

E 960159-01

Title: SPECIFICATION FOR VITON VACUUM BAKEOUT

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SPECIFICATION FOR VITON VACUUM BAKEOUT

LIGO VACUUM EQUIPMENT

Hanford, Washington and Livingston, Louisiana

JOB NO. V59049

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PROCESS SYSTEMS INTERNATIONAL, INC.				SPECIFICATION	
INITIAL APPROVALS	PREPARED	DATE	Approved	DATE	Number: A V049-2-122
	Sm	5/4/96	RES	5/4/96	Rev. 1

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1.0 PURPOSE

The purpose of this specification is to outline the procedure to be used to vacuum bake Viton O-rings for UHV service.

2.0 GENERAL

This specification will be periodically updated as bakeout parameter data becomes available. Testing will be performed by PSI to develop a bakeout procedure that yields the best properties for Viton O-rings in UHV service, namely, low outgassing and high reliability.

3.0 RESPONSIBILITY

It shall be the responsibility of the project engineer , PSI manufacturing , and QA personnel assigned to the Viton bakeout program to ensure that all procedures required by this specification are performed. Data sheets and test results for each lot of Viton that is processed will be signed and archived for future reference.

4.0 VITON BAKEOUT PROCEDURE

1. Prepare the following Viton bakeout system equipment for operation:
 - Vacuum oven
 - Vacuum pump
 - GN2 purge system
 - Instrumentation and controls
2. Load the Viton O-rings into the vacuum oven using clean room techniques to prevent contamination of the oven or Viton. *Log lot no., quantities and sizes.*
3. Close up oven.
4. Start rough pumping oven *.Log time and ambient temperature.*
5. Continue rough pumping until pressure reaches ~ 1 torr. *Log time, oven pressure.*
6. Start GN2 purge flow maintaining the oven pressure between 1 torr and 6 torr. It may be necessary to throttle the vacuum pump inlet valve.

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7. When oven pressure appears to have leveled off, start heating the oven. The temperature set point is 150.C. *Log time, temp., oven pressure.*

Caution! *Dangerous byproducts may be formed if Viton is heated to a temperature greater than 200C*

8. Once the temperature set point is achieved, the goal is to maintain this temperature for 12 to 16 hours. Adjust the purge flow, as required, to maintain the oven pressure between 1 torr and 6 torr. It may be necessary to throttle the vacuum pump inlet valve.

9. Cooldown requires that the temperature is slowly ramped down at 30.C/hr. The oven pressure may drop during cooldown. This is normal and requires no operator action. *Log time, set point, temperature, pressure every 2 hours.*

10. Cooldown is complete when the oven temperature is at ambient and the pressure has been stable for 1 hour. *Log final readings when cooldown is complete.*

11. Isolate oven and shutdown vacuum pumps.

12. Vent oven with GN2.

13. Vent vacuum pumps with GN2.

14. Shutdown purge flow system.

15. Remove Viton O-rings from the oven using clean room procedures. Visually inspect, bag and label the O-rings. Check and log the durometer of one O-ring from the batch. Note: after an O-ring has been baked, the suffix "V" in the O-ring part number must be deleted. This indicates that the O-ring is ready for vessel assembly.

16. Clean the vacuum oven in preparation for the next lot.

Caution! *Deposits found in the oven or piping should be considered hazardous waste and must be handled and treated accordingly.*

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VITON BAKEOUT DATA SHEET

Lot no. _____ Size _____ Quan. _____ Durometer _____
 Date _____ Size _____ Quan. _____ Durometer _____
 By _____ Size _____ Quan. _____ Durometer _____

	1	2	3	4	5	6	7
Date/Time							
Operator							
Temperature							
Set Point							
Oven							
Pressure							
Purge							
Oven							
Pump							
Flow							
Purge							

Remarks _____

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