

# PRODUCT SELECTION FOR HIGH TEMPERATURE CHAIN OILS



## Unequaled high temperature performance

The lubrication of high temperature conveyor chains conveyors is challenging, especially when temperature exceeds 250°C. Lubricants with insufficient resistance to thermo-oxidative stress may evaporate, causing lack of lubrication, or decompose, leaving sticky or carbonaceous residues leading to mechanical failures, fire outbreaks, potential production downtimes and increasing maintenance costs.

NYCO's solutions include high performance synthetic esters, additive and fully formulated fluids.

### ADVANTAGES AND BENEFITS

- |  |                          |
|--|--------------------------|
| Low evaporation                              | ➤ Reduced consumption    |
| Thermo-oxidative resistance, deposit control | ➤ Lower maintenance cost |
| Reduced friction                             | ➤ Energy saving          |
| High flash points                            | ➤ Improved fire safety   |

### SYNTHETIC NEOPOLYOL ESTERS

Of monopentaerythritol or dipentaerythritol  
Of branched acid technology

- Low volatility
- High thermal and oxidative stability
- Superior deposit control and cleanliness

### PERFORMANCE ADDITIVE

Antioxidant and deposit control component  
Patented for use in high temperature chain lubricants

- Outstanding protection against extreme temperature
- Increased lubricant's lifetime
- Improved deposit control and cleanliness

### FULLY FORMULATED HIGH TEMPERATURE OVEN CHAIN LUBRICANTS

Combine NYCO's neopolyol esters and performance additive technologies

- Suitable for lubrication of chains operating at temperatures of up to 300°C

## SYNTHETIC NEOPOLYOL ESTERS

REFERENCE	
<b>Nycobase® 5750</b>	Low viscosity neopolyol ester showing low volatility and high thermo-oxidative stability
<b>Nycobase® 1040X</b> <b>Nycobase® 1060X</b>	Medium viscosity neopolyol ester delivering outstanding levels of cleanliness
<b>Nycobase® 9680X</b>	ISO VG 220 neopolyol ester showing the perfect balance between volatility, cleanliness and resistance to thermo-oxidation, thus delivering unusually high flash points
<b>Nycobase® 9600X</b>	High viscosity, top performance neopolyol ester showing very low volatility and superior resistance to extreme temperatures
<b>Nycobase® 30401 FG</b> <b>Nycobase® 30409 FG</b>	Low viscosity neopolyol ester showing low volatility and high flash points; HX-1 certified
<b>Nycobase® 32506 FG</b>	High viscosity, top performance neopolyol ester showing very low volatility and superior resistance to extreme temperatures; HX-1 certified

### Typical properties

PRODUCT NAME	Evaporation 1h - 250°C ASTM D6375	Kinematic Viscosity @ 40°C mm <sup>2</sup> /s	Kinematic Viscosity @ 100°C mm <sup>2</sup> /s	Viscosity Index	Pour Point °C	Flash Point °C
<b>Nycobase® 5750</b>	2.2	24	5	140	-59	260
<b>Nycobase® 1040X</b>	2.0	94	10.2	88	-27	264
<b>Nycobase® 1060X</b>	0.4	245	19.6	92	-25	296
<b>Nycobase® 9680X</b>	0.1	221	19.6	101	-33	305
<b>Nycobase® 9600X</b>	0.3	380	25.4	88	-17	290
<b>Nycobase® 30401 FG</b>	2.2	20	4.5	143	-45	255
<b>Nycobase® 30409 FG</b>	2.4	21.2	4.6	141	-48	255
<b>Nycobase® 32506 FG</b>	0.3	390	25.3	89	-20	295



## PERFORMANCE ADDITIVE

REFERENCE	
<b>Nycoperf® AO 424</b>	High performance anti-oxidant and deposit control additive Maximizes thermo-oxidative stability and lifetime of lubricant in extreme temperature operating conditions (up to 300°C)

### Typical properties

PRODUCT NAME	Density @ 20°C kg/m <sup>3</sup>	Kinematic Viscosity @ 40°C mm <sup>2</sup> /s	Kinematic Viscosity @ 100°C mm <sup>2</sup> /s	Flash Point °C
<b>Nycoperf® AO 424</b>	974	2800	62	275

## FORMULATED PRODUCTS

REFERENCE	
<b>Nycolube® 56XX HT series</b>	Top performance high temperature chain lubricants, showing outstanding lifetimes and superior cleanliness in extreme temperature applications
<b>Nycolube® 55XX series</b>	High temperature chain lubricants with excellent thermo-oxidation resistance and unusually high flash points
<b>Nycolube® 5950 FG</b>	NSF H1 certified high temperature chain oil with a high flash point

Typical properties

PROPERTIES	UNIT	RESULTS						TEST METHOD
		Nycolube 5620 HT	Nycolube 5630 HT	Nycolube 5650 HT	Nycolube 5660 HT	Nycolube 5670 HT	Nycolube 5950 FG	
Designation				H2 -142713			H1 - 153215	
NSF registration	-	-	-		-	-		
Appearance	-	Brown, clear	Brown, clear	Brown, clear	Brown, clear	Brown, clear	Brown, clear	Visual examination
Flash Point COC	°C	270	265	292	290	311	296	ISO 2592
Kinematic Viscosity @	mm <sup>2</sup> /s	9.0	11.7	18.9	22.3	27.5	19	ISO 3104
40°C								
Evaporation loss 200°C, 6h	% mass	1.6	1.0	1.0	1.0	1.0	0.4	ASTM D972
Steel Corrosion	-	Pass	Pass	Pass	Pass	Pass	Pass	ASTM D665A
4-ball wear scar 1h, 392N	mm	0.4	0.5	0.4	0.4	0.4	0.4	ASTM D4172

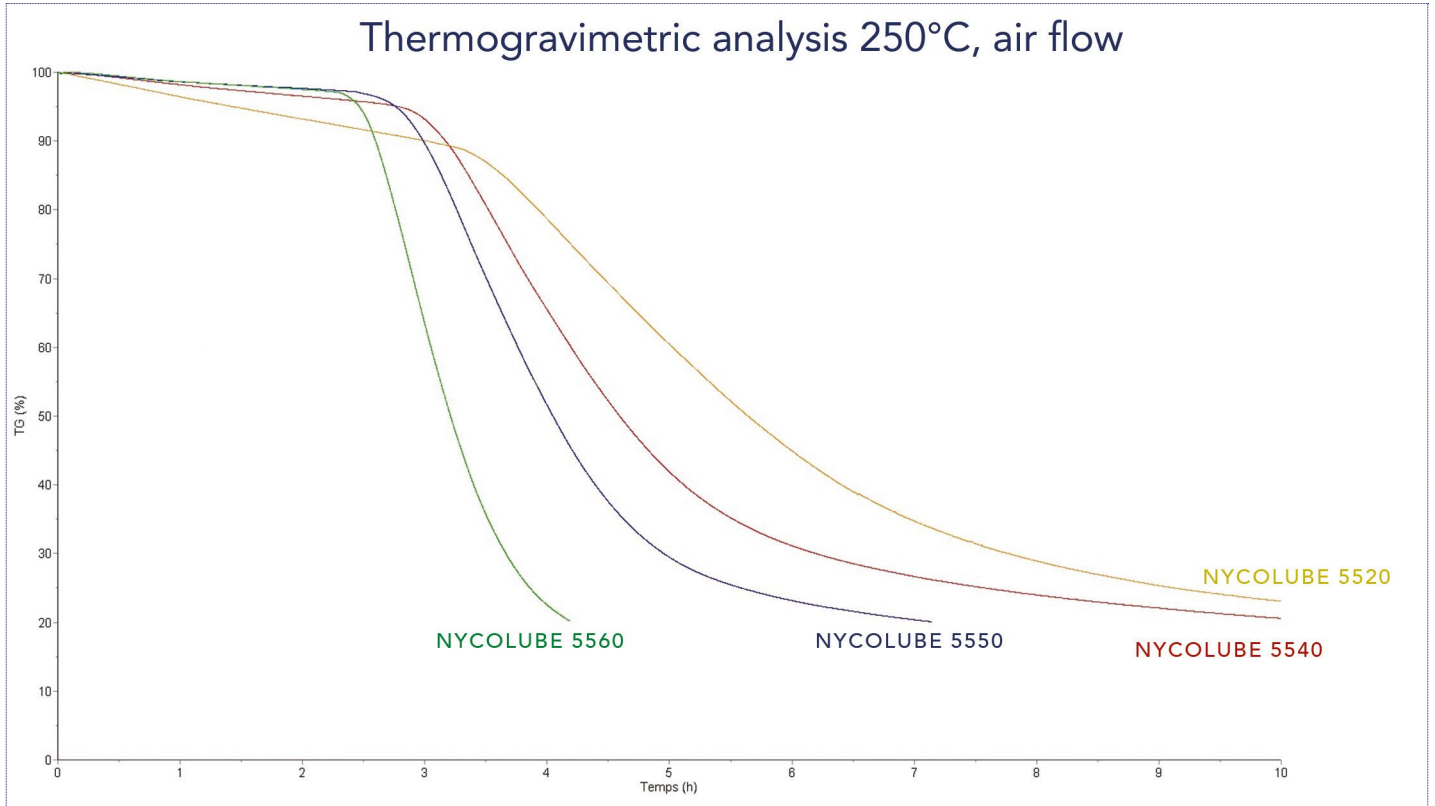
Typical properties

PROPERTIES	UNIT	RESULTS				TEST METHOD
		Nycolube 5520	Nycolube 5540	Nycolube 5550	Nycolube 5560	
Designation						
Appearance	-	Amber, clear	Amber, clear	Amber, clear	Amber, clear	Visual examination
Flash Point COC	°C	276	295	307	312	ISO 2592
Kinematic Viscosity @	mm <sup>2</sup> /s	9.1	15.1	19.4	22.9	ISO 3104
40°C						
Evaporation loss 200°C, 6h	% mass	0.7	0.5	0.4	0.4	ASTM D972
Steel Corrosion	-	Pass	Pass	Pass	Pass	ASTM D665A
4-ball wear scar 1h, 392N	mm	0.4	0.5	0.4	0.5	ASTM D4172

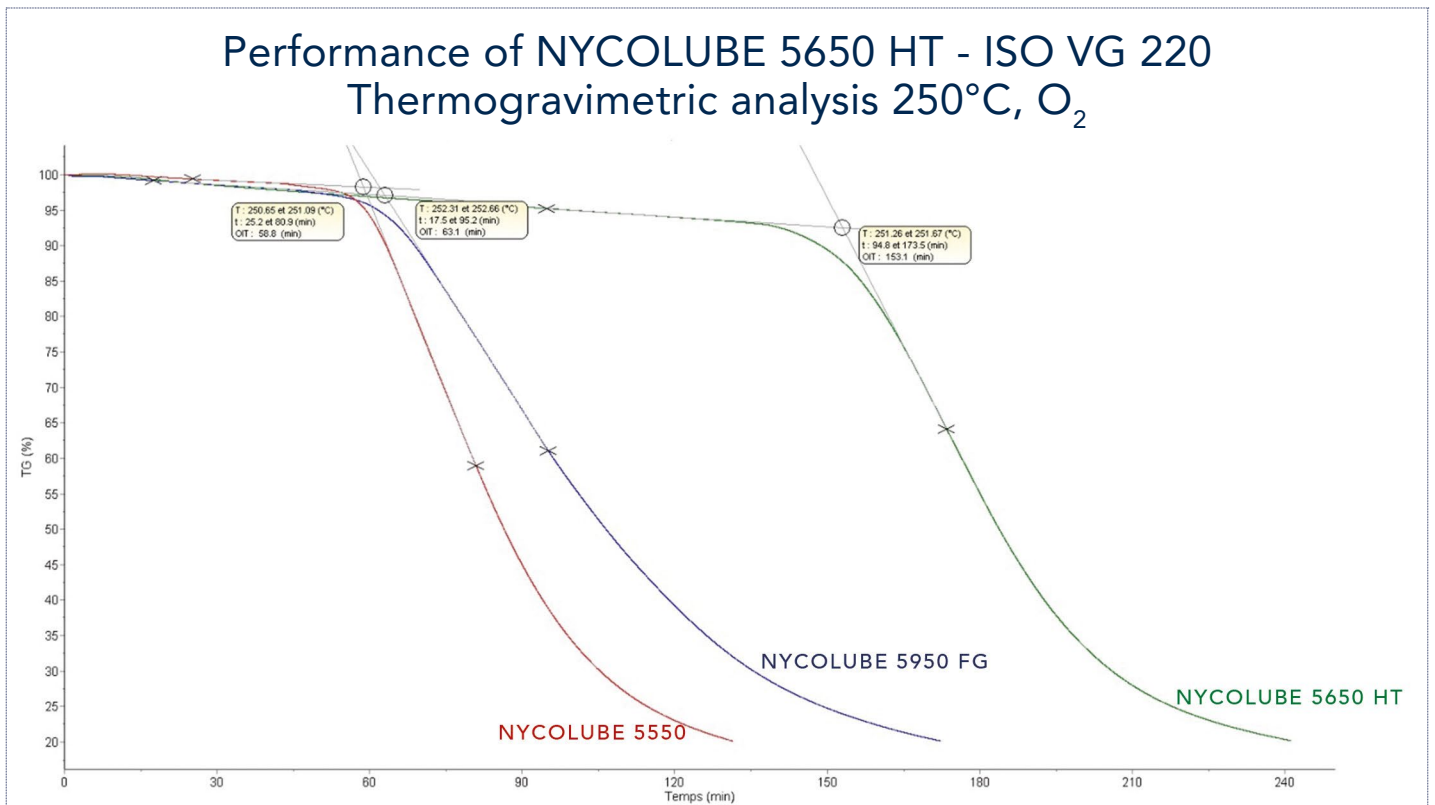
# PERFORMANCE TESTS SUMMARY

## NYCOLUBE® 5500 series

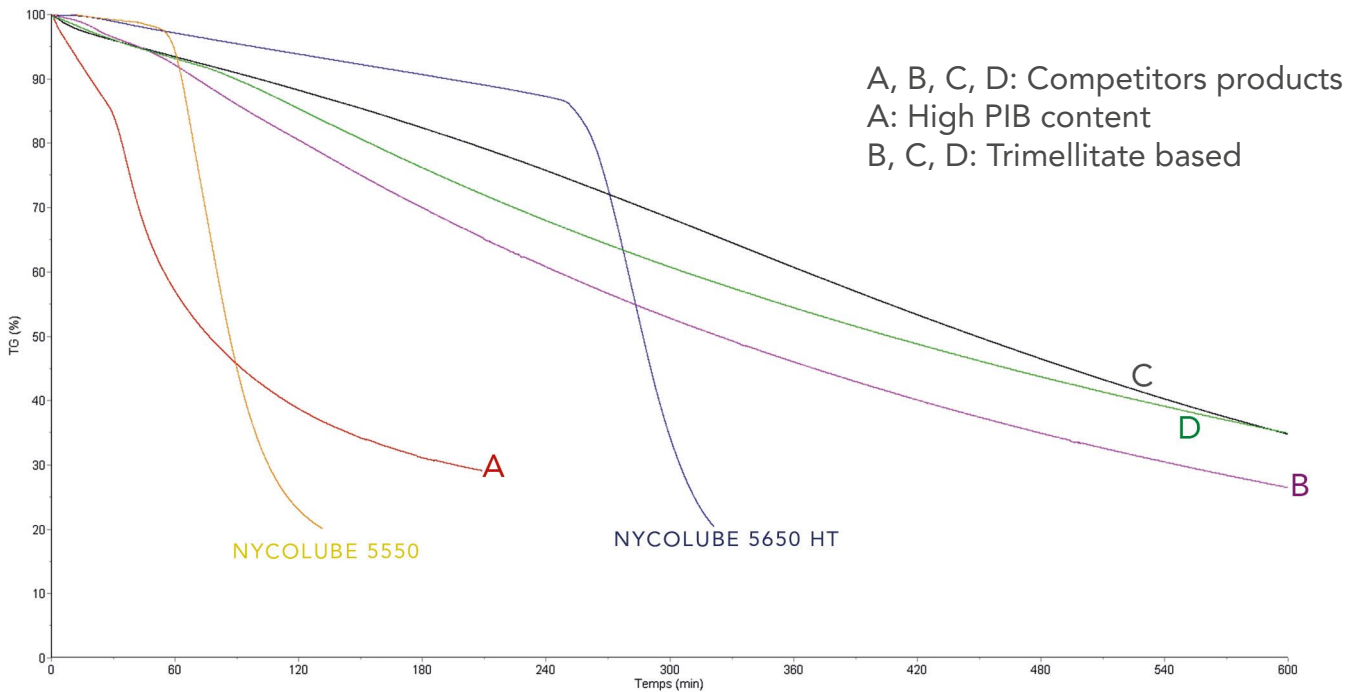
High flash point, low volatility, clean degradation



NYCOLUBE® 5600 HT series products demonstrate unequalled performance and extended lifetime in extreme temperature conditions



## Thermogravimetric analysis 250°C, O<sub>2</sub>



## Micro-coking test GFC-L-27-A-13

A drop of oil is placed on an inclined aluminium plate which is heated between a cold and a hot point during 90 minutes.

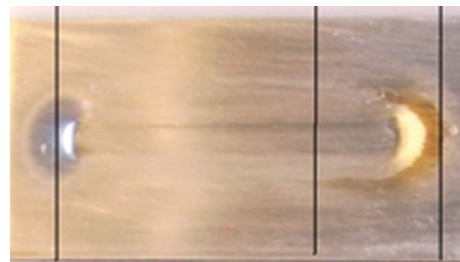
### CONDITIONS

- Oil quantity: 0,6 cm<sup>3</sup>
- Plate inclination: 1°
- Cold point T°: variable
- Hot point T°: variable
- Duration: 90 min





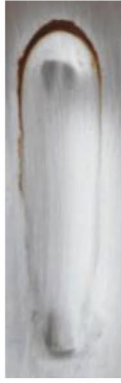

















### MEASUREMENTS

- Starting deposit T°
- Deposit type: gum, varnish, coke, etc.
- Merit: A (hot area), B (cold) and average



## Neopolyol ester technology offers the perfect balance between lifetime and cleanliness

	NYCOLUBE 5650 HT	NYCOLUBE 5950 FG	NYCOLUBE 5550	Competitor product A (PAO - PIB)	Competitor product B (Trimellitate PIB - PAO)	Competitor product C (Trimellitate)	Competitor product D (Trimellitate PIB)
<b>MCT 230-280°C</b>							
TDD	>280	>280	>280	241	240	276	246
Merit	10	10	10	8,75	8,55	9,6	8,57
							
<b>MCT 250-300°C</b>							
TDD	280	<250	256	<250	<250	264	<250
Merit	9,35	7,77	7,43	5,98	6,79	7,42	6,61
							
<b>MCT 280-330°C</b>							
TDD	<280	< 280	<280	<280	<280	<280	<280
Merit	6,43	5,45	5,09	5	1,34	2,24	2,59
							



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