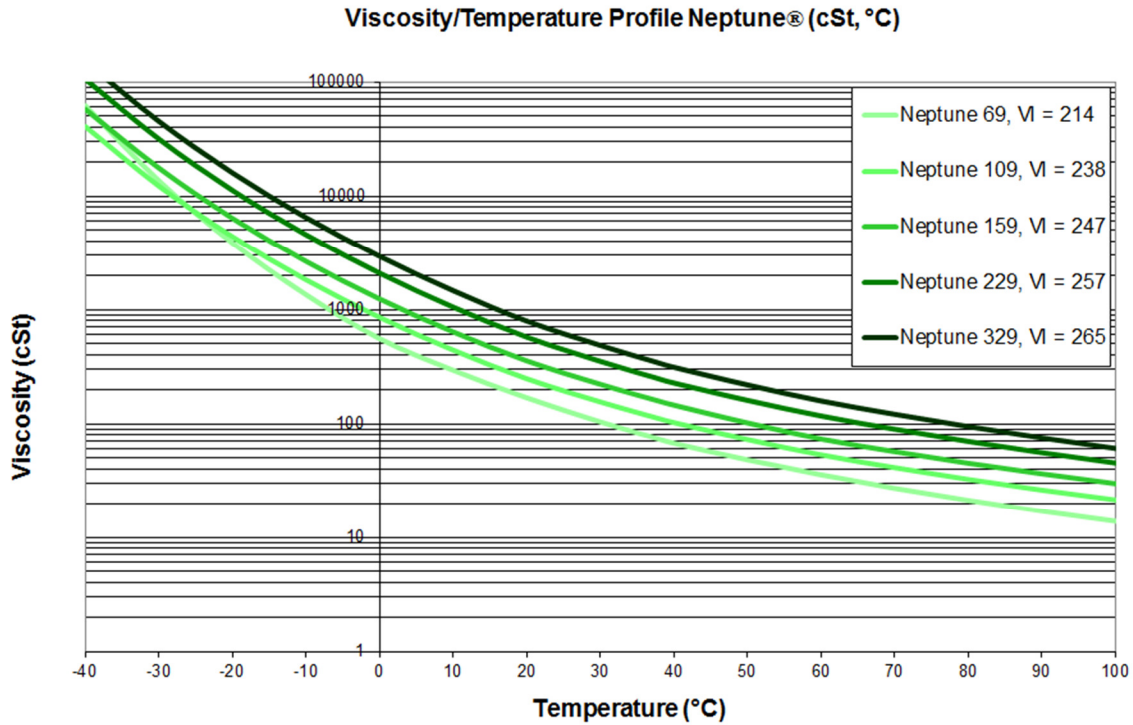
Neptune[®] Gear Lubricants are fully formulated, high performance gear lubricants for enclosed industrial gears including worm gears. **Neptune[®] Gear Lubricants** are formulated to provide excellent lubrication, stability and extended service life while eliminating many of the problems commonly encountered with petroleum gear lubricants. These gear lubricants are designed for demanding industrial applications, with a special emphasis on applications where spills into the water require an environmentally appropriate lubricant. They are anhydrous, do not hydrolyze in the presence of water and do not break down to form sludge or varnish. **Neptune[®] Gear Lubricants** are ideal for use in applications such as dockside and marine mobile equipment, forestry, coal handling, amusement, cooling towers, wind turbines and industrial operations.

BENEFITS:

- Heavier than water - They do not form a sheen when exposed to water
- Water soluble – no bioaccumulation
- Elimination of sludge and carbonaceous residues common with mineral oils
- Biodegradable
- Reduced energy consumption
- Extended service life
- Reduced lubricant and maintenance costs
- Reduced wear rates
- High viscosity index:
 - Eliminates seasonal oil changeovers
 - Facilitates cold-weather startups
 - Eliminates motor overloading during startup

Neptune[®] Gear Lubricants

VISCOSITY COMPARISON:



AGMA VISCOSITY GRADES:

Due to the high viscosity index exhibited by Neptune[®] Gear Lubricants are not classified by one AGMA viscosity rating and will effectively span 2 or 3 AGMA numbers over the operating range of most gear boxes. By knowing either the viscosity required at the operating temperature or the AGMA rating of the current lubricant, an appropriately performing Neptune[®] Gear Lubricant can easily be chosen.

SELECTION GUIDE FOR NEPTUNE[®] LUBRICANTS:

	AGMA Grades Usually Replaced
Neptune [®] 109	2-4
Neptune [®] 159	3-6
Neptune [®] 229	4-7
Neptune [®] 329	5-7
Neptune [®] 469	6-8

MONITORING NEPTUNE[®] GEAR LUBRICANTS:

Although Neptune[®] Gear Lubricants will show a greatly extended service life under most conditions, one should not neglect to perform periodic maintenance and inspection. Periodic inspection of the lubricant will help insure continued trouble-free operations. American Chemical Technologies offers analytical testing for Neptune[®] Gear Lubricants.

Neptune[®] Gear Lubricants

CHANGEOVER PROCEDURE:

Installation of Neptune[®] Gear Lubricants into gear boxes which previously contained petroleum oils should follow the flush procedure below:

1. Drain previous lubricant from the gear box.
2. Replace oil filters.
3. Fill the gear box with the Neptune[®] Gear Lubricant to be used. Run under normal operating conditions for 24 hours. Neptune[®] Gear Lubricants will generally clean varnish and sludge build-up formed from petroleum oils.
4. Thoroughly drain the chosen Neptune[®] Gear Lubricant from the box while warm.
5. Inspect the oil filters and replace as needed.
6. Fill the box with fresh Neptune[®] Gear Lubricant and begin normal operation.
7. Inspect and change filters as required.

This procedure should be followed for best results. However, residual petroleum lubricants can usually be tolerated in the Neptune[®] Gear Lubricant.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

- Avoid contact with eyes
- Wash thoroughly after handling

PROPERTIES:

	Test Method	NAW68	N109	N159	N229	N329
Viscosity @ 40°C	ASTM D445	68 cSt	103 cSt	146 cSt	228 cSt	313 cSt
Viscosity @ 100°C	ASTM D445	13.9 cSt	21.6 cSt	30.0 cSt	45.6 cSt	61.1 cSt
Viscosity Index	ASTM D2270	214	238	247	257	265
Pour Point	ASTM D97	-42°C(-44°F)	-42°C(-43°F)	-41°C(-42°F)	-40°C(-40°F)	-39°C(-38°F)
Density @ 68 °F	ASTM D1298	8.68 lbs/gal	8.69 lbs/gal	8.73 lbs/gal	8.75 lbs/gal	8.77 lbs/gal
Density @ 20 °C	ASTMD4052	1.0372 g/cm ³	1.0372 g/cm ³	1.0379 g/cm ³	1.0414 g/cm ³	1.0418 g/cm ³
Flash Point	ASTM D92	228°C(442°F)	228°C(442°F)	228°C(442°F)	228°C(442°F)	228°C(442°F)
Fire Point	ASTM D92	268°C(514°F)	268°C(514°F)	268°C(514°F)	268°C(514°F)	268°C(514°F)
Ash	ASTM D482	<0.01 %	<0.01 %	<0.01 %	<0.01 %	<0.01 %
Water content	ASTM E203	<0.25 %	<0.25 %	<0.25 %	<0.25 %	<0.25 %
Rust Prevention (24h)	ASTM D665A	Pass	Pass	Pass	Pass	Pass
Copper Strip Corrosion	ASTM D130	1a	1a	1a	1a	1a
Air Release @ 50°C	ASTM D3427		10 min			
EP Properties (Four-Ball Method)	ASTM D2783					
Weld Point		200 kgf	200 kgf	200 kgf	200 kgf	200 kgf
Load-Wear Index		61 kgf	61 kgf	61 kgf	61 kgf	61 kgf
OK Load (Timken Method) , min.	ASTM D2509	70 lb-f	70 lb-f	70 lb-f	70 lb-f	70 lb-f
FZG Gear Test	ASTM D5182					
Pass Load Stage		12	12	12	12	12

The information contained herein is correct to the best of our knowledge. The recommendations or suggestions contained in this bulletin are made without guarantee or representation as to results. We suggest that you evaluate these recommendations and suggestions in your own laboratory prior to use. Our responsibility for claims arising from breach of warranty, negligence, or otherwise is limited to the purchase price of the material. Freedom to use any patent owned by American Chemical Technologies' or others is not to be inferred from any statement contained herein.