

## Product/Process Change Notifications



# PCN - 20 012 R1

Amphenol Information Communication and Commercial Products Group

[www.amphenol-icc.com](http://www.amphenol-icc.com)

Release Date: April 24 2020

<b>Product Name:</b>	Metral High Speed and Metral		
	Metral High Speed and Metral - All Versions		
<b>Product Manager:</b>	Jibu Babu		
<b>Subject:</b>	Notification of Change with Immediate Effectivity		
<b>Distribution:</b>	All Customers		
<b>Type of Change:</b>	Materials Change		
<b>Change Description:</b>	As notified vide our PCN 20012 dtd March 11, 2020, GXT + is approved plating material for Metral High Speed and Metral all versions, meeting the product performance specifications. PCN20012 R1 revision is to notify that we will assign " <b>new Part numbers for GXT + plating products</b> ".		
<b>Reason for Change:</b>	<p><b>Reason for GXT+ plating introduction:</b> Palladium prices have increased significantly over the last several years causing drastic increase in cost of production. We are reviewing the current product pricing. To reduce the impact of palladium metal price spiral on the cost of production, we are implementing GXT+ plating in our process. Your approval for supplies with GXT+ plating will help to limit the product price increase.</p> <p><b>Reason for new Part numbers for GXT+ plating:</b> New Part numbers are assigned for GXT+ plating to ensure traceability in supply chain. See PCN20012R1 Affected parts.xls file , "Alternative Parts" column for new Part numbers.</p>		
<b>Affected Parts:</b>	See attached PCN20012 R1 Affected Parts.xls file		
<b>Effective Date of Change:</b>	May 31, 2020	<i>Note: PCN20012 R1 is revision to previous version PCN20012 dated March 11, 2020 for following changes.</i> 1. PCN20012R1 Affected parts.xls file - Removed 41 part numbers from previous release PCN20012 Affected Parts.xls file. 2. PCN20012R1 Affected parts.xls file - added Alternative Parts for GXT+ plating specification Parts.	
<b>Last Time Buy Date:</b>	NA		
<b>Last Disty Return Date:</b>	NA		
<b>Last Time Shipment Date</b>	NA		
<b>Datasheet Attached?</b>	Select		
<b>Qual/Test Data Attached?</b>	NA		
<b>Samples Availability Date:</b>	March	10	2020
<b>Available Alternatives?</b>	Select		
<b>Questions?</b>	<i>Contact your local AICC Representative, or Product Manager</i>		
	<i>Jibu Babu</i>		
	<i>914843391946 / Jibu.Babu@fci.com</i>		

**Note:**

Customers should contact Product Manager (or their local AICC Representative) directly regarding any concern on the PCN. Lack of any such customer feedback within three weeks of PCN release date will be interpreted as non-objection .











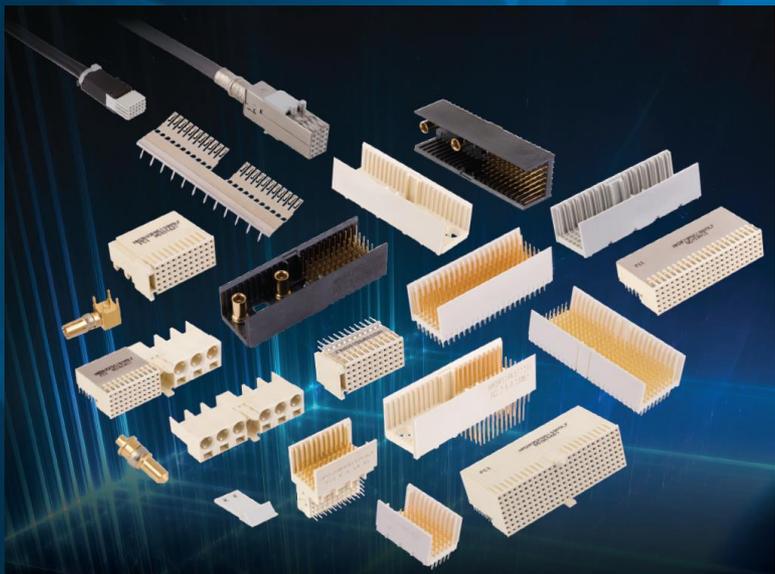






98173-102LF	1
10141318-101LF	2
10144677-101LF	3
10144678-101LLF	4
70203-111LF	5
70203-112LF	6
70203-113LF	7
70229-312LF	8
70298-1100LF	9
70430-158LF	10
85811-101LF	11
85812-101LF	12
85813-101LF	13
85813-102LF	14
85813-103LF	15
85814-101LF	16
85814-102LF	17
85814-103LF	18
88911-101LF	19
88913-101LF	20
88913-111LF	21
88921-101LF	22
89013-102LF	23
89014-102LF	24
89014-112LF	25
89092-101LF	26
90837-101LF	27
91210-101LF	28
91289-101LF	29
91289-102LF	30
91289-103LF	31
91290-101LF	32
91290-102LF	33
91290-103LF	34
10031023-102NLF	35
10060677-101LF	36
HM1F51TBP400H6PLF	37
HM1S42TSR400H6LF	38
HM1S44TRR000H6PLF	39
HM1S52TRR000H6LF	40
70235-A11LF	41

# Metral / Metral HS Product Line GXT+ Plating Upgrade



*March 2020*

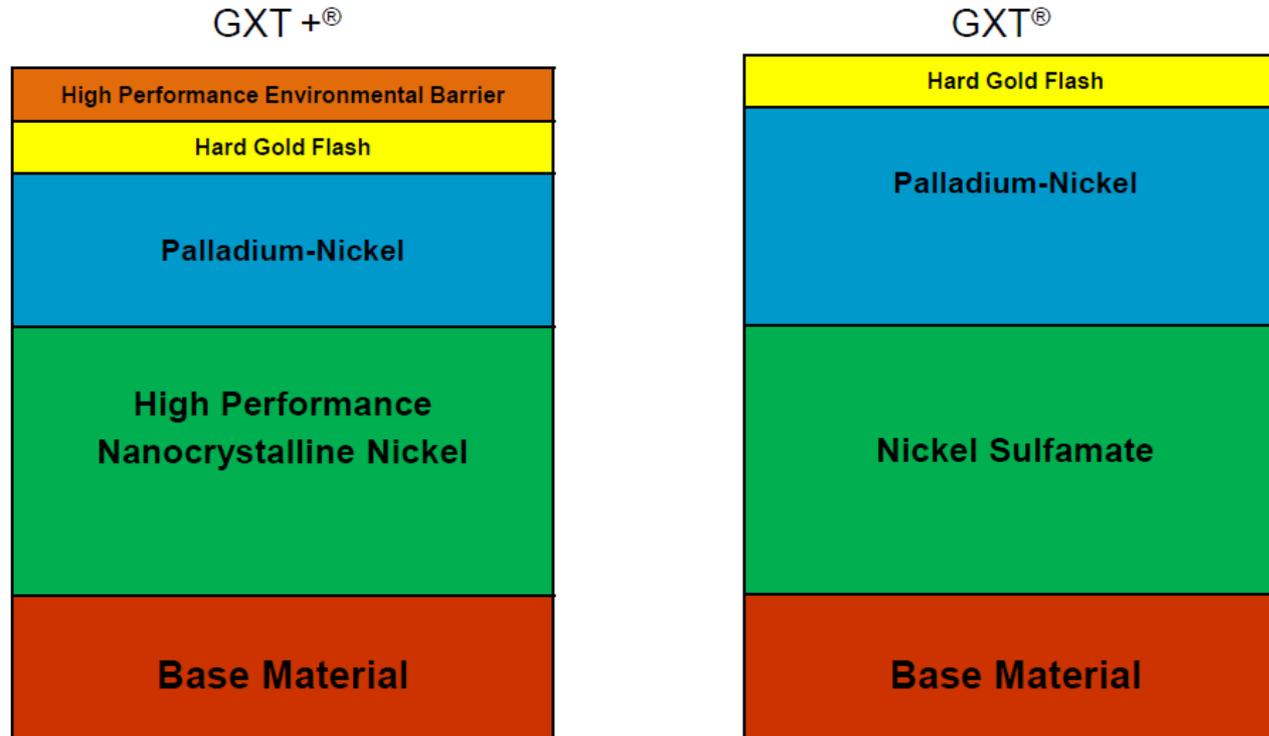
Amphenol Information Communications  
and Commercial Products

**FCi Basics**

# Amphenol ICC

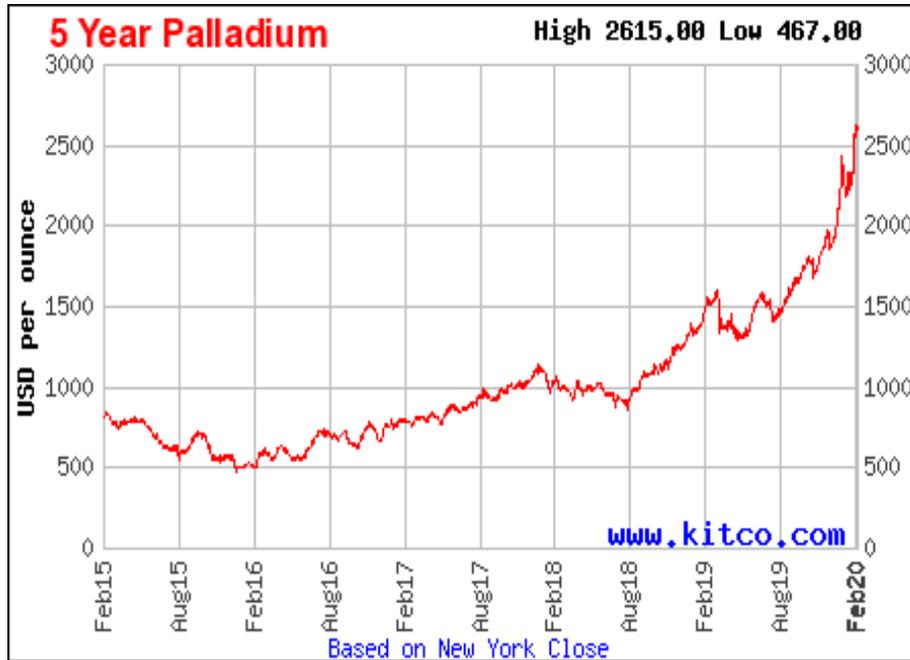
# Overview of GXT & GXT+ Plating

- GXT ® plating is developed more than 30 years ago and was widely used in Millipacs, DIN, Metral, Dsub and other products of Amphenol Basics, HSBP and Consumer Product Portfolio.
- GXT +® plating was developed in 2012 as an upgrade version of current GXT plating. This plating type has been used by many other Amphenol product lines for years.
- Same as GXT ® plating, GXT+® plating also passed all internal and industry standard performance spec. As a conclusion, there is no product performance change between two plating types.
- Plating line is upgraded to handle production of GXT+
- No PN change is proposed with GXT+® supplies



- **GXT+® uses a nanocrystalline Ni deposit that replaces the current Ni layer**
- **The thickness of the hard gold layer remains the same.**
- **Reduction of the PdNi deposit and a high performance environmental barrier is applied.**

# Palladium price spiral

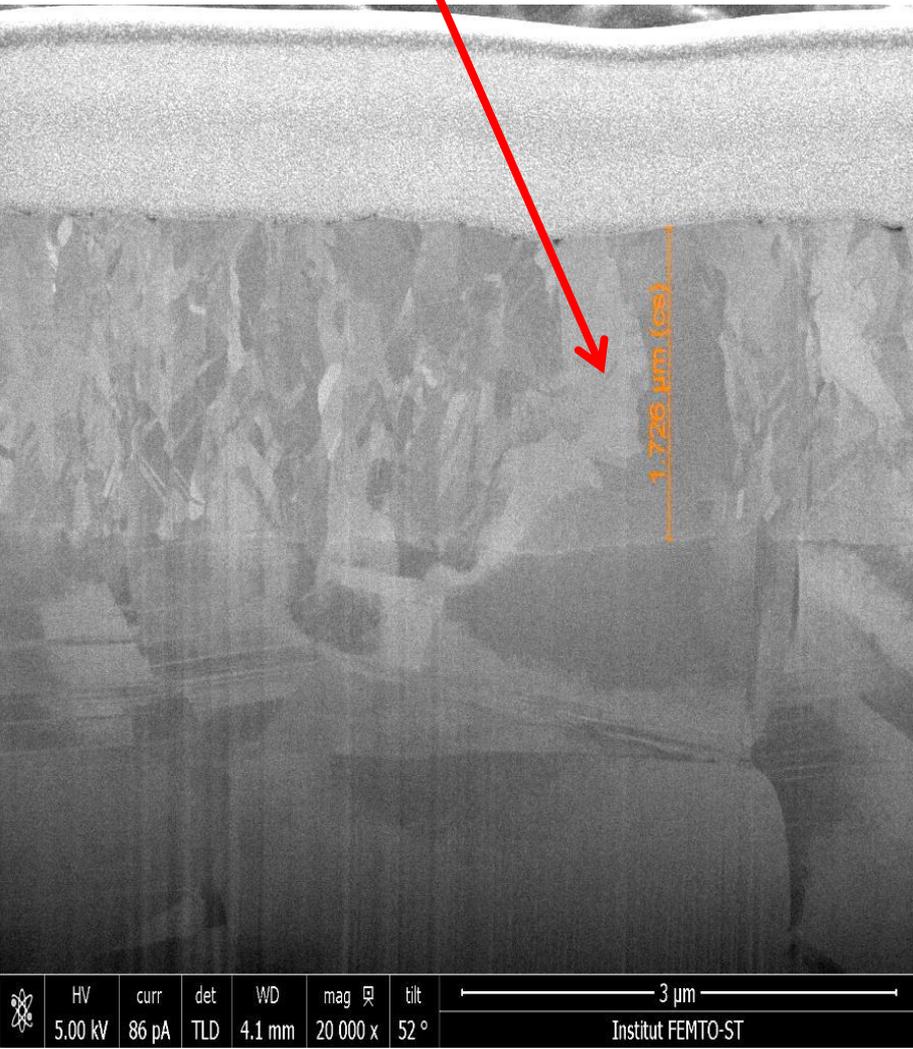


Palladium price changes over the last few months have been drastic. GXT +® plating use less Palladium, so this plating type will be less impacted by the Palladium price increase seen recently

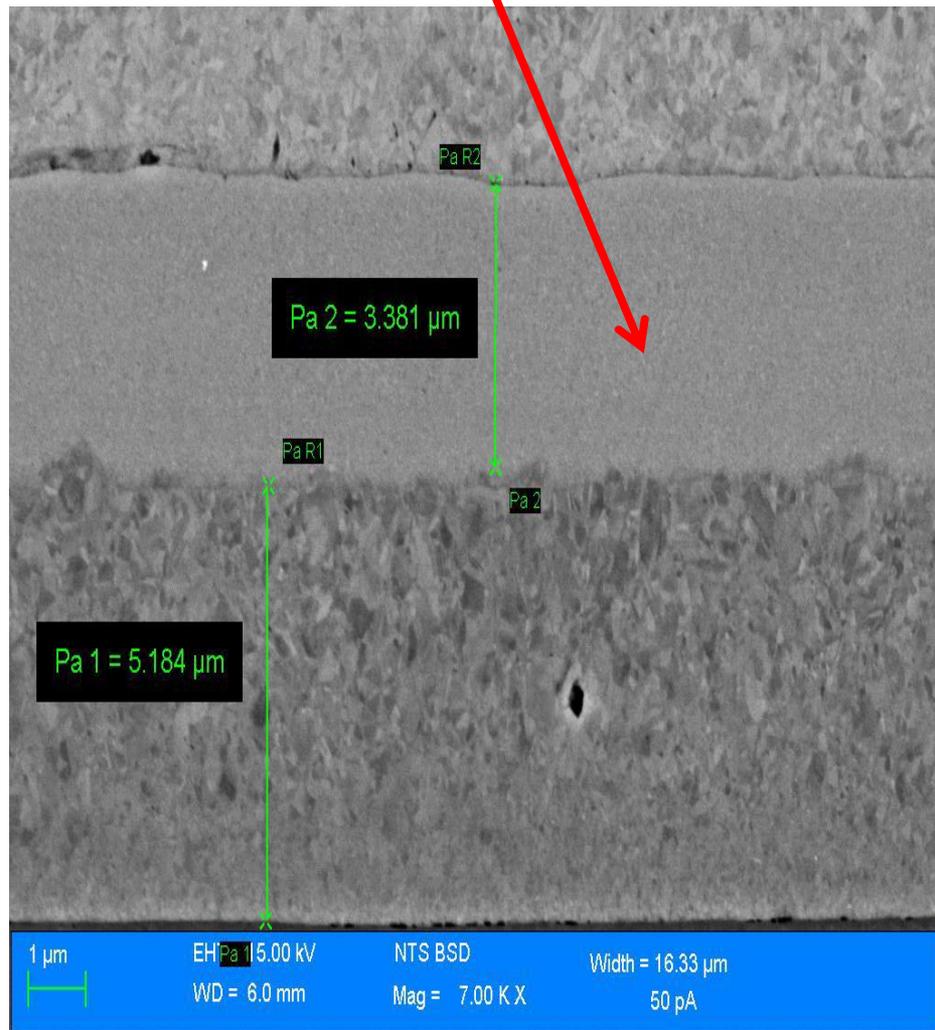
- Improved corrosion resistance via reduced porosity due to the improved Ni grain structure.
- Improved Plating process control
- Similar or greater plating capacity

# Nano-Crystalline-Grain Structure ≡ FCI Basics

Matt Ni Sulfamate



Nano-Crystalline Ni



## Poly- $\alpha$ - Olefin Lube

- As a result of several years R & D, Amphenol has developed a high performance Poly- $\alpha$ - Olefin (PAO) lube to be capable to reduce Au & PdNi thickness w/o compromising product performance.
- The PAO lube has been used for more than 10 years by different product lines in Amphenol.
- **This study validates that PAO does not impact thermal stability, wear resistance, corrosion resistance and contact resistance of the finished product.**

# Thermal stability – TGA test

- Thermal Gravimetric Analysis (TGA) has shown that the PAO lube is stable in elevated temperatures, as well as through a Lead-Free (LF) reflow process and over molding application.

Size: 31.6060 mg  
Method: Polymer Decomposition  
Comment: TGA2950 VG7548, Lot#2C13K05

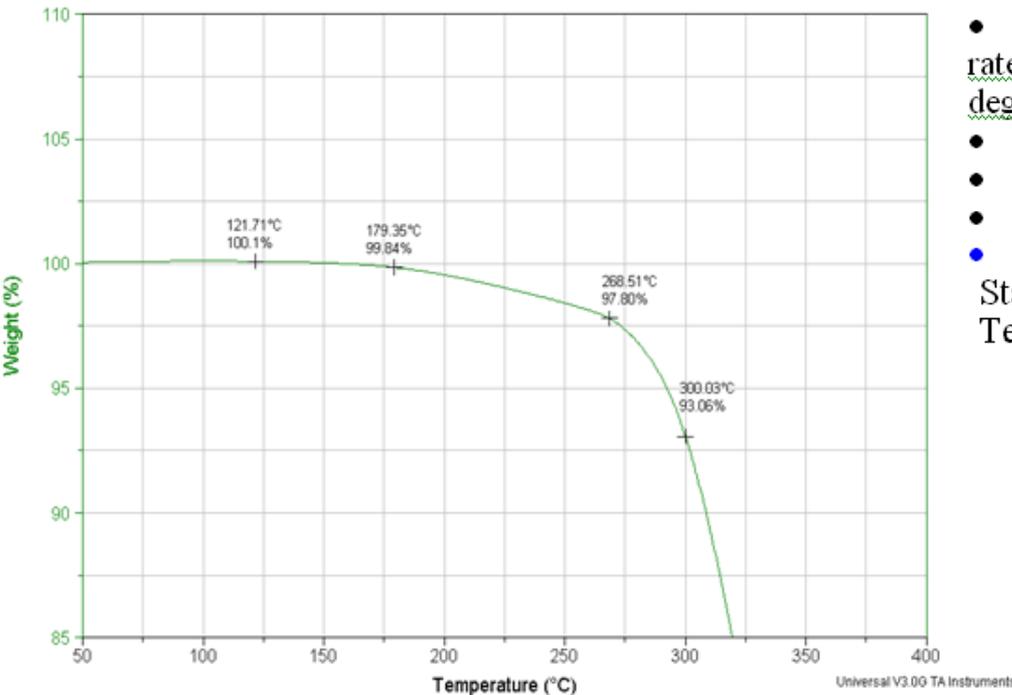
TGA

Operator: C. Rau  
Run Date: 11-Dec-08 08:13

## TESTS:

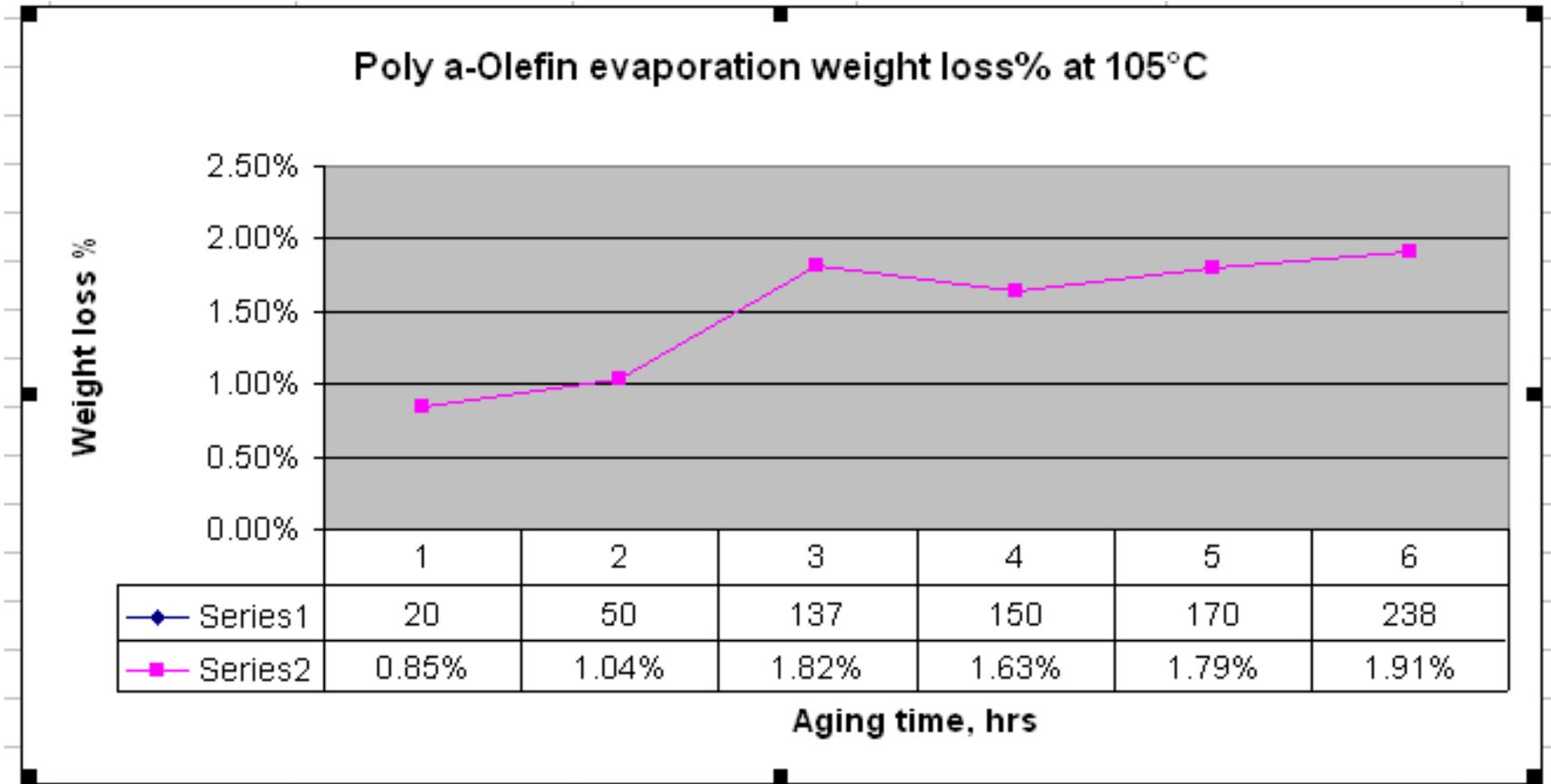
- ASTM method E1131-03 was followed with a Nitrogen flow rate of 40 mL/min, 5 minute isothermal, final temperature of 720 degrees centigrade and the parameters listed below:

	<u>Run 1</u>	<u>Run 2</u>	<u>Run 3</u>
• Sample size mg	22.97	48.65	31.61
• Heating Rate °C/min	5	20	20
• Test Data:			
Start of mass loss	122	146	122
Temperature °C			



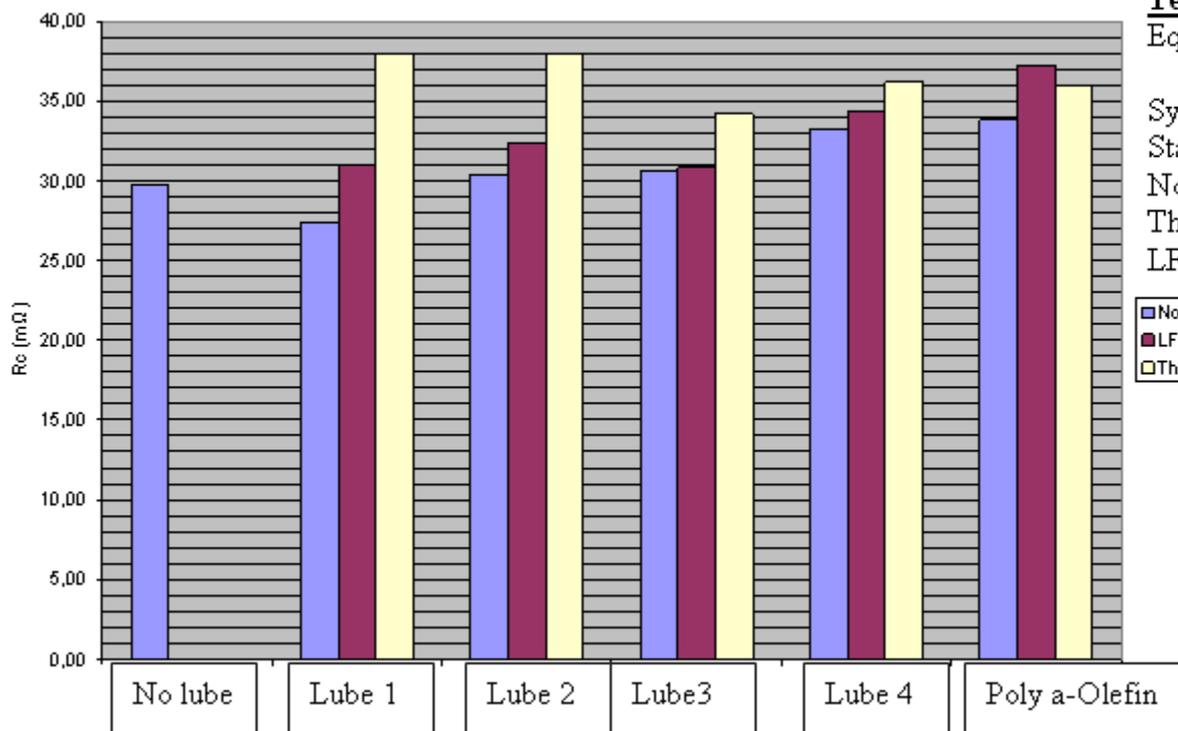
# Thermal Stability – Evaporation Rate

- A thermal age test at 105°C for 238 hrs was conducted and the evaporation rate of this high performance Poly-a-Olefin lube is very low @ <2%. Refer to attached chart:



- Contact resistance impact from PAO after reflow & thermal aging conditions was evaluated. Measurements yielded results that were essentially equivalent to the four other surface treatments applied. Reflow treatment showed a slightly larger impact and a smaller impact from thermal aging. These affects are minimal and overall PAO is preferred for connector applications.

$R_{c(SH)} = f(\text{lubricant and post treatment})$



**Test conditions for Contact Resistance measurements:**

Equipment: Oscilating Tribotester from Tribotechnic with ohmmeter

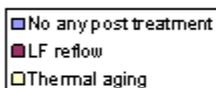
System: Ball against plan

Static partner: 6 mm diameter Brass ball Hard gold plated

Normal Force: 5N

Thermal ageing: 105°C for 65 hours

LF Reflow: 245°C peak Temperature



# Amphenol ICC

**Thank You**