

To ensure objective data, we use measurements from authoritative government organizations.
This data was measured by KITECH (Korea Industrial Technology Institute), a research organization run by the Korean government.

Below is the web address of KITECH.

<https://eng.kitech.re.kr/main/>

<https://www.kitech.re.kr/main/>

우리는 객관적인 데이터를 보장하기 위하여, 공신력이 있는 정부 기관에서 측정 하였습니다.
이 자료는 한국 정부에 의하여 운영되는 연구 기관인 KITECH (한국생산기술연구원)에서 측정한 자료 입니다.
하기는 KITECH의 Web 주소 입니다.

<https://eng.kitech.re.kr/main/>

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TGA: Thermo Gravimetric Analysis

TGA measures the weight change of the sample according to temperature while performing simultaneous thermal analysis.

In other words, you can know the amount of vaporization, evaporation, and oxidation according to the temperature.

You can estimate the temperature available at high temperatures.

TGA : Thermo Gravimetric Analysis (열중량 분석)

TGA는 열분석과 동시에 진행하면서 온도에 따른 시료의 무게 변화를 측정합니다.

즉, 온도에 따른 기화, 증발, 산화량을 알 수 있습니다.

고온에서 사용할 수 있는 온도를 추정할 수 있습니다.



Gas&Dust Sealing Specification

For Corrosive gas

Carrier fluid: Perfluore Polyether [PFPE]

Item	Saturation Magnetization	Viscosity	Vapor Pressure		Torr· L/s Helium gas leak	1 wt/% loss Temp. (TGA)	Pour point	Density
Model	Gauss	mPa.sec (cP) at 27°C	Pa at 20°C	Torr mmHg. at 20°C	Less than 1E-11	°C	°C	g/cm ³
MFF-M4251	420	5,100	<1.5E-11	<1.2E-12	Ok	>280	<-40	2.198
MFF-M5070	500	7,000	<1.5E-11	<1.2E-12	Ok	>280	<-40	2.240

*1 wt/% loss Temp. (TGA): The temperature at which 1% of the weight is reduced by evaporation or vaporization during heating.
(Measurement conditions: Heat up 10°C per minute with a TGA measuring instrument)

*Actual operating temperature varies depending on conditions such as temperature applied to the ferrofluid, RPM, shaft diameter, and operating time.
Please determine the operating temperature considering the above conditions.

*Besides the above products, we can make custom orders.

The world's best heat-resistant PFPE ferrofluid for active gases (World TOP)

A. Weight change rate & weight loss/% of the sample due to the temperature increase

(승온에 따른 시료의 무게 변화율 % 및 weight loss/ %)

***Measurement method: TGA measurement---Temperature rises by 10 degrees Celsius per minute (측정방법: TGA측정---1분당 10°C씩 승온함)

Company	Model No	Gauss/cP at 27°C	Carrier fluid	Usage environment	50°C		100°C			150°C		200°C		250°C		300°C	
					Sample Weight %	Weight loss/ %	Sample Weight %	Weight loss/ %		Sample Weight %	Weight loss/ %	Sample Weight %	Weight loss/ %	Sample Weight %	Weight loss/ %	Sample Weight %	Weight loss/ %
MAGRON	MFF-M4251	420/5100	PFPE	For active gas	99.990	-0.010	99.910	-0.090		99.760	-0.240	99.600	-0.400	99.340	-0.660	98.550	-1.450
MAGRON	MFF-M5070	500/7000	PFPE		99.980	-0.020	99.600	-0.400		99.640	-0.360	99.350	-0.650	99.120	-0.880	98.440	-1.560

weight loss /% (°C)		
-1%	-2%	-5%
282°C	310°C	324°C
280°C	305°C	323°C

**Reference---Comparative data from other companies (참고 ---타사 비교자료)

L*** (England)	F9	450/5000	PFPE	For active gas	99.973	-0.027	99.817	-0.183		99.357	-0.643	98.102	-1.898	92.622	-7.378	78.144	-21.856
M*** (Japan)	MFF-03	550/6200	PFPE		99.996	-0.004	99.833	-0.167		99.500	-0.500	98.559	-1.441	91.162	-8.838	65.352	-34.648
S*** (Japan)	F-310	400/3500	PFPE		99.917	-0.083	99.633	-0.367		99.354	-0.646	98.296	-1.704	93.332	-6.668	78.852	-21.148

176°C	201°C	233°C
185°C	210°C	237°C
158°C	194°C	241°C

B. Change in sample weight % due to isothermal temperature

***Measurement method: TGA measurement-

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Isothermal conditions : (100°C x 1HR)+(150°C x 1HR)

(등온에 따른 시료 무게 변화율 %)

Temperature band and (Elapsed time)	Weight %	
MAGRON / Model No	MFF-M4251	MFF-M5286
Beginning 100°C (7.3 minutes)	100	99.92
After 100°C x 30minutes (37.3 minutes)	99.85	99.55
After 100°C x 1Hour (67.3 minutes)	99.84	99.52
Beginning 150°C (72.3 minutes)	99.87	99.50
After 150°C x 30minutes (102.3 minutes)	99.76	99.41
After 150°C x 1Hour (132.3 minutes)	99.74	99.38

**Reference---Comparative data from other companies
(참고 ---타사 비교자료)

Isothermal conditions : 150°C x 1H
R

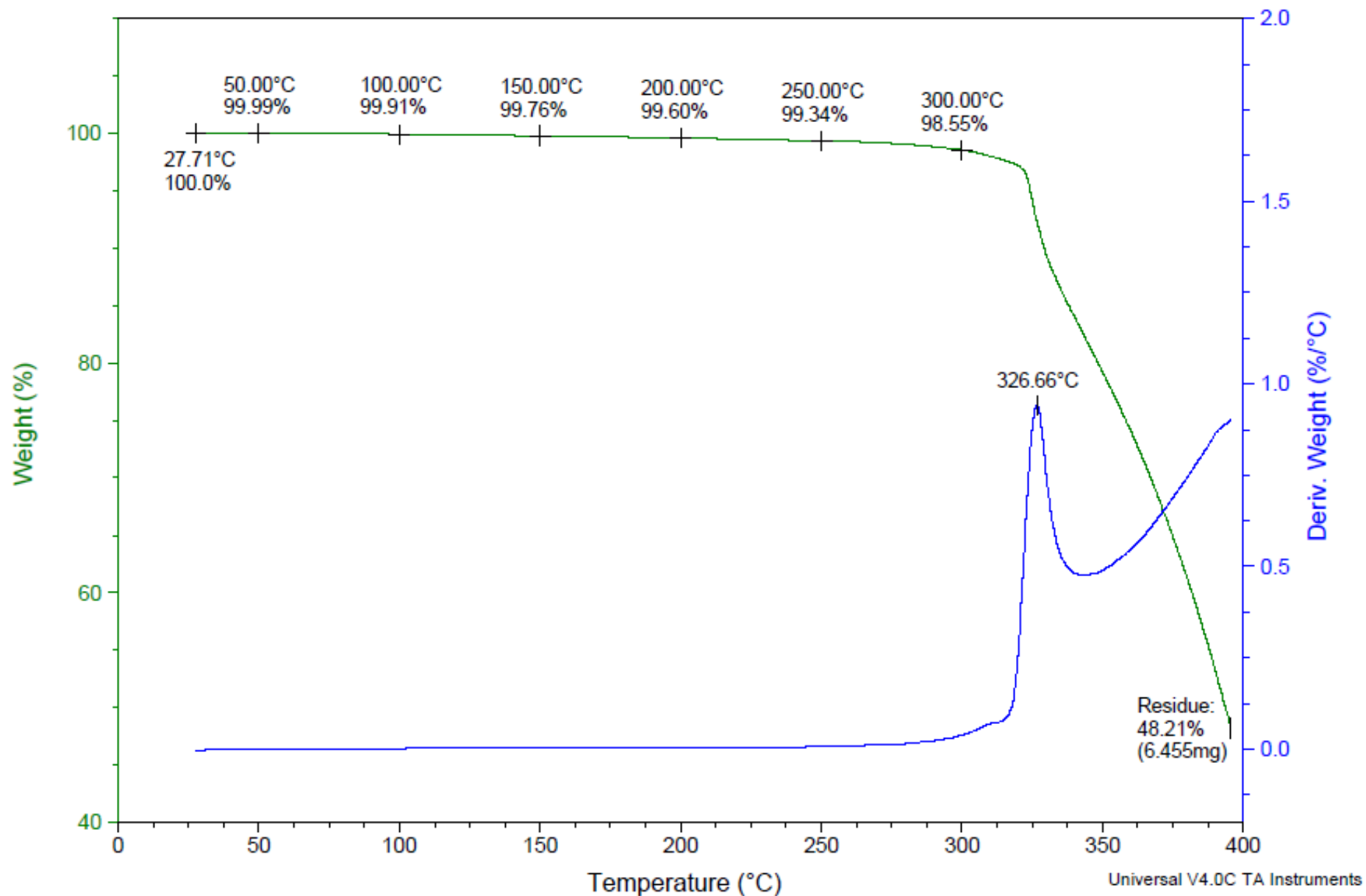
Temperature band and (Elapsed time)	Weight %	
MAGRON / Model No	MFF-M4251	MFF-M5286
After 100°C x 1Hour (67.3 minutes)	99.84	99.52
After 150°C x 1Hour (132.3 minutes)	99.74	99.38

Temperature band and (Elapsed time)	Weight %
Company: Liquids*** (England) / Model No.	F9
After 150°C x 1Hour (63 minutes)	96.53

Sample: [Magron] MFF-M4251 (ramp)
Size: 13.3900 mg
Method: RT to 400 by 10 /min

TGA

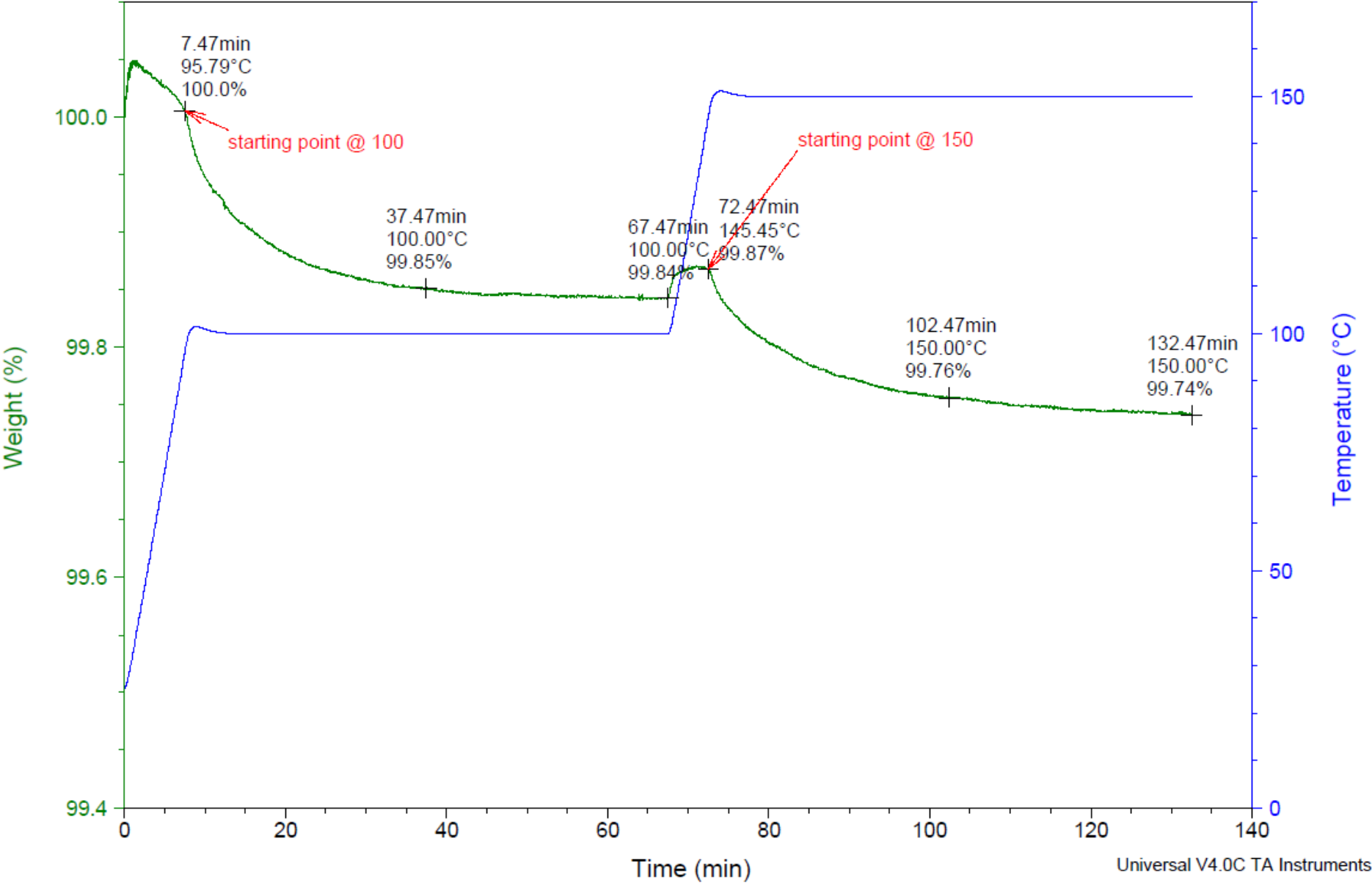
File: C:\...[Magron] MFF-M4251 (ramp).001
Operator: KITECH
Run Date: 2024-06-05 16:40
Instrument: TGA Q500 V6.2 Build 187



Sample: [Magron] MFF-M4251 (isotherm)
Size: 12.6360 mg
Method: 100 (1h) and 150 (1h) isotherm

TGA

File: ...[Magron] MFF-M4251 (isotherm).001
Operator: KITECH
Run Date: 2024-06-06 04:08
Instrument: TGA Q500 V6.2 Build 187

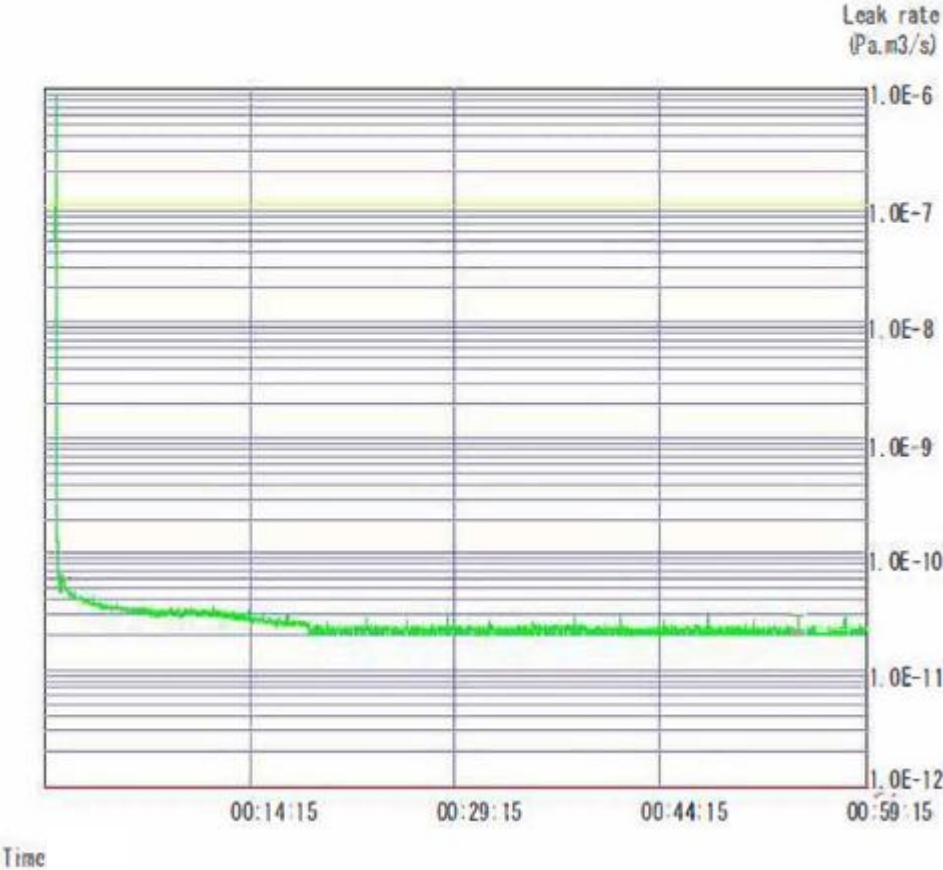


MFF-M4251 Leak test data

Storing Datetime : 2024/07/03 14:59:49
Output Datetime : 2024/07/03 15:59:05

Setpoint1 : 1.0E-07 Setpoint2 : 1.0E-12

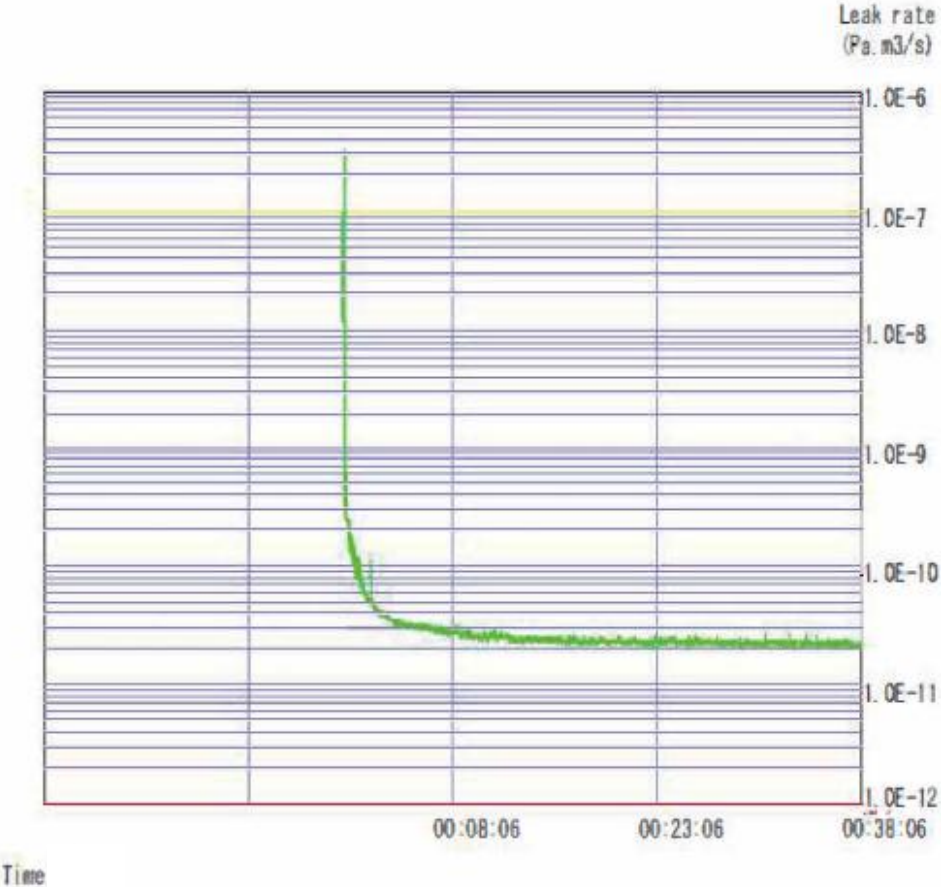
Initial residual gas release (Degassing)



Storing Datetime : 2024/07/03 14:20:50
Output Datetime : 2024/07/03 14:58:56

Setpoint1 : 1.0E-07 Setpoint2 : 1.0E-12

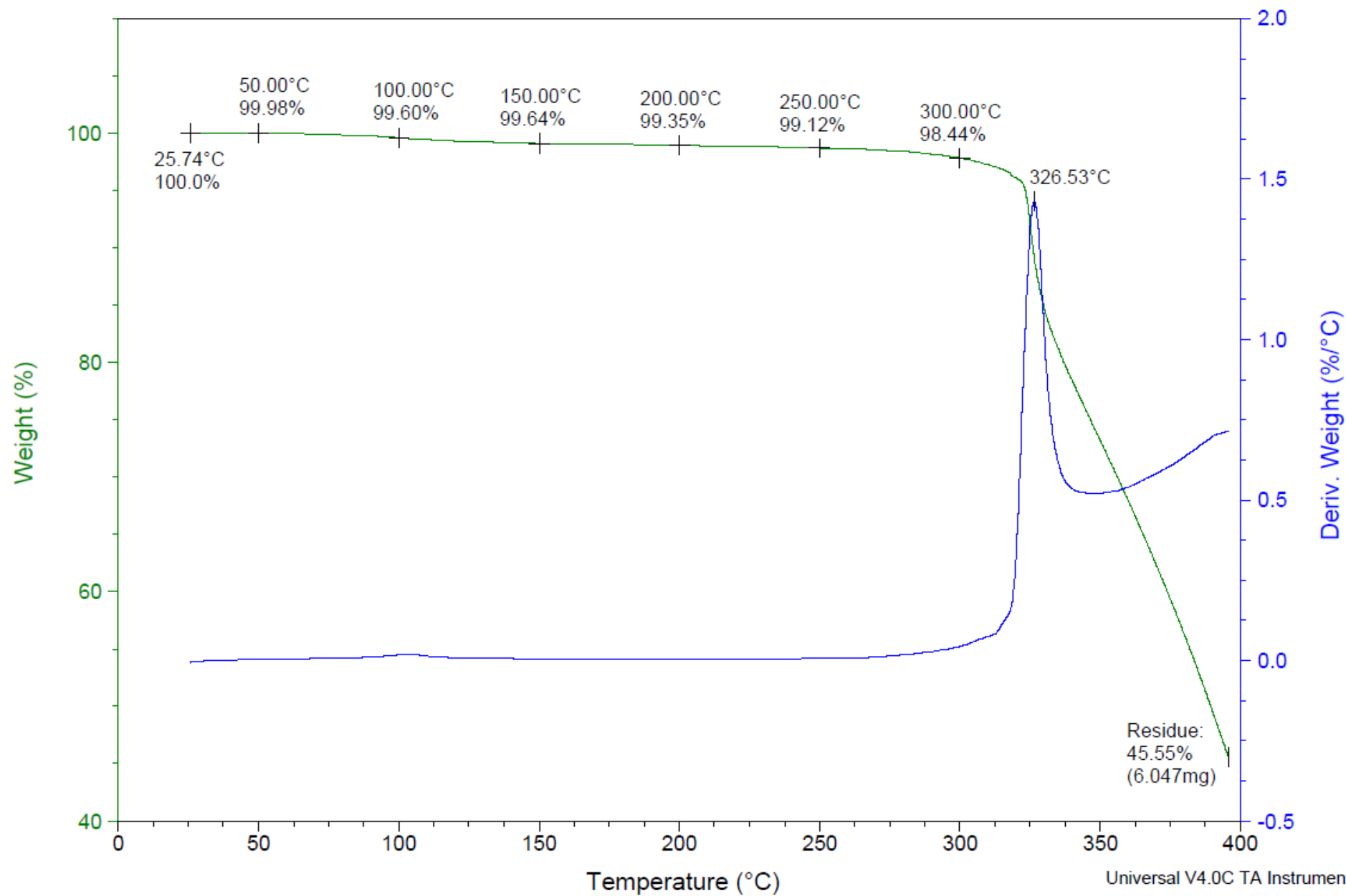
Main leak test data



Sample: [Magron] MFF-M5070 (ramp)
Size: 13.2770 mg
Method: RT to 400 by 10 /min

TGA

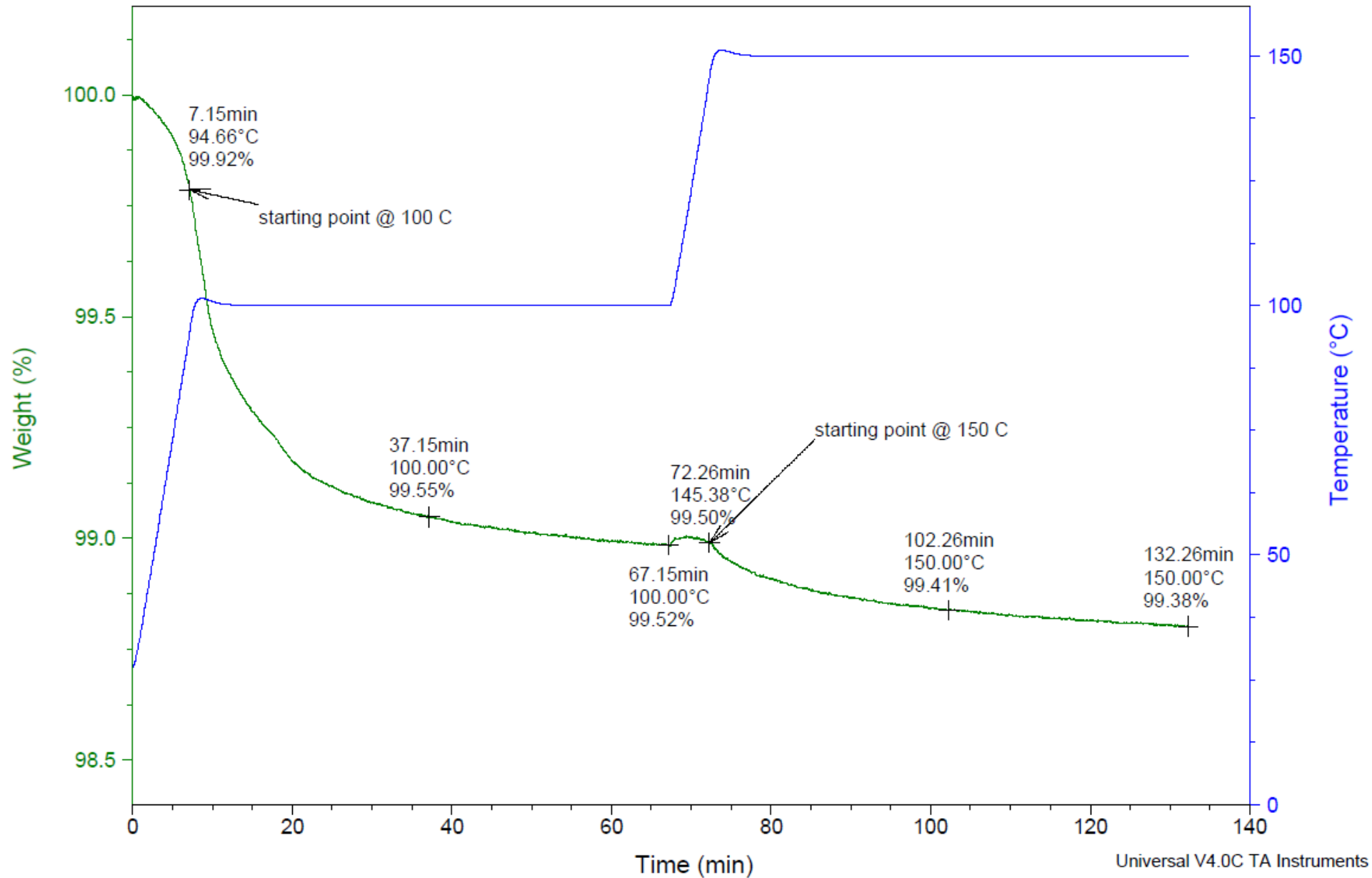
File: C:\...\[Magron] MFF-M5070 (ramp).001
Operator: KITECH
Run Date: 2024-09-10 09:22
Instrument: TGA Q500 V6.2 Build 187



Sample: [Magron] MFF-M5070 (isothermal)
Size: 14.3660 mg
Method: 100 (1h) and 150 (1h) isotherm

TGA

File: C:\...\[Magron] MFF-M5070 (isothermal).001
Operator: KITECH
Run Date: 2024-09-10 12:24
Instrument: TGA Q500 V6.2 Build 187

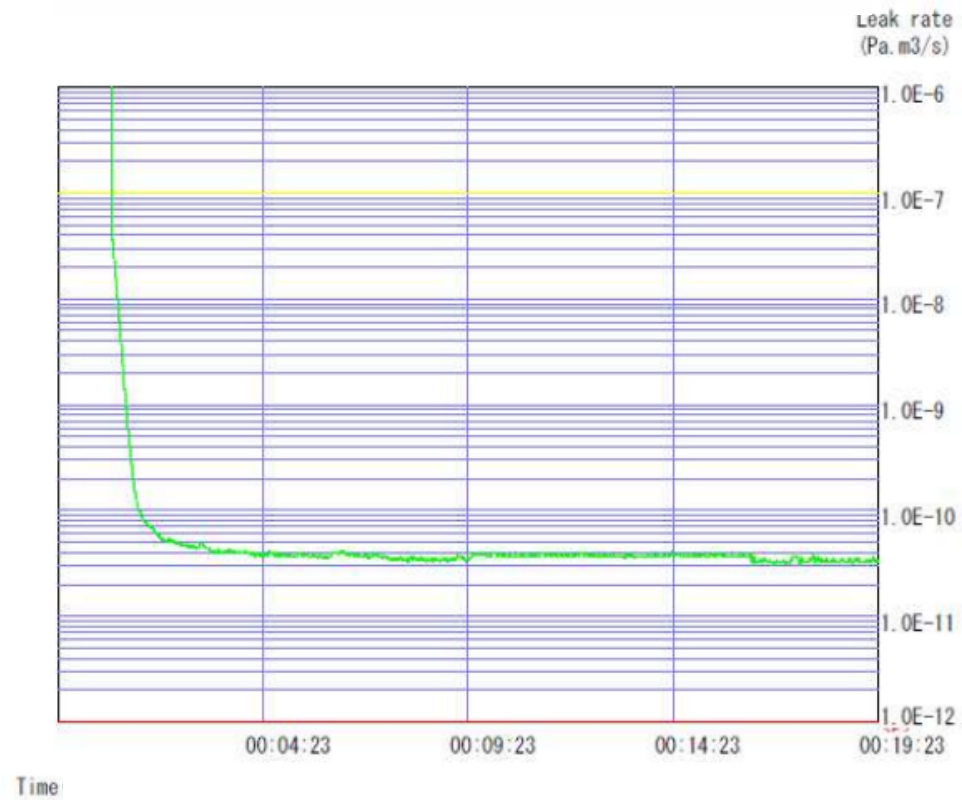


MFF-M5070 Leak test data

Storing Datetime : 2024/09/11 10:16:36
Output Datetime : 2024/09/11 10:36:00

Setpoint1 : 1.0E-07 Setpoint2 : 1.0E-12

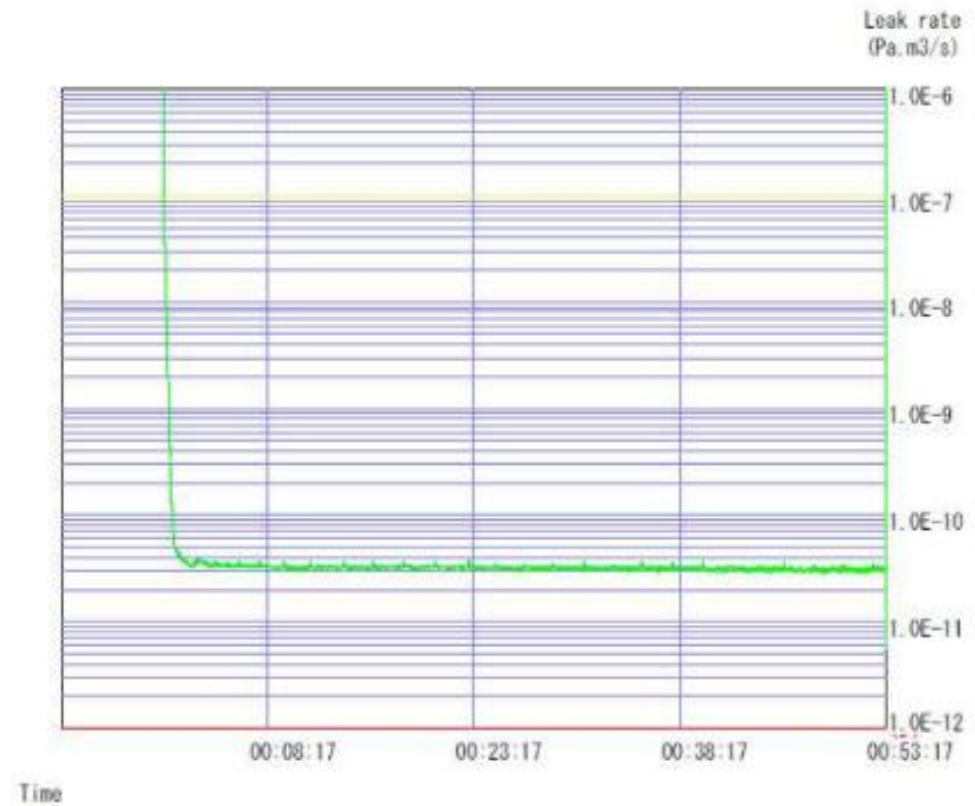
Initial residual gas release (Degassing)



Storing Datetime : 2024/09/11 11:27:51
Output Datetime : 2024/09/11 12:21:08

Setpoint1 : 1.0E-07 Setpoint2 : 1.0E-12

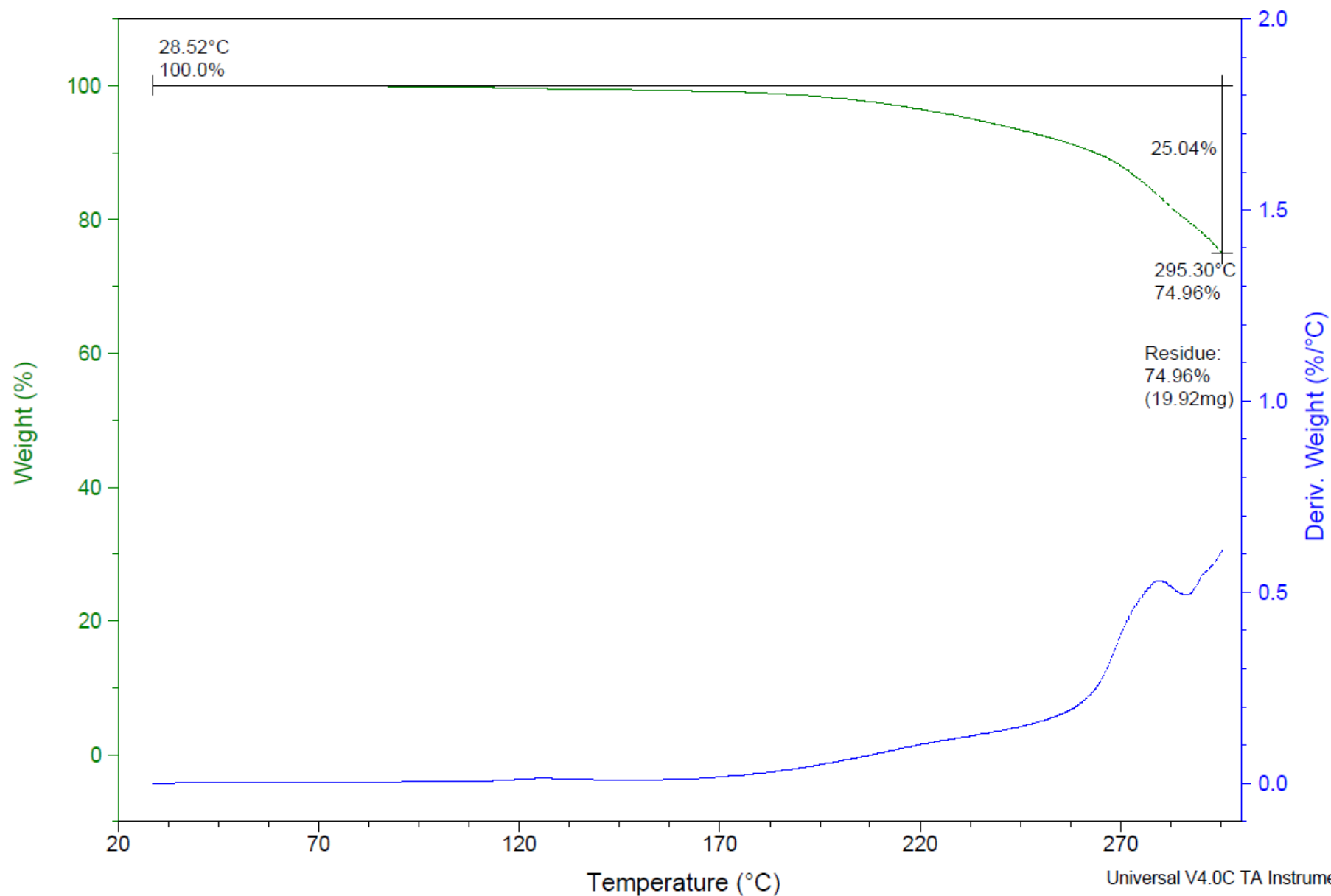
Main leak test data



Sample: [MAGRON] F9
Size: 26.5810 mg
Method: RT->300 by 10 /min

TGA

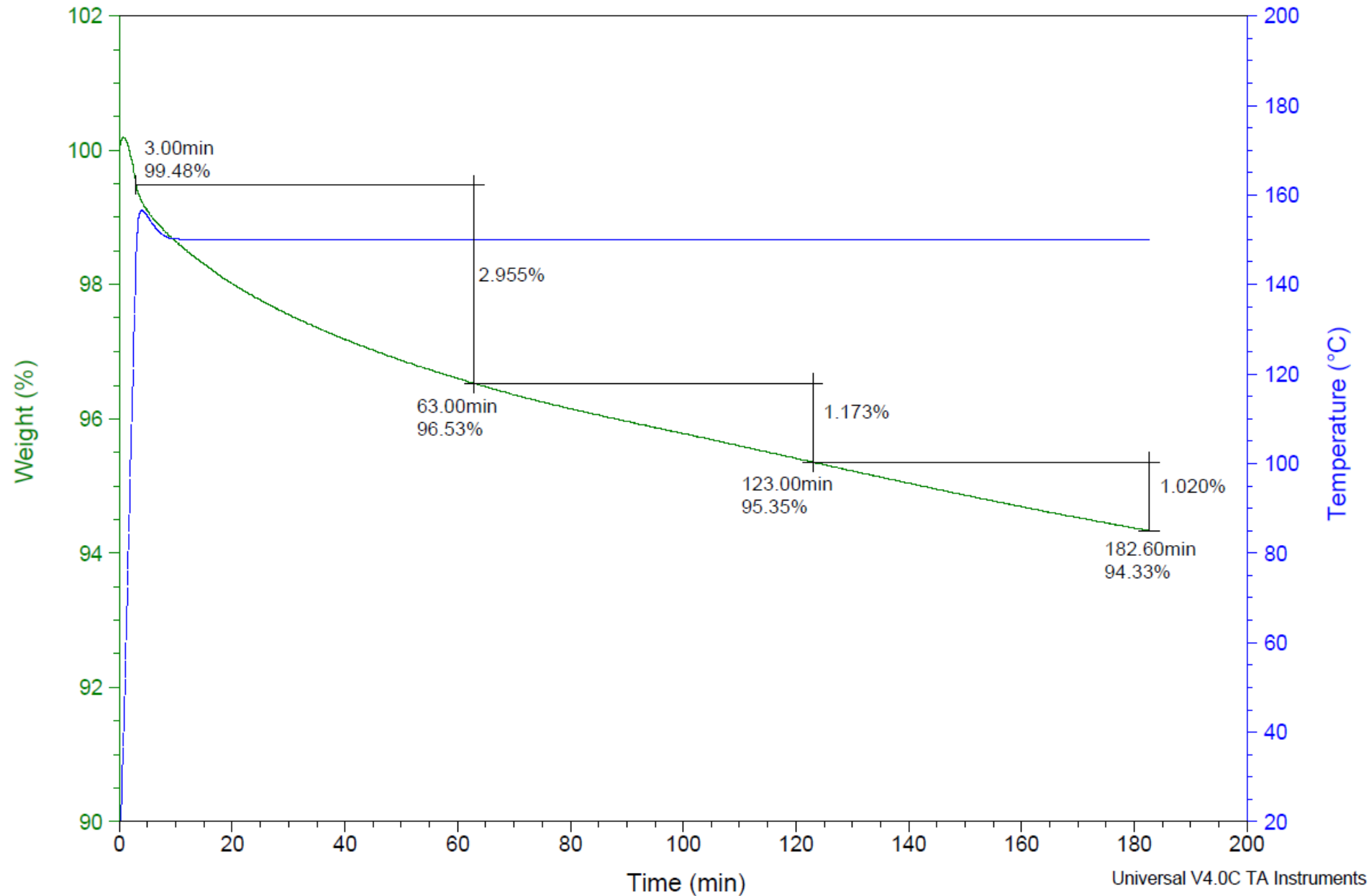
File: C:\...TGA\2023\10\MAGRON[MAGRON] F9.001
Operator: KITECH
Run Date: 2023-10-20 11:41
Instrument: TGA Q500 V6.2 Build 187



Sample: [MAGRON] F9
Size: 10.2710 mg
Method: 150, isothermal 180min

TGA

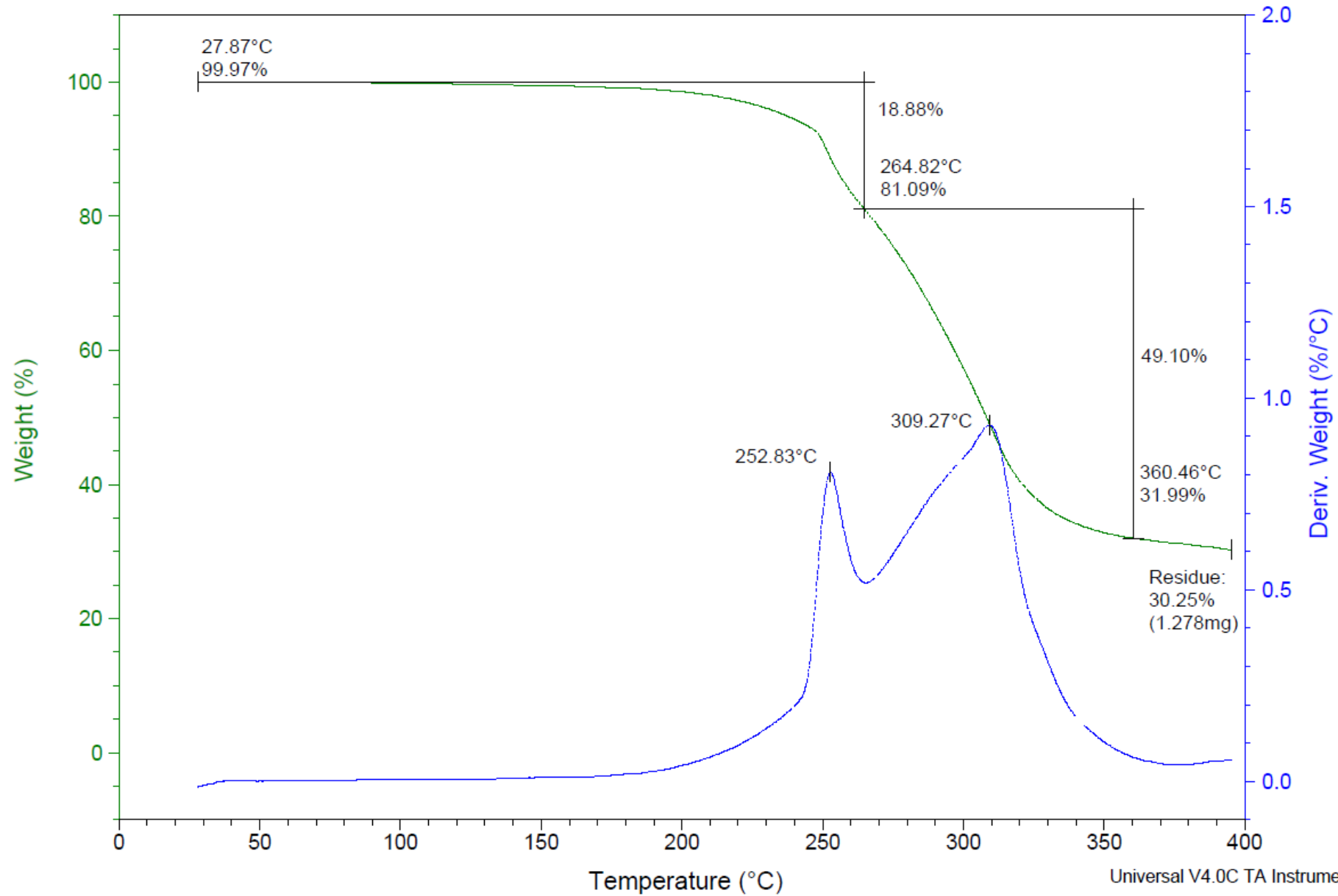
File: C:\...\11\1116_MAGRON[MAGRON] F9.001
Operator: KITECH
Run Date: 2023-11-21 09:27
Instrument: TGA Q500 V6.2 Build 187



Sample: [MAGRON] MFF-03
Size: 4.2230 mg
Method: RT->400, @ 10C/min

TGA

File: C:\...\11\1128_MAGRON\MAGRON] MFF-03.00
Operator: KITECH
Run Date: 2023-11-28 11:15
Instrument: TGA Q500 V6.2 Build 187



Sample: [마그론]F310.
Size: 6.6400 mg
Method: RT->400°C by 10°C/min

TGA

File: C:\...\2023\07\0720_마그론[마그론]F310.
Operator: KITECH
Run Date: 24-Jul-2023 12:06
Instrument: TGA Q500 V6.2 Build 187

