

# Beat the Heat

## New Thermal Coupling Compounds from Nye

**Temperatures are rising.** As photonic and electronic components get smaller, faster and more compact, the need to dissipate heat increases. Whether you're working with diodes, transistors, rectifiers, or resistors, Nye's new thermal coupling compounds can help.

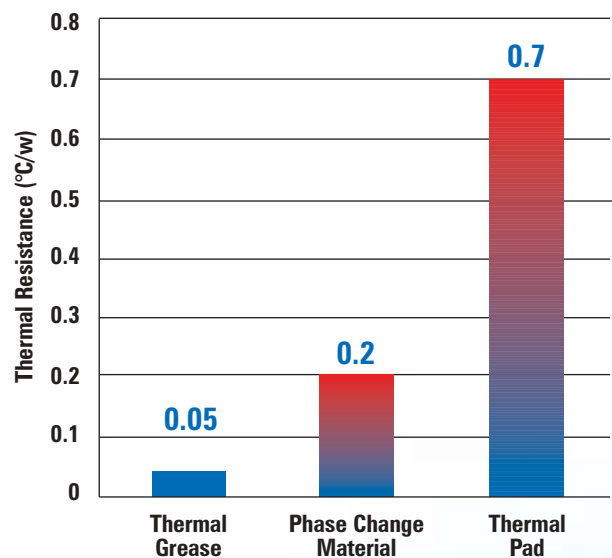
Nye offers both silicone and non-silicone thermal greases. Our design goals are to deliver easy-to-handle, electrically insulative thermal coupling compounds with excellent thermal conductivity, no pump out, no outgassing and no phase separation in storage. Notably, you'll find water-cleanable silicone and non-silicone thermal coupling compounds at Nye. Water-cleanable thermal compounds eliminate the need to use flammable or environmentally hazardous solvents.

Nye also offers a wide variety of packaging options. From pails and drums to standard tubes, jars, syringes, cartridges and single-use blister packs, we'll make sure you have the best packaging for your application.

And as with all Nye products, you can take advantage of custom formulations. We'll work with you to formulate a thermal grease that delivers the viscosity, temperature range, and cure rate you need to optimize your product and manufacturing process. We can also formulate electrically conductive thermal greases. Like our SmartGrease™, a thermal coupling compound from Nye "knows" how you want your product to perform.

**For more information on Nye's new thermal coupling compounds, optical coupling gels, or synthetic lubricants, call us at 508-996-6721 or e-mail [techhelp@nyelubricants.com](mailto:techhelp@nyelubricants.com).**

Typical Thermal Resistance



### Why Thermal Grease?

Compared to thermal pads and phase change materials, thermal grease offers the lowest possible thermal resistance.

Nye Thermal Coupling Compounds	Operating Temperature (°C)	Thermal Conductivity (W/m <sup>2</sup> K)	Technical Notes
<b>TCC 941</b>	-55 to 205	1.2 @ 36°C	TCC 941 is a water-cleanable, silicone thermal grease. It offers high thermal conductivity and virtually no bleed at elevated temperatures. It does not harden, dry out or melt after 1,000 hours at 200°C. An effective thermal couplant, TCC 941 is an excellent joint compound for any device where efficient cooling is desired.
<b>TCC 942</b>	-40 to 210	2.2 @ 55°C	TCC 942 is non-silicone, synthetic thixotropic thermal grease. It will flow under moderate shear, but exhibits "no creep" features when pressure is removed, even at temperatures in excess of 100°C. As a solid it will withstand temperatures in excess of 200°C. It does not phase separate.
<b>TCC 943</b>	-40 to 200	1.4 @ 50°C	TCC 943 is a non-silicone, synthetic thermal grease. It is a soft, pumpable gel that cures to a non-flowing tacky solid when heated (usually within 1 hour @ 100 to 110°C). Thermal transfer efficiency increases with cure. TCC 943 does not contribute to solder bath contamination, exhibits very low bleed and evaporation, and has excellent thermal resistance over a wide temperature range.
<b>TCC 944</b>	-40 to 150	1.3 @ 50°C	TCC 944 is a water-cleanable, non-silicone, synthetic thermal grease. It has a soft, grease consistency, excellent dielectric properties, and exhibits thixotropic behavior. It is competitively priced with Dow Corning 340, but requires no solvents for clean up.



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ISO 9001:2000  
ISO/TS-16949



ISO 14001



# NYE THERMAL TRANSFER COMPOUND 941

A metal oxide thickened silicone based heat transfer medium intended for applications where efficient cooling is desired.  
Material is water cleanable.



Lubricant Properties			Typical Value	Test Method
Recommended Service Range (°C)			-55 to 205	
Thickener			Zinc Oxide	
Type			Silicone	
Base Oil	Kinematic Viscosity cSt (mm <sup>2</sup> /s)	100°C	-	ASTM D-445
	Viscosity Index		-	ASTM D-2270
	Flash Point (°C)		-	ASTM D-92
	Pour Point (°C)		-	ASTM D-97
	Typical Properties of the Grease			
Color, Appearance			White, Smooth	
Penetration	Worked, 60X		340	ASTM D-217
Density	gm/cc	25°C	2.2	ASTM D-70
Oil Separation	24 hours	200°C	0.5%	FTM 321
Evaporation	24 hours	200°C	0.5 %	FTM 321
Dielectric Strength		volts/mil	400	ASTM D- 149
Thermal Conductivity	cal/sec-cm-°C	36°C	0.00286	ASTM D-5470

The typical properties shown on this product data sheet should not be used as a basis for preparing specifications. Refer to our product Material Safety Data Sheet for detailed safety information.  
(0510)



# NYE THERMAL COUPLING COMPOUND 942

A metal oxide thickened, non-silicone based heat transfer medium intended for applications where typical silicone compounds are undesirable and increased thermal transfer efficiency is required.

*The SmartGrease<sup>™</sup> Company*

Lubricant Properties			Typical Value	Test Method
Recommended Service Range (°C)			-40 to 210	
Thickener			Metal Oxide	
Type			Hydrocarbon	
Base Oil	Kinematic Viscosity cSt (mm <sup>2</sup> /s)	100°C	-	ASTM D-445
	Viscosity Index		-	ASTM D-2270
	Flash Point (°C)		-	ASTM D-92
	Pour Point (°C)		-	ASTM D-97
	Typical Properties of the Grease			
Color, Appearance			Dark Gray, Smooth	
Penetration	Worked, 60X		-	ASTM D-217
Density	gm/cc	25°C	2.5	ASTM D-70
Oil Separation	24 hours	200°C	0 %	FTM 321
Evaporation	24 hours	200°C	0 %	FTM 321
Dielectric Strength		volts/mil	318	ASTM D- 149
Thermal Conductivity	cal/sec-cm-°C	55°C	0.00523	ASTM D-5470

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(0510)



# NYE THERMAL COUPLING COMPOUND 943

A metal oxide thickened, non-silicone based heat transfer medium intended for applications where a high temperature thermal cure is desired.

*The SmartGrease<sup>™</sup> Company*

Lubricant Properties			Typical Value	Test Method
Recommended Service Range (°C)			-40 to 200	
Thickener			Zinc Oxide	
Type			Hydrocarbon	
Base Oil	Kinematic Viscosity cSt (mm <sup>2</sup> /s)	100°C	-	ASTM D-445
	Viscosity Index		-	ASTM D-2270
	Flash Point (°C)		-	ASTM D-92
	Pour Point (°C)		-	ASTM D-97
	Typical Properties of the Grease			
Color, Appearance			Gray, Smooth	
Penetration	Worked, 60X		-	ASTM D-217
Density	gm/cc	25°C	2.5	ASTM D-70
Oil Separation	24 hours	200°C	0.1%	FTM 321
Evaporation	24 hours	200°C	0.1%	FTM 321
Dielectric Strength		volts/mil	318	ASTM D- 149
Thermal Conductivity	cal/sec-cm-°C	50°C	0.003346	ASTM D-5470

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# NYE THERMAL COUPLING COMPOUND 944

A metal oxide thickened, non-silicone based heat transfer medium intended for applications where water cleanup is desirable.

*The SmartGrease<sup>™</sup> Company*

Lubricant Properties			Typical Value	Test Method
Recommended Service Range (°C)			-40 to 150	
Thickener			Zinc Oxide	
Type			Hydrocarbon	
Base Oil	Kinematic Viscosity	100°C	-	ASTM D-445
	cSt (mm <sup>2</sup> /s)			
	Viscosity Index		-	ASTM D-2270
	Flash Point (°C)		-	ASTM D-92
	Pour Point (°C)		-	ASTM D-97
Typical Properties of the Grease				
Color, Appearance			White, Smooth	
Penetration	Worked, 60X		330	ASTM D-217
Density	gm/cc	25°C	2.6	ASTM D-70
Oil Separation	24 hours	150°C	0 %	FTM 321
Evaporation	24 hours	150°C	1 %	FTM 321
Dielectric Strength		volts/mil	265	ASTM D- 149
Thermal Conductivity	cal/sec-cm-°C	50°C	0.00311	ASTM D-5470

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