

PRODUCT SELECTION FOR FOOD INDUSTRY LUBRICANTS



A double challenge

The use of lubricants in the food processing industry constitutes a hygiene risk, and food contamination may have serious consequences, as illustrated by instances of expensive product recalls.

In addition, in some areas of food processing, high temperature conditions may be found. For instance, lubricants may be exposed to temperatures of up to 300°C in the bakery industry, which represents a technical challenge for proper lubrication of the equipment as well as for fire safety.

The National Sanitary Foundation (NSF) registers food grade lubricants and components, using the H1 (acceptable product as a lubricant with incidental food contact for use in and around food processing areas) and HX-1 (acceptable ingredient for use in H1 lubricants) categories.

NYCO's NSF registered synthetic products provide food safety as well as outstanding technical performance. They are also Kosher and Halal certified.

SYNTHETIC NEOPOLYOL ESTERS

NYCO's synthetic neopolyol esters provide excellent performance features in terms of lubrication, cleanliness, behaviour in ultra-high or ultra-low temperature environment, and fire safety. The use of such products results in reduced maintenance costs and downtime.

NYCO's food grade synthetic product line offers HX-1 certified base fluids covering a wide range of viscosities and applications, and may be used in hydraulic oils, gear oils, compressor oils, chain oils and greases. NYCO also offers an ISO VG 220, H1 certified fully formulated high temperature chain oil for the food industry.

ADVANTAGES AND BENEFITS

- Excellent lubricity
- Excellent low temperature behavior
- Resistance to high temperatures

- Low volatility
- High polarity

- › Added protection against friction and wear
- › Performance in food freezing applications
- › Increased lifetimes and improved cleanliness
- Reduced fire outbreaks
- › Improved fire safety
- › Solubility aid in PAO base fluids

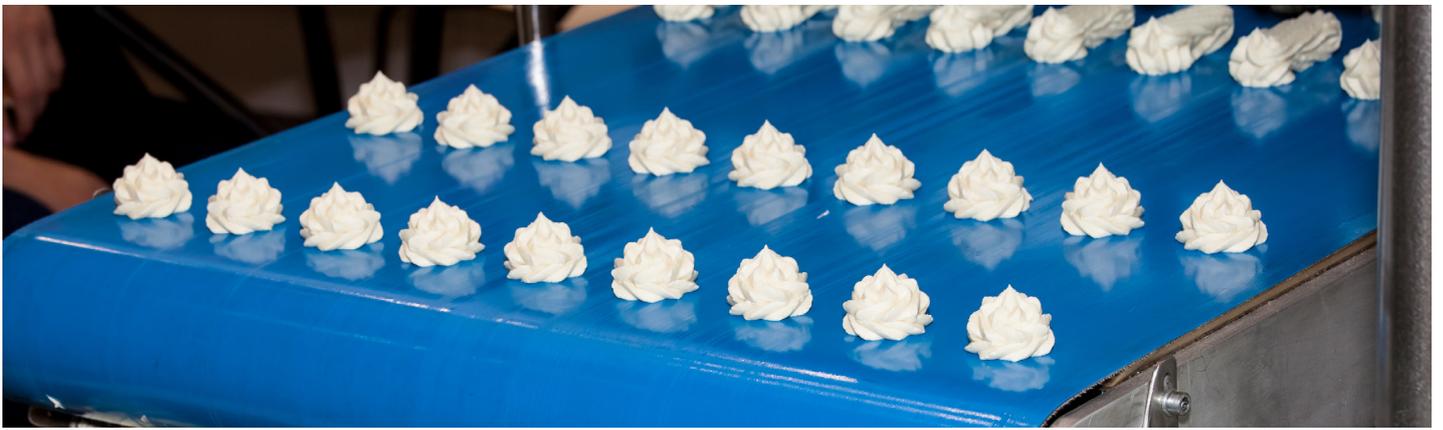




SYNTHETIC NEOPOLYOL ESTERS

REFERENCE

Nycobase® 20307 FG	Low viscosity, low temperature applications, polarity agent in PAOs
Nycobase® 30401 FG Nycobase® 30409 FG	ISO VG 22, multi-purpose with a balanced profile showing lubricity, thermo-oxidative stability and low volatility
Nycobase® 30502 FG	ISO VG 22, multi-purpose, added lubricity
Nycobase® 40810 FG	ISO VG 46 complex ester
Nycobase® 32011 FG	ISO VG 220, ultra-low volatility, outstanding flash point, excellent thermo-oxidative stability and cleanliness, good lubricity properties, recommended for high temperature chain oils
Nycobase® 43203 FG	ISO VG 320 complex ester, showing excellent thermo-oxidative stability and outstanding lubricity. Not compatible with mineral fluids or PAOs
Nycobase® 43608 FG	ISO VG 320 complex ester, with excellent lubricity.
Nycobase® 32506 FG	High viscosity, low volatility, outstanding thermo-oxidative stability, cleanliness, and a high flash point. Particularly recommended for high temperature chain oils
Nycobase® 45004 FG	ISO VG 460 complex ester, with excellent lubricity
Nycobase® 46115 FG	Ultra-high viscosity complex ester, useful as a thickener. Outstanding lubricity



Typical properties

RESULTS													
PROPERTIES	UNIT	Nycobase 20307 FG	Nycobase 30401 FG	Nycobase 30409 FG	Nycobase 30502 FG	Nycobase 40810 FG	Nycobase 32011 FG	Nycobase 43203 FG	Nycobase 43608 FG	Nycobase 32506 FG	Nycobase 45004 FG	Nycobase 46115 FG	
NSF registration number		148533	141593	151776	141591	155470	166589	141592	151777	148349	143760	146569	
Limitation in mass %		5 max	None	None	None	None	98 max	None	None	None	None	None	
Colour GARDNER	-	<1	<1	<1	<1	4	<1	4	3	<1	4	3	
Density at 20°C	kg/dm ³	0.913	0.942	0.942	0.938	0.941	0.966	1.013	0.950	0.963	0.949	0.957	
Flash point COC	°C	224	255	255	267	265	300	276	278	295	284	286	
Pour point	°C	-66	-45	-48	-36	-39	-28	-33	-39	-20	-33	-6	
Acid number	mg KOH/g	0.05	0.05	0.03	0.05	0.02	0.02	0.05	0.10	0.05	0.10	0.10	
Kinematic viscosity @	mm ² /s	100°C	3.3	4.5	4.6	5.0	8.1	19.2	34.0	36.2	25.3	50.3	622
		40°C	11.7	20.0	21.2	23.0	45.0	212	325	320	390	488	10077
		-18°C	193	455	498	547	1500	-	44500	-	-	63100	-
Viscosity Index	-	164	143	141	150	157	102	147	160	89	163	243	
Evaporation loss 6 h - 200°C	%	12	2.2	2.3	1.5	-	0.3	2.8	1.2	2.2	1.1	0.9	
Iodine number	g I ₂ /100 g	<1	<1	<1	2	13	<1	<1	17	<1	20	22	
Water content	mg/kg	200	200	200	200	200	200	200	200	200	200	200	
Biodegradability	%	84	78	85	76	81	-	66	56	-	46	-	
Renewable carbon content	%	38	81	-	81	82	-	54	85	-	86	87	

FORMULATED PRODUCTS

REFERENCE

Nycolube® 5951 FG

ISO VG 220, fully formulated high temperature chain oil, showing outstanding flash points, excellent resistance to thermo-oxidation and cleanliness, and good anti-wear properties

Typical properties

PROPERTIES	UNIT	TYPICAL RESULT	TEST METHOD
NSF registration number	-	167455	-
Appearance	-	Clear, bright and free from sediments and other impurities*	Visual examination
Colour APHA	-	100	ISO 2211
Density at 20°C	kg/dm ³	0.967	ISO 12185
Flash point COC	°C	320	ISO 2592
Pour point	°C	-33	ISO 3016
Kinematic viscosity at 100° at 40°C	mm ² /s	19.4 225	ISO 3104
Viscosity Index	-	98	ISO 2909
Acid number (pH=11)	mg KOH/g	0.3	ISO 6619
Evaporation, 6 h – 200°C	% mass	0.3	ASTM D972
Steel corrosion	-	Pass	ISO 7120A
Copper corrosion	-	1b	ISO 2160
4 ball Wear Scar 1 h – 392 N	mm	0.42	ASTM D4172
4 ball Weld Load	kg	126	ASTM D2783

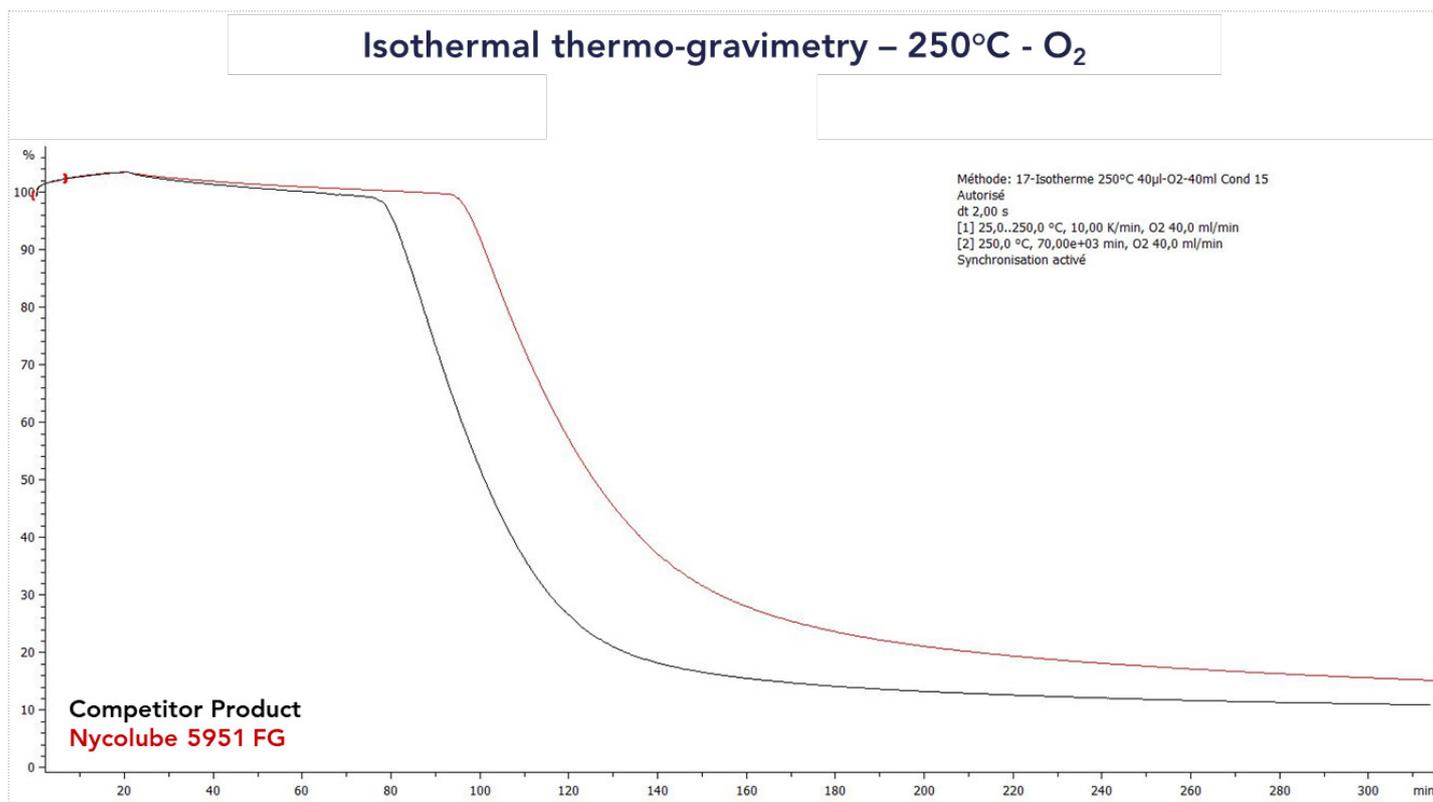
*Colour may change from yellow to slightly red with no impact on product performance

PERFORMANCE TEST SUMMARY

In the below micro-coking test, **NYCOLUBE® 5951 FG** provides outstanding cleanliness properties, including in the 230-280°C temperature range.

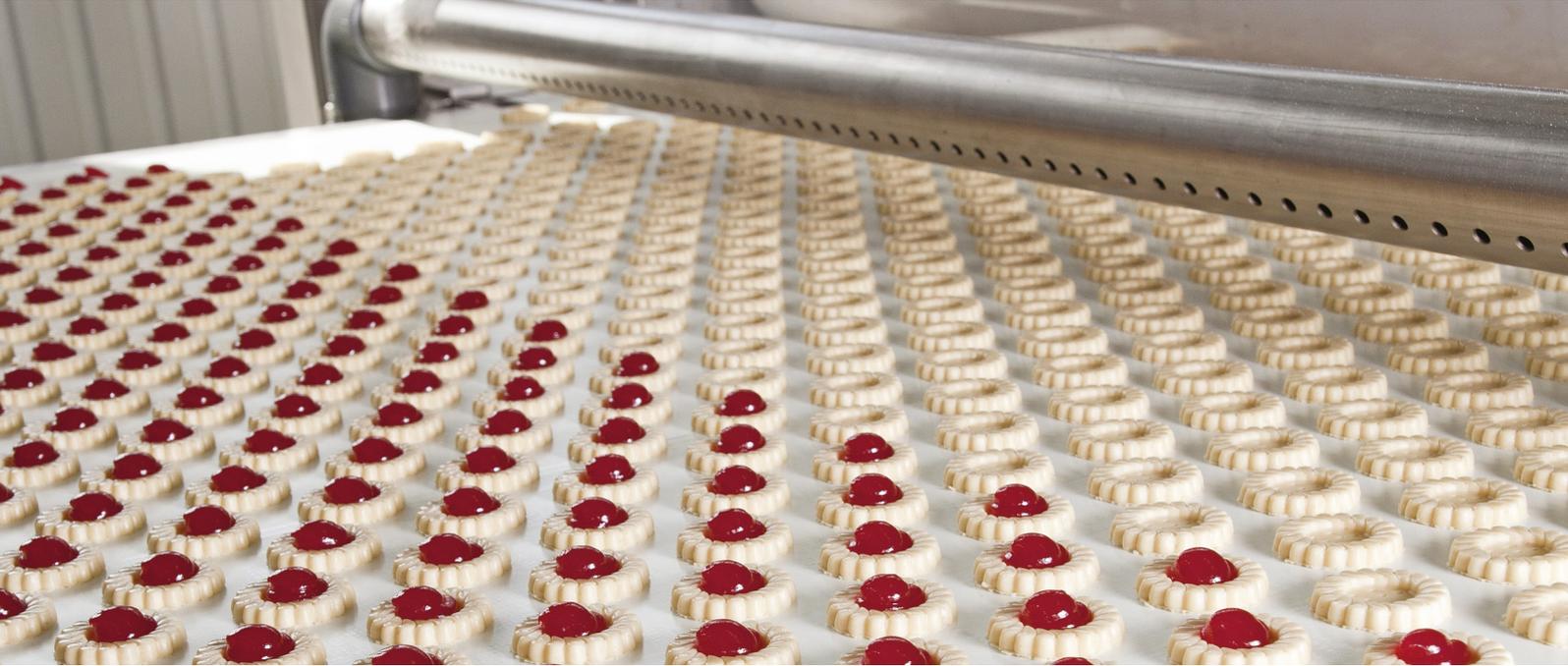
	Competitor Product	NYCOLUBE 5951 FG
GFC Lu-27-A-13, Micro-Coking Test, 230-280°C		
Deposit temperature	251	265
Average merit	9,28	9,55
		
GFC Lu-27-A-13, Micro-Coking Test, 250-300°C		
Deposit temperature	<250	<250
Average merit	7,65	8,08
		

NYCOLUBE® 5951 FG shows lower volatility and longer lifetimes than top tier product from competition.





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