

THERM-A-GAP™ G579

Reliability Test Report

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TABLE OF CONTENTS

1.0 Introduction	4
1.1 Purpose	
1.2 Sample Set-Up Summary	
2.0 Steady Temperature Test	4
2.1 Introduction and Reference	
2.2 Procedure	
2.3 Purpose and Reference	
3.0 Test Procedure	5
3.1 Sample Preparation	
3.2 Thermal Impedance	
3.3 Compression Deflection	
4.0 Results	5
4.1 Compression Deflection	
4.2 Thermal Impedance	
Appendices	
A. Typical Properties	8
B. Thermal Impedance vs. Pressure	9
C. Compression Deflection High Temperature Heat Aging	9

SUMMARY OF PHYSICAL PROPERTIES

List of Acronyms and Initials

TIM	Thermal Interface Materials
HSP	Heat Spreader Materials
SPR	Standard Product Requirements
IEC	International Electrotechnical Commission

List of Definitions

Laboratory Environment	A temperature between 20 and 25 °C and a relative humidity between 40 and 60%
Room Temperature	A temperature between 20 and 25 °C
Normal Performance	Fulfillment of specified performance requirement
Thermal Decomposition:	Allowed as long as the material still remains in spec. after testing
Mechanical Decomposition	Allowed as long as the material still remains in spec. after testing
Visible Decomposition	Minimal visible decomposition is allowed. This will be further defined at a later date.

1.0 Introduction

1.1 Purpose

The purpose of the document is to explain the mechanical and environmental tests and the corresponding measurements that were performed on samples of Chomerics thermally conductive gap filler THERM-A-GAP™ G579.

1.2 Sample Set-Up Summary

The samples were tested at a thickness of 0.100 inches (2.5 mm). The thermal impedance and compression as a factor of pressure were measured for each sample. The measurements were taken initially and after heat aged processes. The heat aged processes were steady temperature at 70 and 125°C, and damp heat 85°C/85%RH.

2.0 Steady Temperature Test

2.1 Introduction and Reference

The purpose of the steady temperature test is to ensure the reliability of the samples after exposure to a range of air temperatures.

2.2 Procedure

The samples were placed into the test chambers at 70°C, 125°C, and 85°C/85%RH and held for 1000 hours. After the 96 hours, the first set of samples were taken out of the 70°C and 125°C and left at room temperature. Measurements of three of the samples were taken after a minimum of 2 hours. The process was repeated after 240, 504, and 1000 hours. Damp heat at 85°C/85%RH was tested only after 1000 hours. After the two hour recovery period, the final measurements were taken in a laboratory environment to test for the normal performance of the samples.

2.3 Acceptance Criteria

Minimal visible decomposition will be allowed. The acceptable level of decomposition is to be defined.

Mechanical decomposition is allowed as long as the material still remains within specification after testing.

Thermal decomposition is allowed as long as the material still remains within specification after testing.

3.0 Test Procedure

3.1 Sample Preparation

The thermal impedance samples were cut to 1 in² (6.45 cm²) discs before aging and the deflection samples were cut to 0.5 inch diameter discs or 0.196 in² (1.26 cm²) before aging. Liners were left on and the samples were spread out and not stacked during aging.

3.2 Thermal Impedance

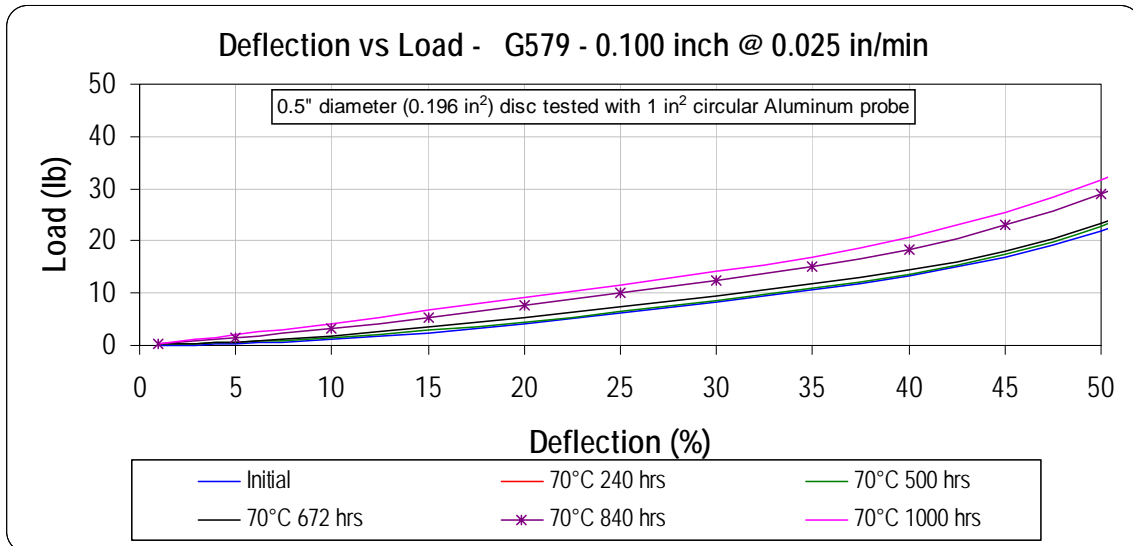
Three samples were tested at 50°C and 10 PSI (0.069 MPa) of pressure for each aging condition per ASTM D5470.

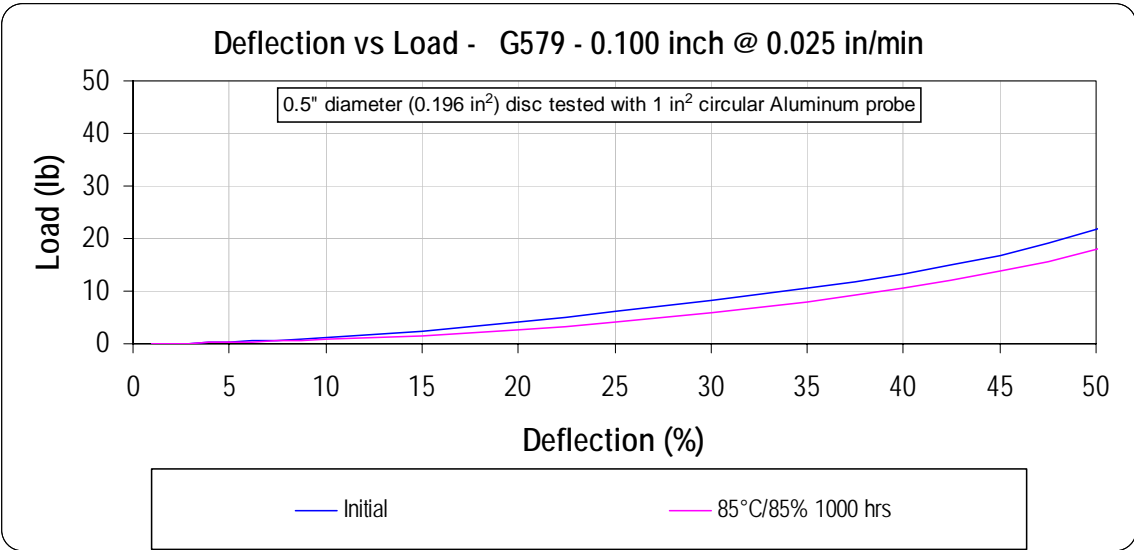
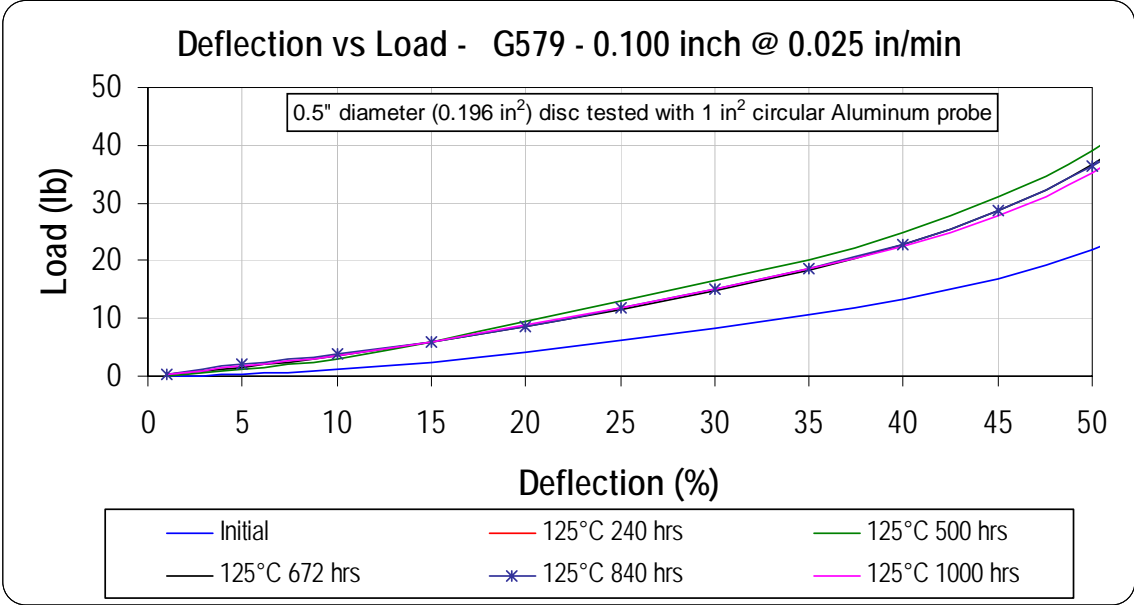
3.3 Compression Deflection

Samples were tested in a laboratory environment on a Texture Analyzer (from Texture Technologies) per Chomerics NBD-001, which is a modified version of ASTM C165. Three samples were tested for each aging condition. Samples were tested at 0.025 inches/min (0.01 mm/sec) up to 50% deflection or 50kg, the limit of the load cell.

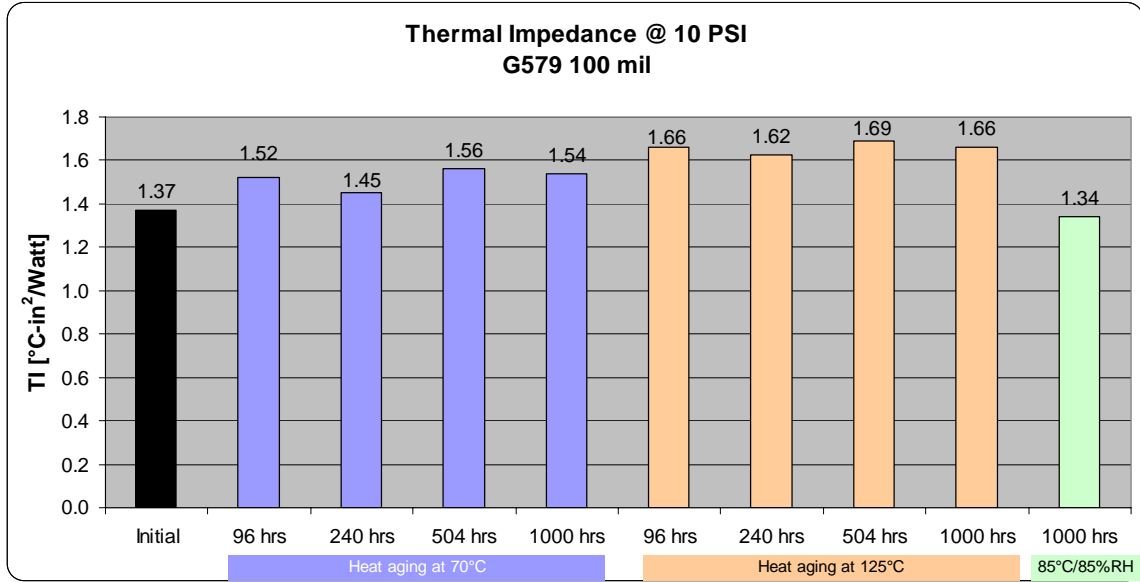
4.0 Results

4.1 Compression Deflection





4.2 Thermal Impedance

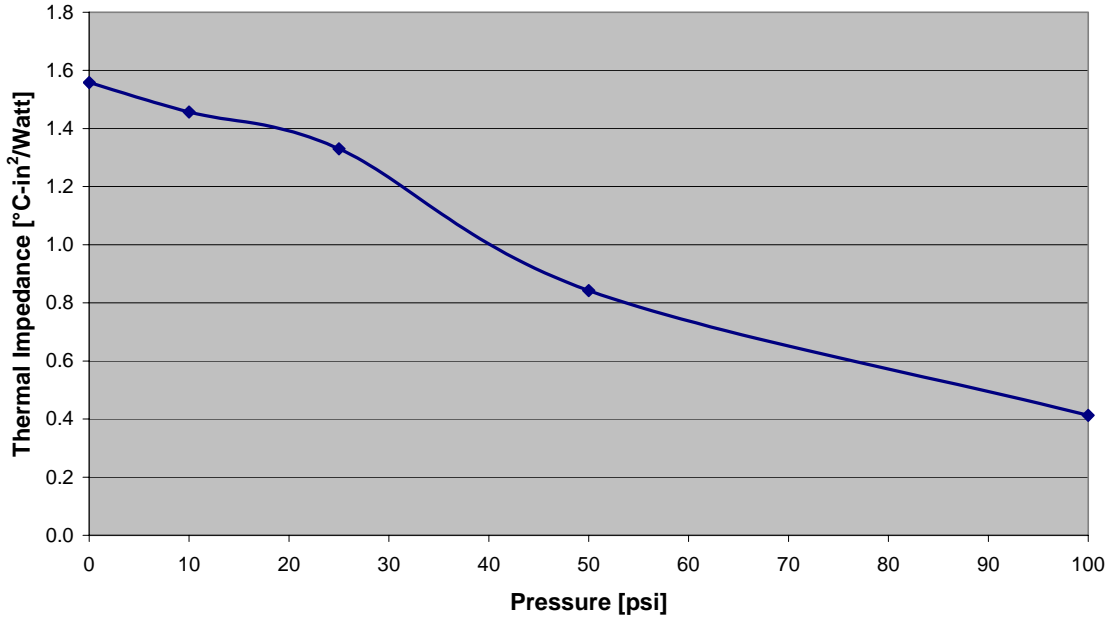


Appendix A: Typical Properties

G579 Typical Properties			
Physical	Color		Pink
	Carrier		A or G
	Standard Thicknesses, inch (mm)		0.020-0.20 (0.5-5.0)
	Specific Gravity		2.9
	Hardness, Shore 00		30
	Extractable Silicone %		6
	Continuous Use Temperature °C		-55 to 200
	Percent Deflection at Various Pressures		5 psi (34 kPa)
10 psi (69 kPa)			33
25 psi (172 kPa)			55
50 psi (345 kPa)			68
Thermal	Thermal Impedance, °C-in ² /W (°C-cm ² /W) at 10 psi (69 kPa) and 0.040 in (1 mm) thick		0.7 (4.5)
	Apparent Thermal Conductivity, W/m-K		3.0
	Heat Capacity, J/g-K		1
	Coefficient of Thermal Expansion, ppm/K		150
Electrical	Dielectric Strength, Vac/mil (Kvac/mm)		200 (8)
	Volume Resistivity, ohm-cm		10 ¹⁴
	Dielectric Constant at 1,000 kHz		8.0
	Dissipation Factor at 1,000 kHz		0.010
Regulatory	Flammability Rating		V-0
	RoHS Compliant		Yes
	Outgassing, % TML (%CVCM)		0.19 (0.06)
	Shelf Life, years from date of manufacture		2

Appendix B: G579 Thermal Impedance vs Pressure

**G579 100 mil (2.54mm)
Thermal Impedance vs Pressure**



Appendix C: A579 Compression Deflection After High Temperature Heat Aging

