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Tank 241-S-109, Cores 158 and 160, Analytical Results for the 45 day Report

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Westinghouse Hanford Company, Richland, WA 99352
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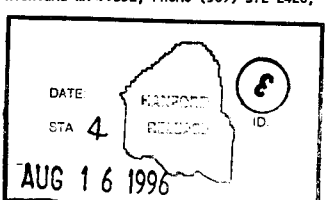

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ANALYTICAL SERVICES

TANK 241-S-109
ANALYTICAL RESULTS
FOR THE 45 DAY REPORT

Project Coordinator: LARRY L. FRITTS

Prepared for the U.S. Department of Energy
Office of Environmental Restoration
and Waste Management

by

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Richland, Washington

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TABLE OF CONTENTS

Narrative 1

S-109 Sample Breakdown (Attachment I) 13

Sample Data Summary 28

Inorganic Analyses 43

Differential Scanning Calorimetry (DSC)
DSC Worklist # 11173 (3734, 3759) 45
DSC Worklist # 11174 (3760, 3800) 52
DSC Worklist # 11175 (3801, 3839) 58
DSC Worklist # 11176 (3922, 3923) 64
DSC Worklist # 11177 (3924, 3925) 71
DSC Worklist # 11178 (3926, 3927) 78
DSC Worklist # 11309 (4017) 84
DSC Worklist # 11599 (3734, 3800, 3801, 3839, 3859, 3760, 3922) . . . 88
DSC Worklist # 11600 (3923, 3924, 3925, 3926, 3927, 4017) 89
DSC Worklist # 11661 (4023, 4033) 90
DSC Worklist # 11664 (4035, 4036) 96
DSC Worklist # 11699 (4035, 4036, 4023, 4033) 104

Thermogravimetric Analysis (TGA)
TGA Worklist # 11163 (3734, 3759) 105
TGA Worklist # 11164 (3760, 3800) 112
TGA Worklist # 11165 (3801, 3839) 118
TGA Worklist # 11166 (3922, 3923) 124
TGA Worklist # 11167 (3924, 3925) 131
TGA Worklist # 11168 (3926, 3927) 138
TGA Worklist # 11307 (4017) 144
TGA Worklist # 11654 (4023, 4033) 148
TGA Worklist # 11657 (4035, 4036) 154

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NARRATIVE

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222-S ANALYTICAL SERVICES

TANK 241-S-109, CORES 158 AND 160, ANALYTICAL RESULTS FOR THE 45 DAY REPORT

Summary

This document is the 45-day laboratory report for tank 241-S-109. Push mode core segments were removed from risers 14 and 16 between June 21, 1996, and July 3, 1996. Segments were received and extruded at the 222-S Analytical Laboratory. Analyses were performed in accordance with the *Tank 241-S-109 Push Mode Core Sampling and Analysis Plan* (TSAP) for this tank (Field, 1996) and the Safety Screening Data Quality Objective (DQO) (Dukelow, et al., 1995).

None of the subsamples submitted for Total Alpha Activity (AT) analysis or Differential Scanning Calorimetry (DSC) exceeded the action limits as stated in the Safety Screening Data Quality Objective (Dukelow, et al., 1995).

Primary safety screening results are included in the data summary table (Table 1). The raw data from DSC and TGA analyses are included in this report.

Appearance and Sample Handling

Two cores of twelve segments were expected from this tank. Sampling problems prevented the acquisition of complete cores.

Attachment 1 is a cross reference to relate the tank farm identification numbers to the 222-S Laboratory LabCore sample numbers. The subsamples generated in the laboratory for analysis are identified in these diagrams with their sources shown.

Core 158

Seven push mode core segments were removed from tank 241-S-109 riser 14 between June 21, 1996, and June 27, 1996. All segments were received by the 222-S Laboratory between July 11, 1996, and July 16, 1996. Table 2 summarizes the extrusion information.

Core 160

Five push mode core segments were removed from tank 241-S-109 riser 16 between July 2, 1996, and July 3, 1996. All segments were received by the 222-S Laboratory between July 9, 1996, and July 12, 1996. Table 3 summarizes the extrusion information.

Field Blank
A field blank was provided to the 222-S Laboratory with core 160. This sample was treated as a drainable liquid in accordance with the TSAP.

Liner Liquid
The liner liquid recovered during extrusions will be analyzed by Inductively Coupled Plasma (ICP) spectroscopy and Ion Chromatography (IC) only. The results will be reported in a revision to this document.

Table 2. Sample Receipt and Extrusion Information for S-109, Core 158.

Customer Id	Segment	Date Sampled	Date Received	Date Extruded	Inches Extruded*	Liquid Recovered (g)	Solids Recovered (g)	Sample Description
96-362	1	6/21/96	7/11/96	7/19/96	8.0	0.0	120.3--upper half 57.5--lower half	The upper half solids were gray and resembled a moist crumbly saltcake. The lower half solids were yellow and resembled a moist crumbly saltcake.
96-363	2	6/24/96	7/11/96	7/16/96	3.0	60.8--liner	38.9--lower half	The solids were yellow and resembled a dry crumbly saltcake. The liner liquid was dark gray and opaque.
96-363A	2A	6/24/96	7/11/96	7/22/96	2.0	0.0	23.9--lower half	The solids were light yellow with small gray pieces and resembled a dry saltcake.
96-363B	2B	6/24/96	7/11/96	7/16/96	5.0	0.0	43.6--upper half 20.9--lower half	The upper half solids were bluish-gray and resembled a moist saltcake. The lower half solids were light yellow and resembled a moist saltcake.
96-364	3	6/25/96	7/11/96	7/19/96	5.0	116.2--liner	77.5--upper half 51.1--lower half	The upper half solids were gray-white and resembled a dry saltcake. The lower half solids were yellow and resembled a dry saltcake. The liner liquid was light gray and opaque.
96-364A	3A	6/26/96	7/16/96	7/19/96	5.0	0.0	107.2--lower half	The solids were yellow with a light gray tint on the upper end and resembled a dry crumbly saltcake.
96-365	4	6/27/96	7/16/96	7/19/96	5.0	0.0	80.9--lower half	The solids were light gray-white and resembled a flaky, moist saltcake.

*Approximate Inches Extruded

Table 3. Sample Receipt and Extrusion Information for S-109, Core 160.

Customer Id	Segment	Date Sampled	Date Received	Date Extruded	Inches Extruded*	Liquid Recovered (g)	Solids Recovered (g)	Sample Description
Field Blank	Field Blank	7/8/96	7/12/96	7/22/96	0.0	242.9--drainable	0.0	The drainable liquid was clear and colorless.
96-378	1	7/2/96	7/9/96	7/16/96	6.0	0.0	61.7--lower half	The solids were gray-white and resembled a dry saltcake.
96-379	2	7/2/96	7/9/96	7/16/96	6.0	0.0	77.0--lower half	The solids were light yellow with a small amount of light greenish-gray crystals and resembled a dry saltcake.
96-379A	2A	7/2/96	7/9/96	7/16/96	1.0	15.0--liner	6.0--lower half	The lower half solids were light yellow with a slight green tint and resembled a fine, crumbly, dry saltcake. The liner liquid was dark gray and opaque.
96-379-B	2B	7/2/96	7/11/96	7/22/96	3.5	125.2--liner	30.0--upper half 32.5--lower half	The liner liquid had a slight yellow color and was opaque. The upper half solids were yellow with a gray tint and resembled a dry, crumbly saltcake. The lower half solids were gray and resembled a dry, crumbly saltcake.
96-379C	2C	7/3/96	7/12/96	7/22/96	Unmeasurable	68.8--drainable	Unmeasurable	The drainable liquid was green and opaque. The solids were gray and resembled a wet salt. Separation of solids and liquids was not possible. All of the sample was subsampled as drainable liquid. The filtered solids will be archived.

*Approximate Inches Extruded

Analytical Results Summary

The data summary table (Table 1) included in this report compiles the safety screening analytical results and applicable notification limits associated with each subsample submitted.

Differential Scanning Calorimetry (DSC)

None of the subsamples submitted for Differential Scanning Calorimetry (DSC) exceeded the action limits as stated in the TSAP.

The DSC analyses were performed in duplicate on direct subsamples. The exothermic energy based on dry weight of subsample was calculated for all subsamples. The average of the thermogravimetric analysis (TGA) results for each subsample was used in the dry weight correction for that subsample.

Relative percent differences (RPD) greater than 20% were reported for four of the sixteen subsamples. These were the result of small exotherms and sample inhomogeneity. The results for these subsamples were near the detection limit for the instrument; at these levels precision is compromised. No further analysis of these subsamples was requested.

The field blank average result was 0.00 J/g. Standard recovery criterion was met for all subsamples.

Thermogravimetric Analysis (TGA)

The TGA analyses were performed in duplicate on direct subsamples. Typically results were determined by summing weight loss steps below 200°C; weight loss steps above this were not used to determine the result. More information may be obtained by examining the raw data.

RPDs greater than 20% were reported for five of the sixteen subsamples. These were the result of low water content and sample heterogeneity. The results for these subsamples were near the detection limit for the instrument; at these levels precision is compromised. No further analysis for these subsamples was requested. Low water content for six of the subsamples resulted in thermograms with a small scale. This small scale shows the vibrations of the balance and does not affect data quality. The cognizant chemist noted that the thermogram for sample S96T004033 (core 160, segment 2C, drainable liquid) showed several weight loss reactions occurring. All of these weight loss reactions were identified as the same peak.

The field blank average result was 99.92%. Standard recovery criterion was met for all subsamples.

Density

Bulk density was run for eleven of the fifteen solid subsamples. Subsamples S96T004016 (core 158, segment 2A, lower half), S96T003758 (core 158, segment 2B, lower half), and S96T003771 (core 160, segment 2A, lower half) did not provide enough material for a bulk density determination. Sample S96T004029 (core 160, segment 2B, lower half) was too dry to perform a bulk density measurement.

The results of the bulk density test ranged from 1.19 g/mL to 1.73 g/mL. The higher bulk density of 1.73 g/mL was used to calculate the solid total alpha activity notification limit for the tank (35.5 μCi/g).

Total alpha results for liquids do not require correction for density. The specific gravity results for the liquid subsamples will be reported in a revision to this document.

Total Alpha (AT)

The liquid AT results were below the total alpha activity notification limit of 61.5 μCi/mL. All solid AT results were below the total alpha activity notification limit of 35.5 μCi/g (based on a bulk density of 1.73 g/mL).

The AT analyses were performed in duplicate on direct subsamples for the liquids. Solid subsamples were prepared for analysis by performing a fusion digest in duplicate. The fusion digest is indicated with an "F" in the aliquot class (A#) column in the data summary table (Table 1).

An RPD greater than the precision as defined by the TSAP was reported for eight of the sixteen subsamples. Count replicate results and similar result behavior with the original analysis show this to be the result of low sample alpha activity and sample inhomogeneity. Low spike recoveries are the result of self-absorption by the solids left on the planchet after drying. The low alpha activity allowed a larger sample size to be used in the analysis; lowering the detection limit, but increasing the amount of residual solids due to the salt like nature of these subsamples. The results may be biased low by this process. Continuing reruns were not requested.

The field blank result was near the detection limit giving a sample result less than 6.61e-6 μCi/mL and a duplicate result of 3.58e-6 μCi/mL. Standard recovery criterion was met for all subsamples.

Procedures

Table 4 lists the analytical procedures used for performing the sample analyses. Abbreviations for analyses are defined in the table notes.

Table 4. Analytical Procedures

Analysis	Sample Portion	Preparation Procedure +	Analysis Procedure
DSC	Solid/Liquid	N/A	LA-514-113, Rev. C-1 LA-514-114, Rev. C-1
TGA	Solid/Liquid	N/A	LA-514-114, Rev. C-1 LA-560-112, Rev. B-1
AT	Solid Liquid	LA-549-141, Rev. F-0 N/A	LA-508-101, Rev. D-2
Bulk Density	Solid	N/A	LO-160-103, Rev. B-0

Notes:
+ = preparation procedure is for fusion digest on solid
Abbreviations:
N/A = not applicable (these are direct subsamples)
DSC = differential scanning calorimetry
TGA = thermogravimetric analysis
AT = total alpha activity

References

Dukelow, G. T., J. W. Hunt, H. Babad, and J. E. Meacham, 1995, *Tank Safety Screening Data Quality Objective*, WHC-SD-WM-SP-004, Rev. 2, Westinghouse Hanford Company, Richland, WA 99352.

Field, J. G., 1996, *Tank 241-S-109 Push Mode Core Sampling and Analysis Plan*, WHC-SD-WM-TSAP-087, Rev. 1, Westinghouse Hanford Company, Richland, WA 99352.

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ATTACHMENT I

S-102 SAMPLE BREAKDOWN

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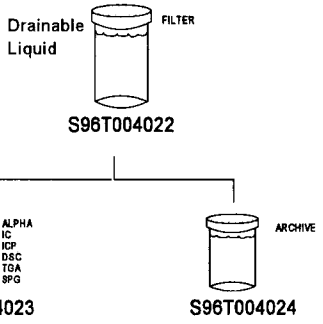
S-109
Core:160
Seg: FB (Field Blank)
S96T003694

Attachment 1
Page 1 of 13



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Core:158
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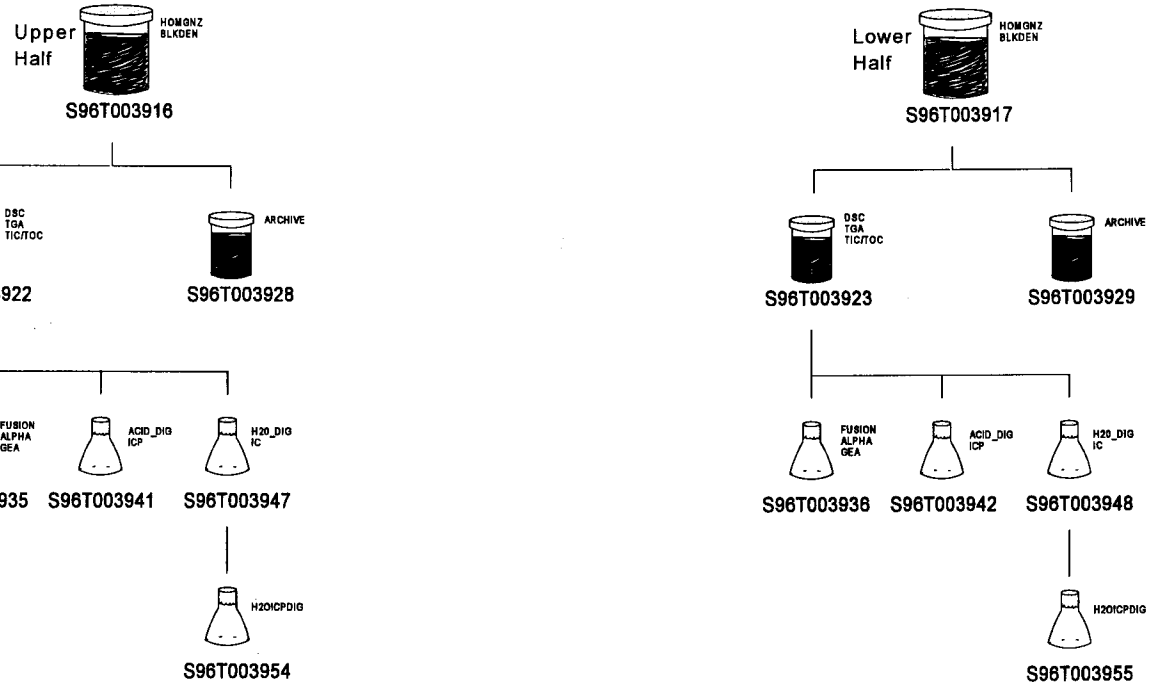
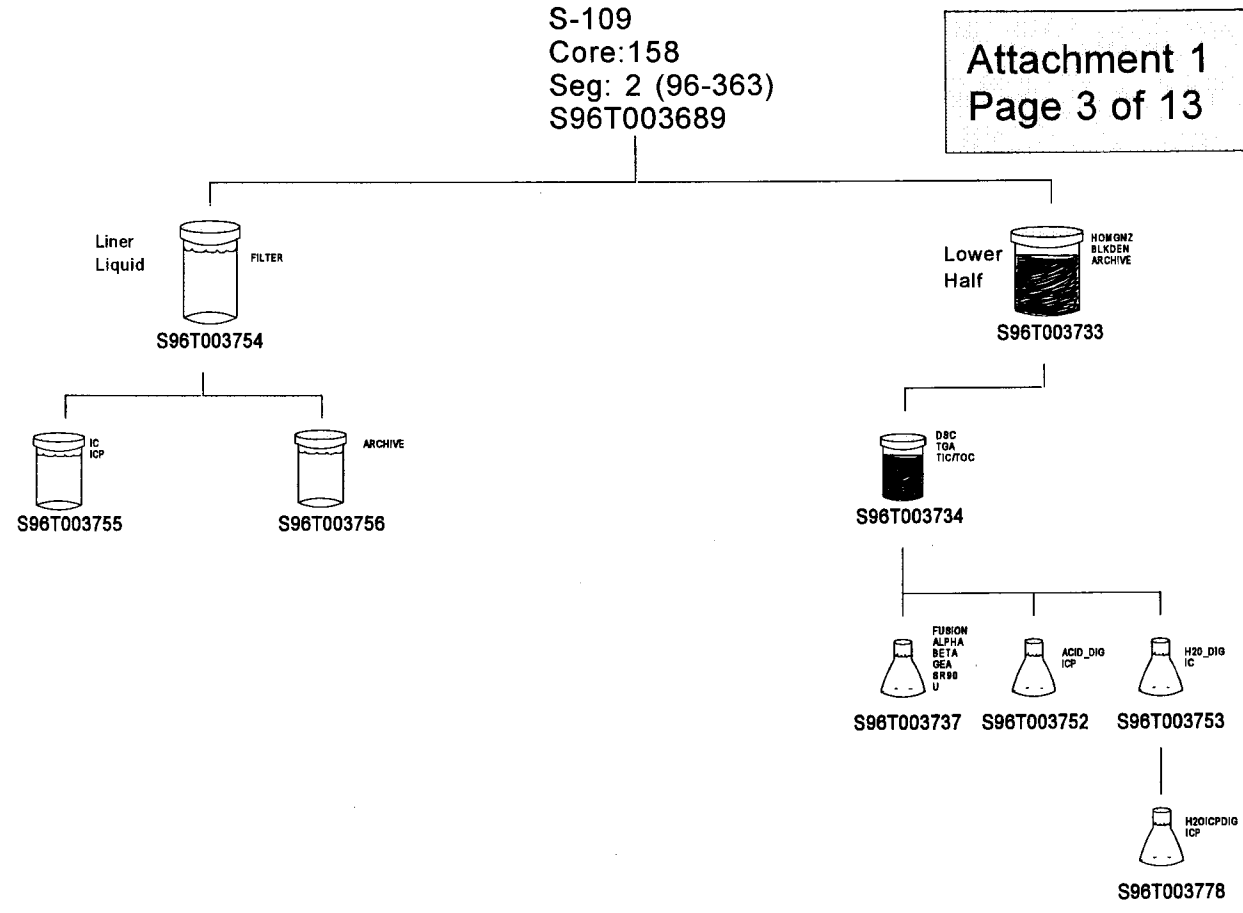
S96T003688

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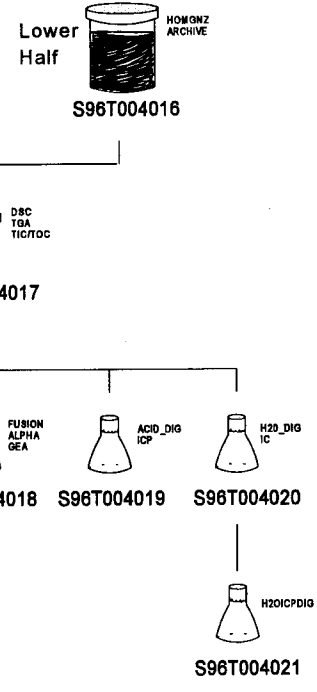
Liner
Liquid
FILTER
S96T003754
IC
ICP
S96T003755
ARCHIVE
S96T003756
Lower
Half
HOMOGNZ
BLKDEN
ARCHIVE
S96T003733
DSC
TOA
TIC/TOC
S96T003734
FUSION
ALPHA
BETA
GEA
SR90
U
S96T003737
ACID_DIG
ICP
S96T003752
H20_DIG
IC
S96T003753
H2OICPDIG
ICP
S96T003778

S-109
Core:158
Seg: 2A (96-363A)
S96T003690

Attachment 1
Page 4 of 13



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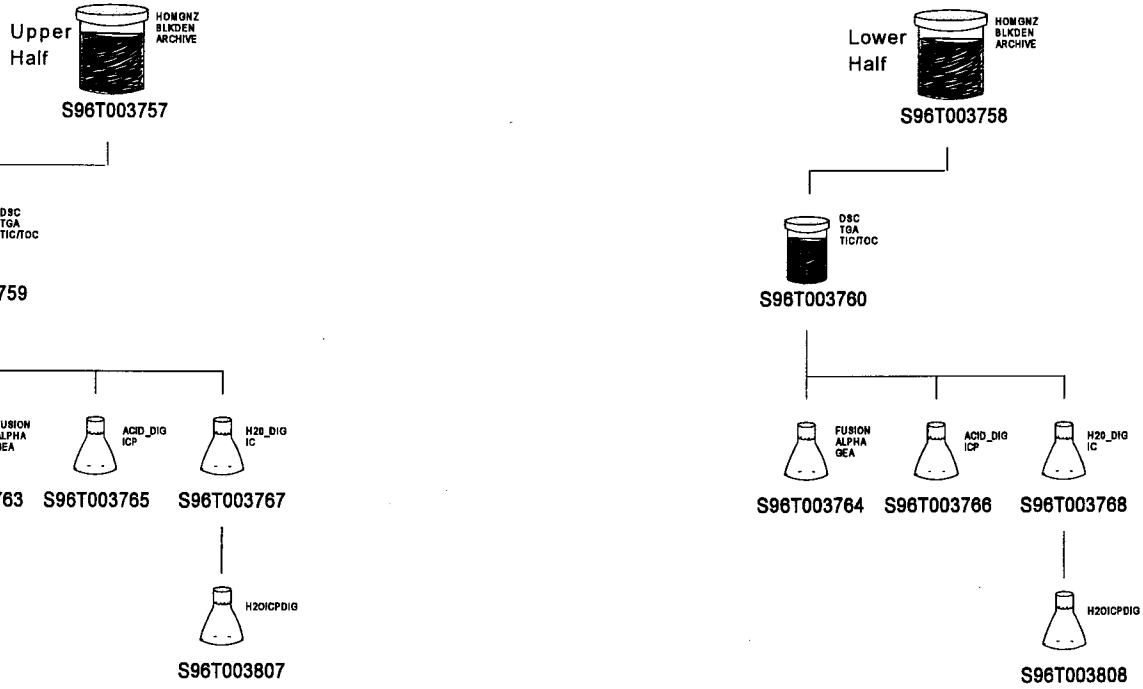
S96T003691



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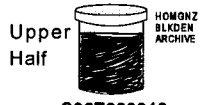
S96T003692

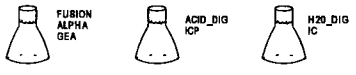


S96T003918

S96T003919

S96T003924

S96T003925



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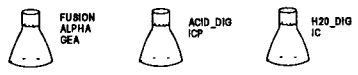
S96T003932



S96T003938 S96T003944 S96T003950

S96T003956

S96T003933 S96T003934

S96T003957

Attachment 1
Page 7 of 13

S-109
Core:158
Seg: 3A (96-364A)
S96T003729

Lower Half

HOMOGNZ BLKDEN
S96T003920

DSC TGA TIC/TOC
S96T003926

ARCHIVE
S96T003930

FUSION ALPHA GEA
S96T003939

ACID_DIG ICP
S96T003945

H2O_DIG IC
S96T003951

H2OICPDIG
S96T003958

Attachment 1
Page 8 of 13

S-109
Core:158
Seg: 4 (96-365)
S96T003730

Lower Half

HOMGNZ BLKDEN

S96T003921

DSC TGA TIC/TOC

S96T003927

ARCHIVE

S96T003931

FUSION ALPHA GEA

S96T003940

ACID_DIG ICP

S96T003946

H2O_DIG IC

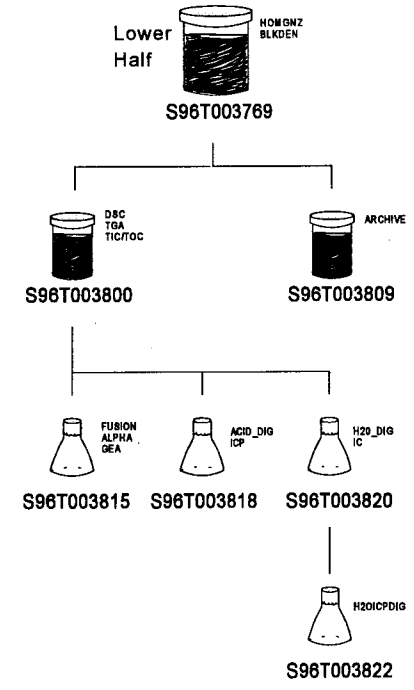
S96T003952

H2OICPDIG

S96T003959

S-109
Core:160
Seg: 1 (96-378)
S96T003671

Attachment 1
Page 9 of 13



Attachment 1
Page 10 of 13

S-109
Core:160
Seg: 2 (96-379)
S96T003672

Lower Half
HOMOGNZ BLKDEN
S96T003770

DSC TGA TIC/TOC
S96T003801

ARCHIVE
S96T003813

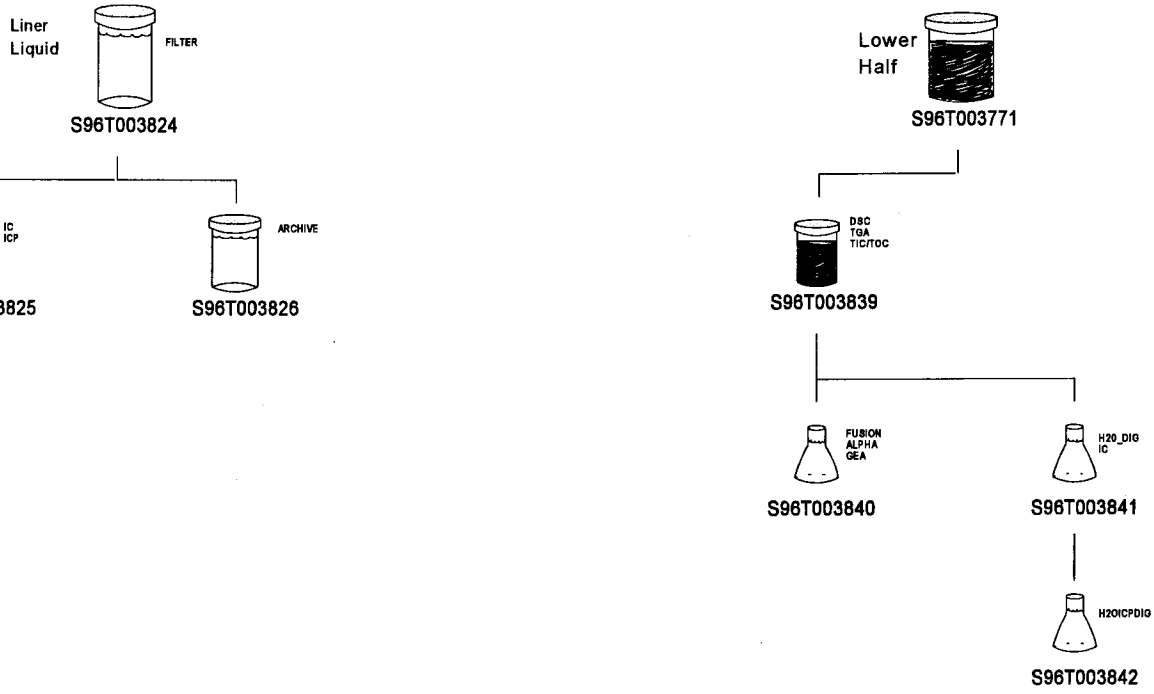
FUSION ALPHA BETA GEA SR90 U
S96T003814

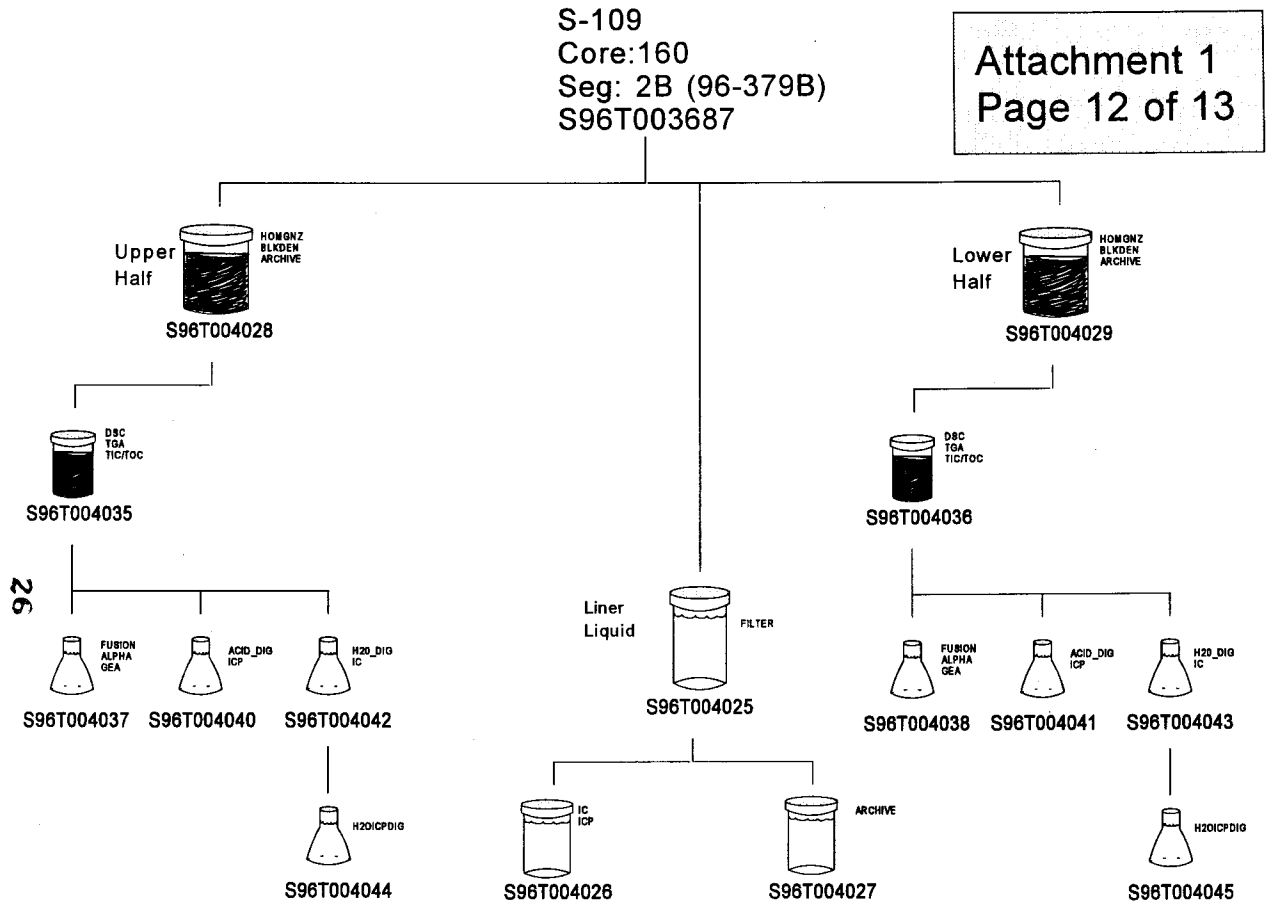
ACID_DIG ICP
S96T003819

H2O_DIG IC
S96T003821

H2OICPDIG ICP
S96T003823

S-109
Core:160
Seg: 2A (96-379A)
S96T003673

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S96T003687
Upper Half
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S96T004028
Lower Half
HOMGNZ BLKDEN ARCHIVE
S96T004029
DSC TGA TIC/TOC
S96T004035
DSC TGA TIC/TOC
S96T004036
FUSION ALPHA GEA
ACID_DIG ICP
H20_DIG IC
S96T004037
S96T004040
S96T004042
Liner Liquid
FILTER
S96T004025
FUSION ALPHA GEA
ACID_DIG ICP
H20_DIG IC
S96T004038
S96T004041
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H2OICPDIG
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IC ICP
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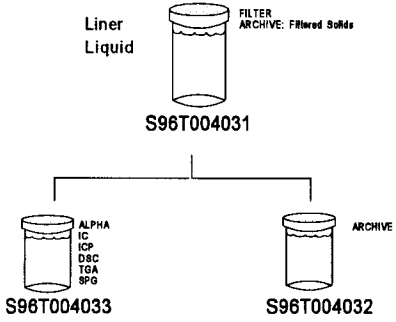
S96T004045

S-109
Core:160
Seg: 2C (96-379C)
S96T003693



SAMPLE DATA SUMMARY

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Table 1. Data Summary Table
S-109

CORE NUMBER: 160
SEGMENT #: Field Blank

SEGMENT PORTION: Field Blank

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T004023			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	94.55	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T004023			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T004023			% Water by TGA using Mettler	%	None	None	99.88	n/a	99.98	99.86	99.92	0.12	n/a	n/a	n/a
S96T004023			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	93.75	3.88e-06	<6.61e-06	3.58e-06	n/a	n/a	n/a	5.75e-06	5.00E+02

=> Limit violated
=> Selected Limit

Table 1. Data Summary Table
S-109

CORE NUMBER: 158
SEGMENT #: 1

SEGMENT PORTION: U Upper Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T003916			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.730	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T003922			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003922			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	94.03	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003922			% Water by TGA on Perkin Elmer	%	None	None	100.0	n/a	18.90	27.27	23.09	36.3	n/a	n/a	n/a
S96T003935		F	Alpha of Digested Solid	uCi/g	-1.0e+00	35.50	117.2	<2.01e-03	1.03e-02	6.48e-03	8.39e-03	45.5	n/a	5.00e-03	5.36E+01

L Lower Half of Segment: L Lower Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T003917			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.340	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T003923			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003923			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	94.03	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003923			% Water by TGA on Perkin Elmer	%	None	None	100.0	n/a	7.190	7.210	7.200	0.28	n/a	n/a	n/a
S96T003936		F	Alpha of Digested Solid	uCi/g	-1.0e+00	35.50	117.2	<2.01e-03	2.24e-02	2.03e-02	2.14e-02	9.84	n/a	5.00e-03	2.67E+01

=> Limit violated
=> Selected Limit

Table 1. Data Summary Table
S-109

CORE NUMBER: 158
SEGMENT #: 2

SEGMENT PORTION: L Lower Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T003733			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.230	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T003734			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003734			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	92.20	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003734			% Water by TGA on Perkin Elmer	%	None	None	100.0	n/a	7.090	5.260	6.175	29.6	n/a	n/a	n/a
S96T003737	F		Alpha of Digested Solid	uCi/g	None	None	85.94	<1.89e-03	7.25e-03	7.22e-03	7.24e-03	0.41	55.43	3.00e-03	4.70E+01

=> Limit violated
=> Selected Limit

Table 1. Data Summary Table
S-109

CORE NUMBER: 158
SEGMENT #: 2A

SEGMENT PORTION: L Lower Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T004017			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	99.12	n/a	31.70	47.80	39.75	40.5	n/a	n/a	n/a
S96T004017			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	34.30	51.70	43.00	40.5	n/a	n/a	n/a
S96T004017			% Water by TGA using Mettler	%	None	None	99.90	n/a	7.790	7.410	7.600	5.00	n/a	n/a	n/a
S96T004018		F	Alpha of Digested Solid	uCi/g	-1.0e+00	5.50	117.2	<2.01e-03	8.74e-03	4.41e-03	6.57e-03	65.9	n/a	5.00e-03	5.04E+01

=> Limit violated
=> Selected Limit

Table 1. Data Summary Table
S-109

CORE NUMBER: 158
SEGMENT #: 2B

SEGMENT PORTION: U Upper Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T003757			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.370	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T003759			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003759			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	92.20	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003759			% Water by TGA on Perkin Elmer	%	None	None	100.0	n/a	11.03	10.44	10.73	5.50	n/a	n/a	n/a
S96T003763	F		Alpha of Digested Solid	uCi/g	-1.0e+00	35.50	117.2	<2.01e-03	2.63e-03	5.57e-03	4.10e-03	71.7	83.29	5.00e-03	1.22E+02

L Lower Half of Segment: L Lower Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T003758			Bulk Density of Sample	g/mL	None	None	n/a	n/a	insuff.s	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T003760			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	91.74	n/a	8.00e-01	1.100	9.50e-01	31.6	n/a	n/a	n/a
S96T003760			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	9.00e-01	1.200	1.050	28.6	n/a	n/a	n/a
S96T003760			% Water by TGA using Mettler	%	None	None	98.72	n/a	10.50	12.08	11.29	14.0	n/a	n/a	n/a
S96T003764	F		Alpha of Digested Solid	uCi/g	-1.0e+00	35.50	86.72	<1.61e-03	<3.09e-03	2.95e-03	n/a	n/a	61.56	4.00e-03	1.89E+02

=> Limit violated
=> Selected Limit

Table 1. Data Summary Table
S-109

CORE NUMBER: 158
SEGMENT #: 3

SEGMENT PORTION: U Upper Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T003918			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.280	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T003924			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003924			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	94.90	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003924			% Water by TGA on Perkin Elmer	%	None	None	100.0	n/a	7.150	6.690	6.920	6.65	n/a	n/a	n/a
S96T003937	F		Alpha of Digested Solid	uCi/g	-1.0e+00	35.50	86.72	<1.61e-03	5.56e-03	<5.02E-3	n/a	n/a	n/a	4.00e-03	6.59E+01

L Lower Half of Segment: L Lower Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T003919			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.590	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T003925			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003925			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	94.90	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003925			% Water by TGA on Perkin Elmer	%	None	None	100.0	n/a	12.79	10.74	11.77	17.4	n/a	n/a	n/a
S96T003938	F		Alpha of Digested Solid	uCi/g	-1.0e+00	35.50	86.72	<1.61e-03	6.11e-03	8.36e-03	7.24e-03	31.1	n/a	4.00e-03	5.80E+01

=> Limit violated
=> Selected Limit

Table 1. Data Summary Table
S-109

CORE NUMBER: 158
SEGMENT #: 3A

SEGMENT PORTION: L Lower Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T003920			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.340	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T003926			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	92.09	n/a	1.200	0.00e+00	6.00e-01	200	n/a	n/a	n/a
S96T003926			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	1.300	0.00e+00	6.50e-01	200	n/a	n/a	n/a
S96T003926			% Water by TGA using Mettler	%	None	None	98.53	n/a	9.200	8.700	8.950	5.59	n/a	n/a	n/a
S96T003939	F		Alpha of Digested Solid	uCi/g	-1.0e+00	35.50	86.72	<1.61e-03	3.03e-03	8.55e-03	5.79e-03	95.3	n/a	4.00e-03	1.17E+02

=> Limit violated
=> Selected Limit

Table 1. Data Summary Table
S-109

CORE NUMBER: 158
SEGMENT #: 4

SEGMENT PORTION: L Lower Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T003921			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.270	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T003927			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	92.09	n/a	0.00e+00	30.50	15.25	200	n/a	n/a	n/a
S96T003927			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	32.50	16.25	200	n/a	n/a	n/a
S96T003927			% Water by TGA using Mettler	%	None	None	98.53	n/a	6.000	6.100	6.050	1.65	n/a	n/a	n/a
S96T003940		F	Alpha of Digested Solid	uCi/g	-1.0e+00	35.50	91.41	1.00e-03	9.99e-03	8.40e-03	9.20e-03	17.3	51.53	1.00e-03	2.47E+01

=> Limit violated
=> Selected Limit

Table 1. Data Summary Table
S-109

CORE NUMBER: 160
SEGMENT #: 1

SEGMENT PORTION: L Lower Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T003769			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.270	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T003800			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	91.74	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003800			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003800			% Water by TGA using Mettler	%	None	None	98.72	n/a	4.310	9.40e-01	2.625	128	n/a	n/a	n/a
S96T003815	F		Alpha of Digested Solid	uCi/g	-1.0e+00	35.50	96.09	<1.22e-03	3.29e-03	4.18e-03	3.73e-03	23.8	77.44	2.00e-03	5.51E+01

=> Limit violated
=> Selected Limit

Table 1. Data Summary Table
S-109

CORE NUMBER: 160
SEGMENT #: 2

SEGMENT PORTION: L Lower Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T003770			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.220	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T003801			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	92.09	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003801			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003801			% Water by TGA using Mettler	%	None	None	98.75	n/a	1.000	1.560	1.280	43.8	n/a	n/a	n/a
S96T003814		F	Alpha of Digested Solid	uCi/g	None	None	95.31	<3.76e-04	2.26e-03	2.37e-03	2.32e-03	4.75	59.61	1.00e-03	3.79E+01

=> Limit violated
=> Selected Limit

Table 1. Data Summary Table
S-109

CORE NUMBER: 160
SEGMENT #: 2A

SEGMENT PORTION: L Lower Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T003839			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	92.09	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003839			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003839			% Water by TGA using Mettler	%	None	None	98.75	n/a	6.870	8.860	7.865	25.3	n/a	n/a	n/a
S96T003840		F	Alpha of Digested Solid	uCi/g	-1.0e+00	35.50	96.09	<1.22e-03	4.45e-03	<4.61E-3	n/a	n/a	n/a	4.00e-03	8.21E+01

=> Limit violated
=> Selected Limit

Table 1. Data Summary Table
S-109

CORE NUMBER: 160
SEGMENT #: 2B

SEGMENT PORTION: U Upper Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T004028			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.190	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T004035			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	93.50	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T004035			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T004035			% Water by TGA using Mettler	%	None	None	99.93	n/a	5.950	6.100	6.025	2.49	n/a	n/a	n/a
S96T004037		F	Alpha of Digested Solid	uCi/g	-1.0e+00	35.50	89.06	<1.92e-03	5.43e-03	6.50e-03	5.96e-03	17.9	60.17	3.00e-03	6.28E+01

L Lower Half of Segment: L Lower Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T004029			Bulk Density of Sample	g/mL	None	None	n/a	n/a	NA	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T004036			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	101.6	n/a	9.500	8.900	9.200	6.52	n/a	n/a	n/a
S96T004036			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	11.77	11.03	11.40	6.49	n/a	n/a	n/a
S96T004036			% Water by TGA using Mettler	%	None	None	100.2	n/a	20.04	18.57	19.30	7.61	n/a	n/a	n/a
S96T004038		F	Alpha of Digested Solid	uCi/g	-1.0e+00	35.50	89.06	<1.92e-03	1.91e-02	1.32e-02	1.61e-02	36.5	n/a	3.00e-03	2.89E+01

=> Limit violated
=> Selected Limit

Table 1. Data Summary Table
S-109

CORE NUMBER: 160
SEGMENT #: 2C

SEGMENT PORTION: Drainable Liquid

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T004033			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	94.55	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T004033			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T004033			% Water by TGA using Mettler	%	None	None	99.88	n/a	52.07	52.78	52.42	1.35	n/a	n/a	n/a
S96T004033			Alpha in Liquid Samples	uCi/mL	-1.0e+00	41.50	93.75	3.88e-06	3.44e-03	4.14e-04	1.93e-03	157	69.64	2.32e-04	1.68E+01

=> Limit violated
=> Selected Limit

INORGANIC ANALYSES

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LABCORE Data Entry Template for Worklist# 11173

Analyst: KRM **Instrument:** DSC0 3 **Book #** 12N14B

Method: LA-514-114 Rev/Mod C-1

Worklist Comment: S-109 DSC, RUN UNDER N2. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-03	SOLID	28.45	26.23*	N/A	Joules/g
96000979	S-109	2	SAMPLE	S96T003734	0		DSC-03	SOLID	N/A	Ø		Joules/g
96000979	S-109	3	DUP	S96T003734	0		DSC-03	SOLID	Ø	Ø	N/A	Joules/g
96000979	S-109	4	SAMPLE	S96T003759	0		DSC-03	SOLID	N/A	Ø		Joules/g
96000979	S-109	5	DUP	S96T003759	0		DSC-03	SOLID	Ø	Ø	N/A	Joules/g

Final page for worklist # 11173

See attached for signatures
Analyst Signature Date 7-29-96 BDY

Stan Pitt 7-29-96
Analyst Signature Date

Verified/Validated by
Blandina Valenzuela 8-1-96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Data Entry Template for Worklist# 11173

Analyst: KRM **Instrument:** DSC03 **Book #** 12N14-B

Method: LA-514-113 Rev/Mod C-1

Worklist Comment: S-109 DSC, RUN UNDER N2. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-01	SOLID			N/A	Joules/g
96000979	S-109	2	SAMPLE	S96T003734	0		DSC-01	SOLID	N/A			Joules/g
96000979	S-109	3	DUP	S96T003734	0		DSC-01	SOLID			N/A	Joules/g
96000979	S-109	4	SAMPLE	S96T003759	0		DSC-01	SOLID	N/A			Joules/g
96000979	S-109	5	DUP	S96T003759	0		DSC-01	SOLID			N/A	Joules/g

Final page for worklist # 11173

Analyst Signature Date 7-28-96

Analyst Signature Date

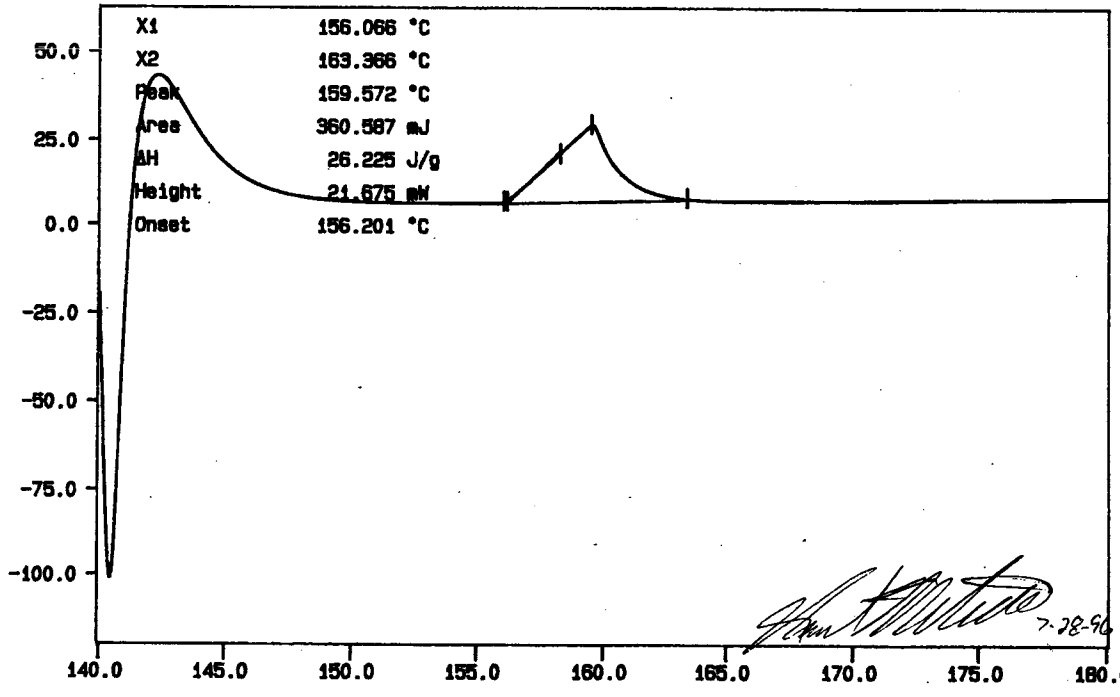
DSC-03 Instrument was used.

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

Curve 1: DSC
File info: IND072801 Sun Jul 28 04:50:23 1996
Sample Weight: 13.750 mg
12N14-B INDIUM AT 10C/MIN

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 47 TO 51.

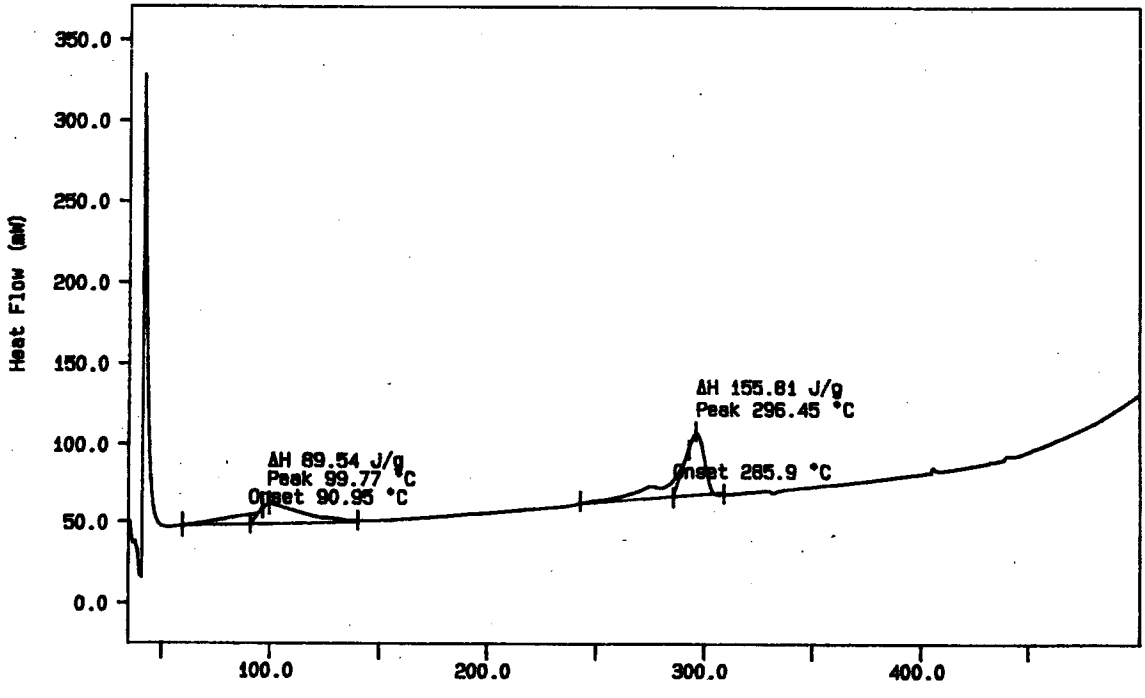


47

N2, EXOTHERM DOWN
TIME: 0.0 min RATE: 10.0 C/min
KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System

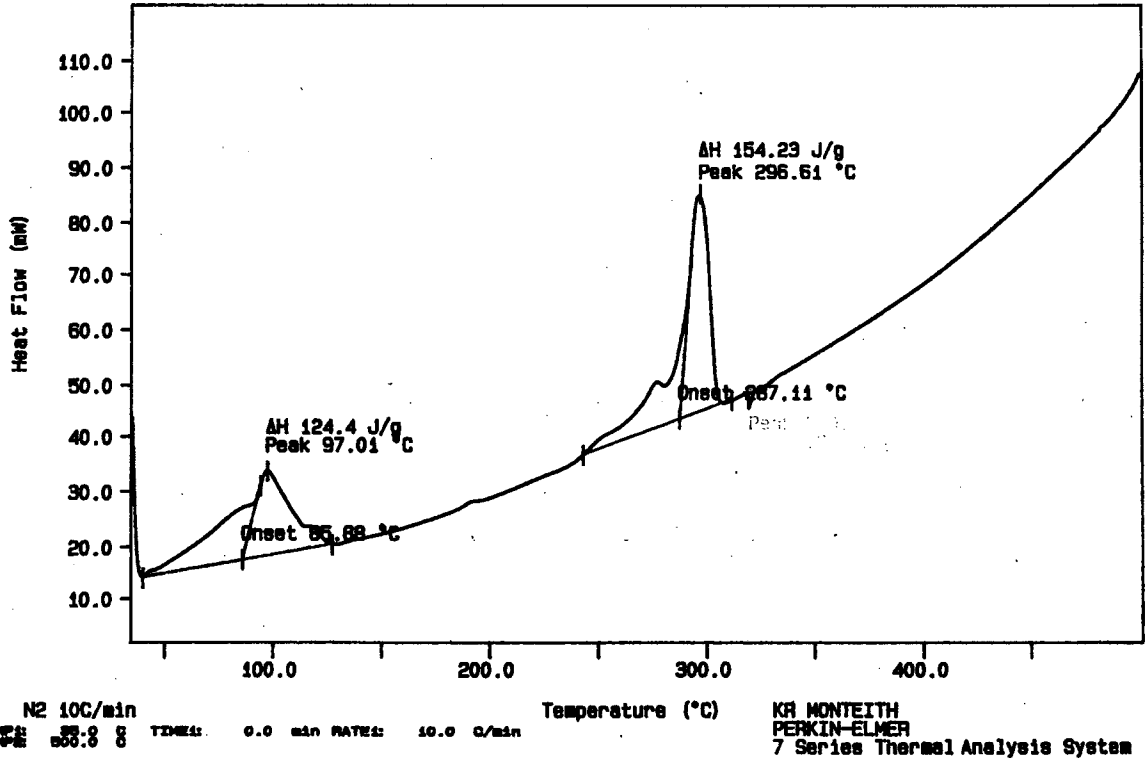
WHC-SD-WM-DP-194, REV.0

Curve 1: DSC
File info: SAM0720804 Sun Jul 28 10:08:00 1996
Sample Weight: 23.220 mg
S96T003734

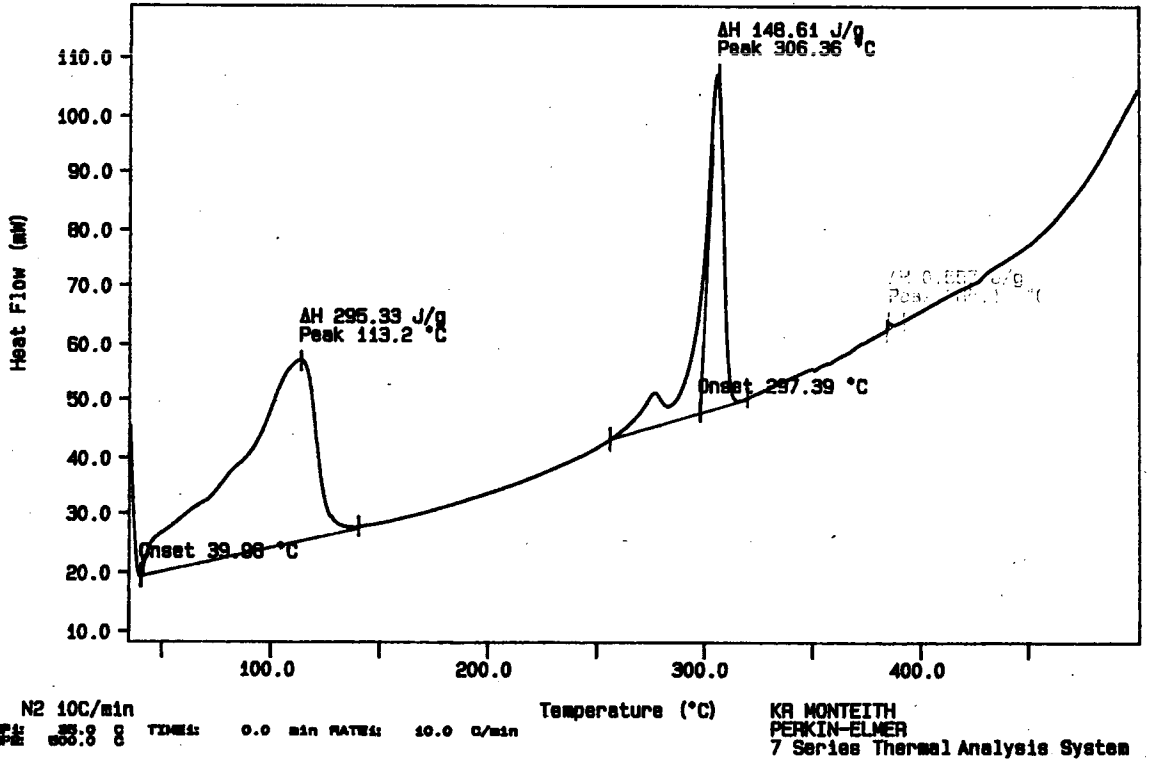


N2 10C/min
TIME: 0.0 min RATE: 10.0 C/min
KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System

Curve 1: DSC
File info: SAM072805 Sun Jul 28 12:40:08 1996
Sample Weight: 25.720 mg
S96T003734 DUP



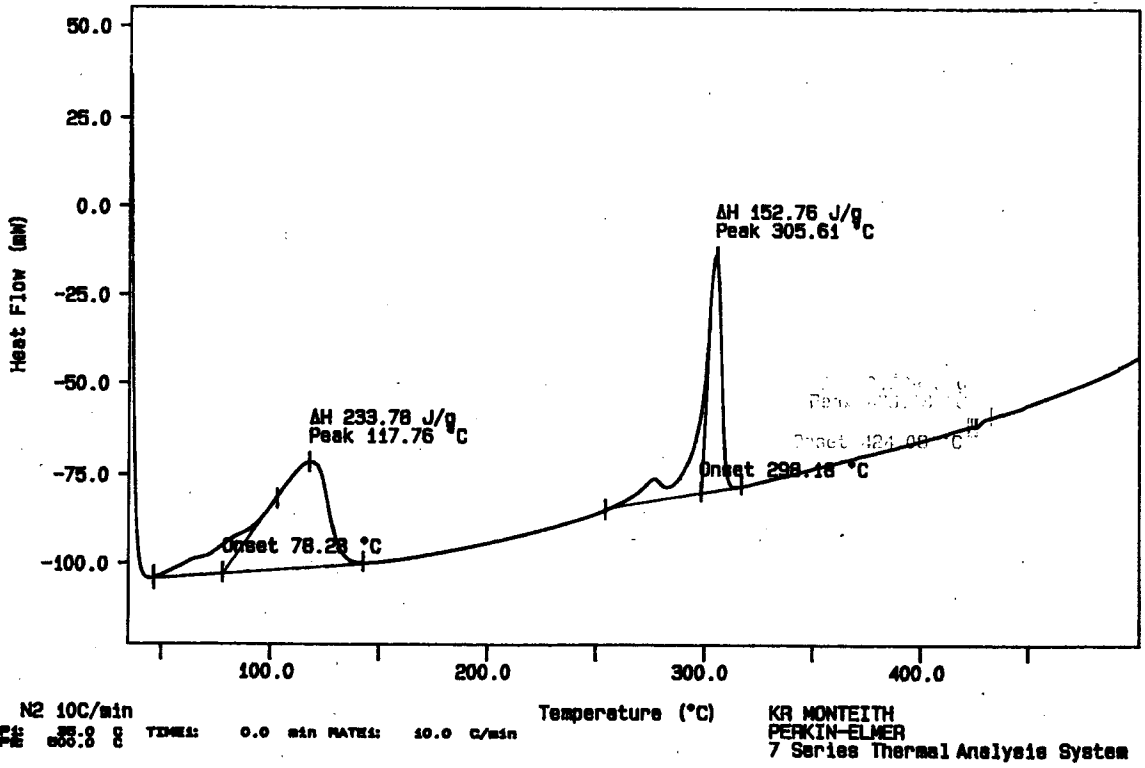
Curve 1: DSC
File info: SAM072802 Sun Jul 28 06:23:47 1996
Sample Weight: 27.490 mg
S96T003759



50

WHC-SD-WM-DP-194, REV.0

Curve 1: DSC
File info: SAM072803 Sun Jul 28 08:49:16 1996
Sample Weight: 28.290 mg
896T003759 DUP



N2 10C/min
TEMP1: 25.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 600.0 C
KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System

LABCORE Data Entry Template for Worklist# 11174

Analyst: KRM **Instrument:** DSC0 1 **Book #** 12W4-B

Method: LA-514-113 Rev/Mod

Worklist Comment: S-109 DSC, RUN UNDER N2. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-01	SOLID	28.45	26.1*	N/A	Joules/g
96000979	S-109	2	SAMPLE	S96T003760	0		DSC-01	SOLID	N/A	0.8		Joules/g
96000979	S-109	3	DUP	S96T003760	0		DSC-01	SOLID	0.8	1.1	N/A	Joules/g
96000961	S-109	4	SAMPLE	S96T003800	0		DSC-01	SOLID	N/A	Ø		Joules/g
96000961	S-109	5	DUP	S96T003800	0		DSC-01	SOLID	Ø	Ø	N/A	Joules/g

Final page for worklist # 11174

7-28-96
Analyst Signature **Date**

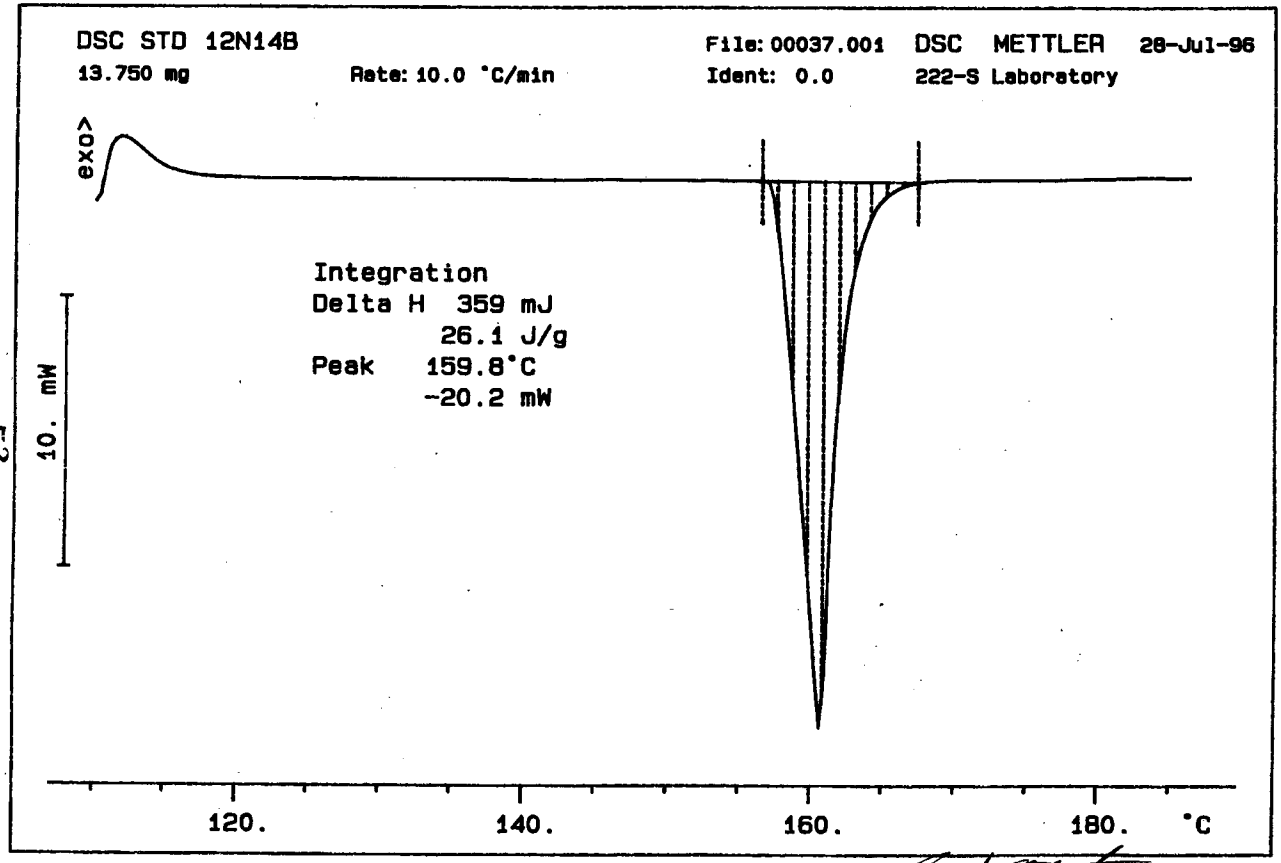
7-29-96
Analyst Signature **Date**

Verified/Validated by
Blandina
Valenzuela
7-31-96

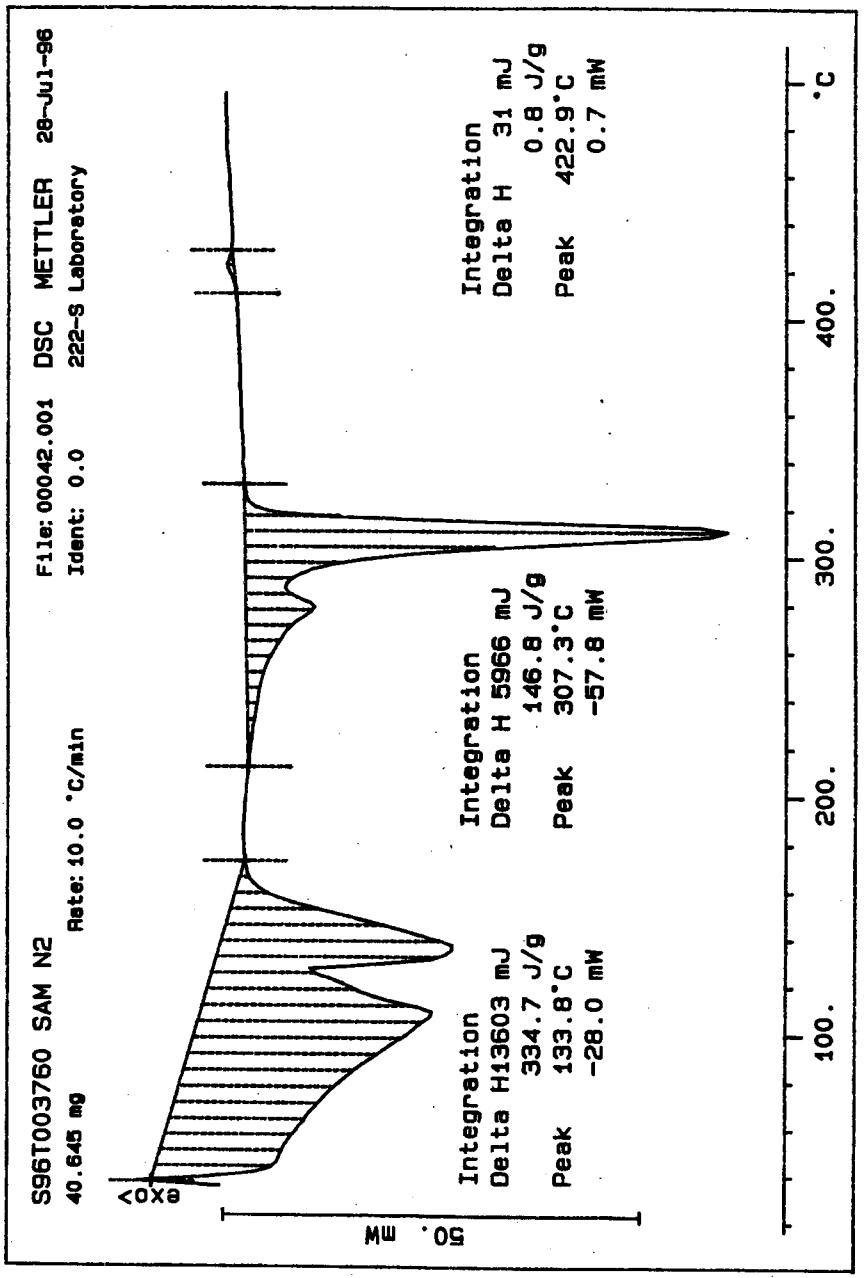
Data Entry Comments:

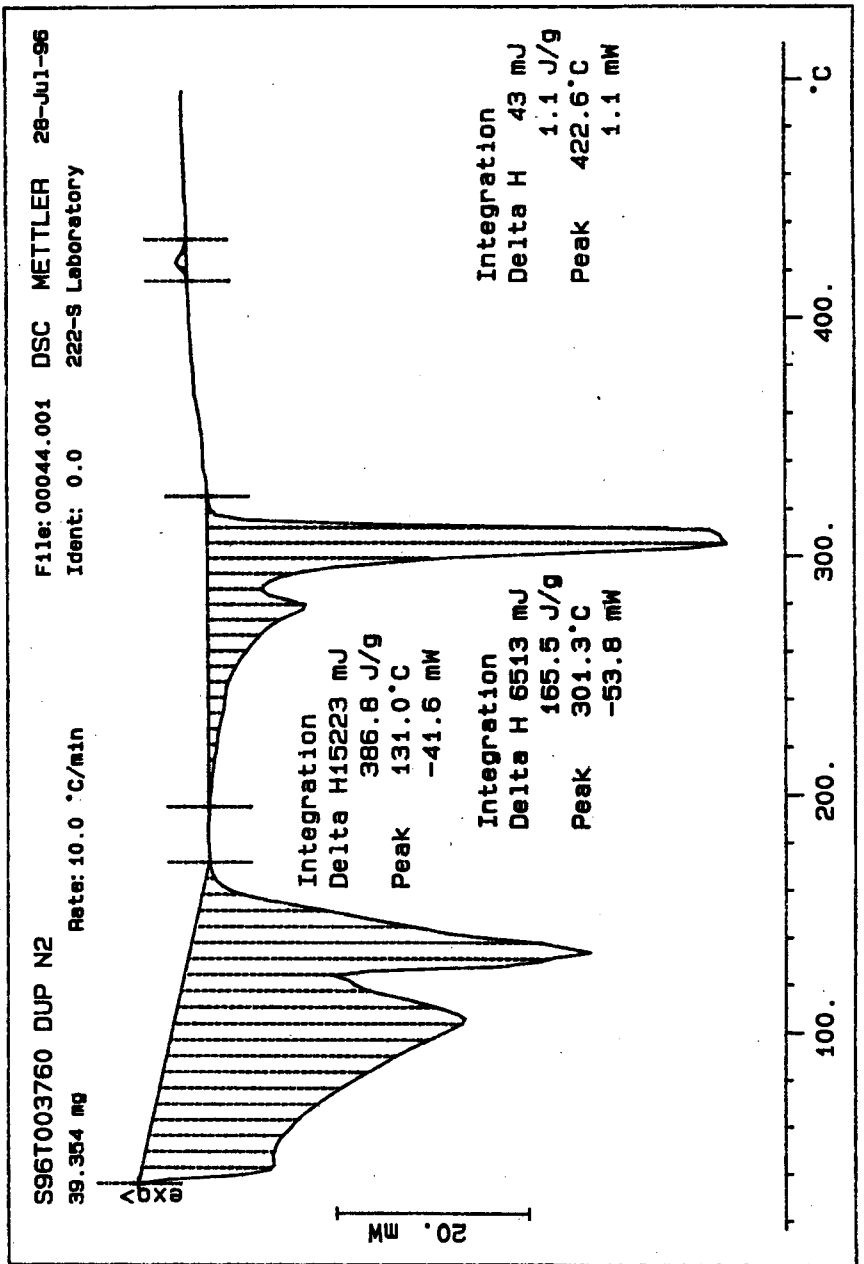
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

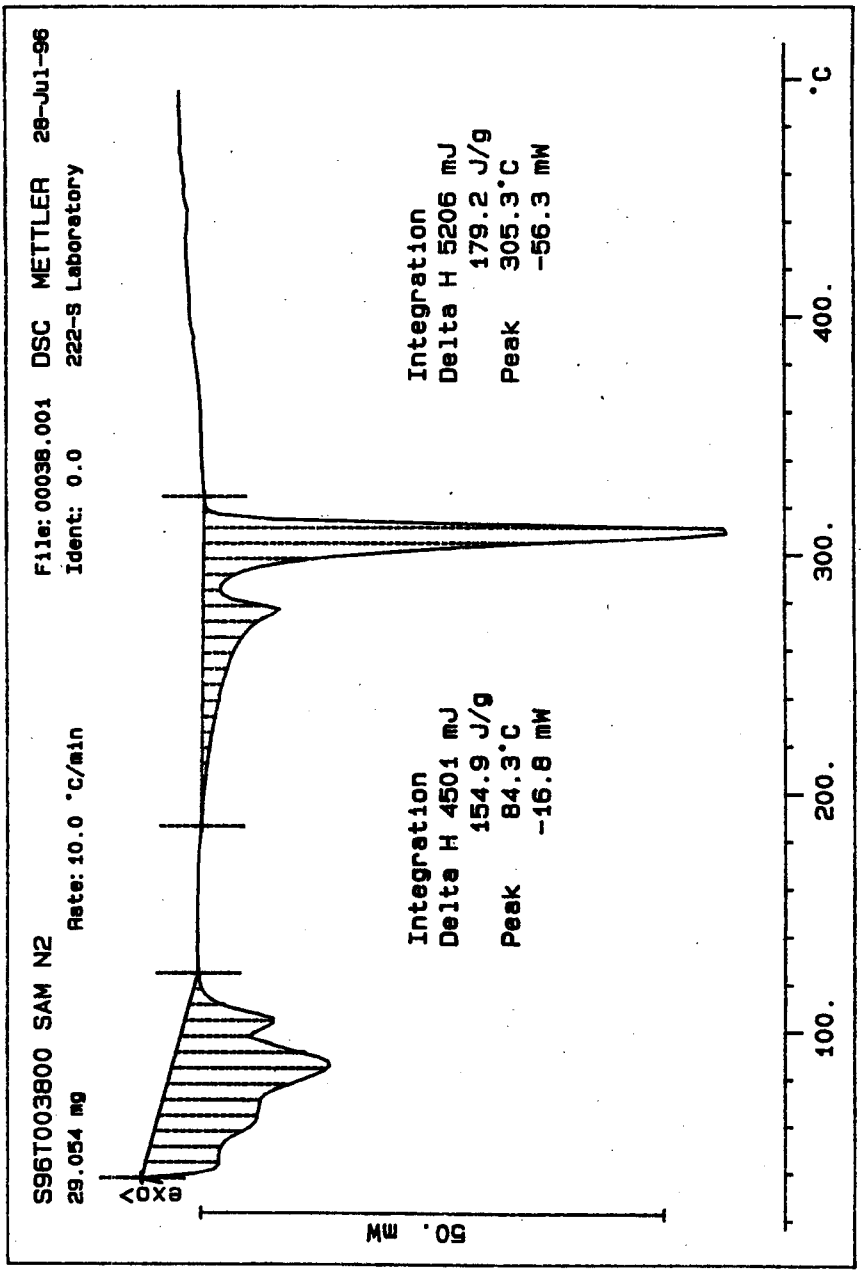
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 53 TO 57.

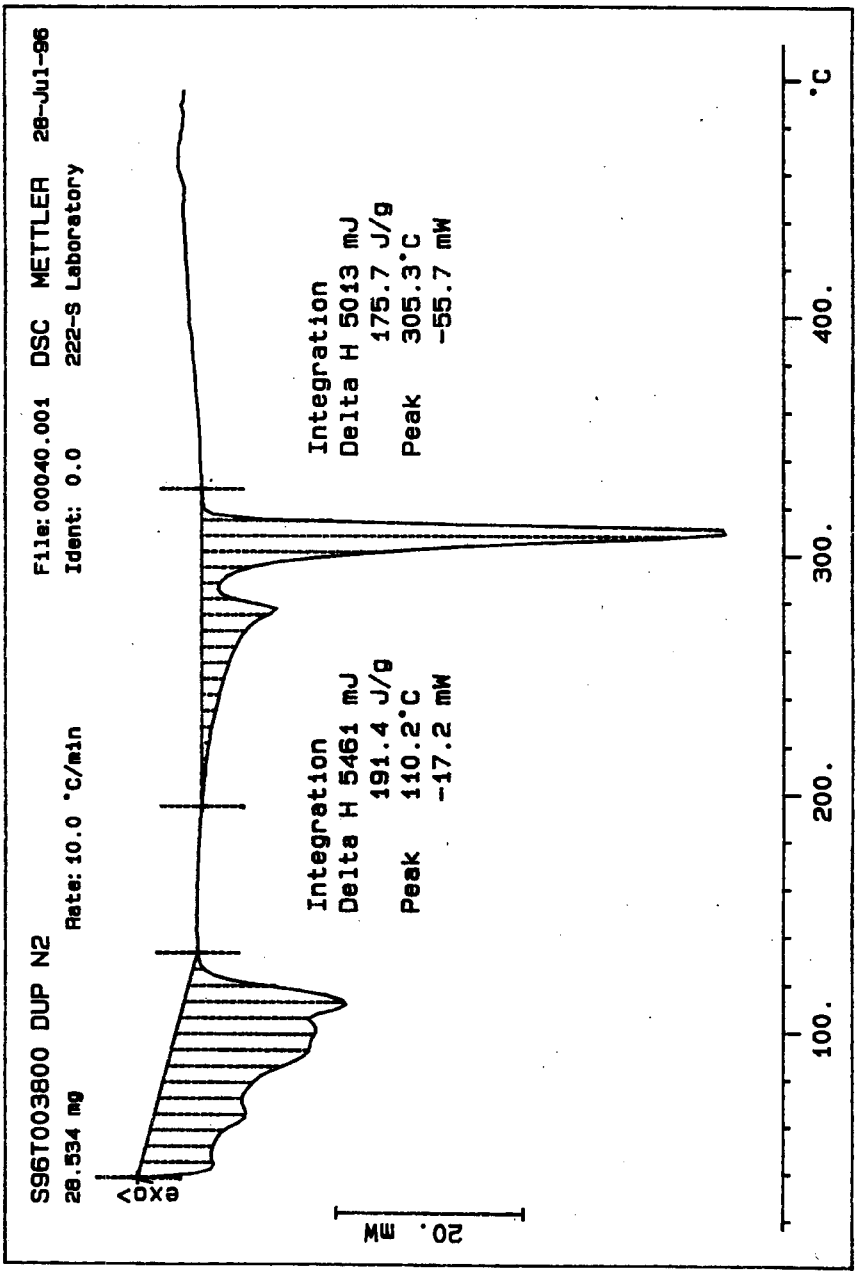


7-28-96


S96T003760 SAM N2
40.645 mg
Rate: 10.0 °C/min
File: 00042.001
Ident: 0.0
DSC METTLER 28-Jul-96
222-S Laboratory
Integration
Delta H 31 mJ
0.8 J/g
Peak 422.9°C
0.7 mW
Integration
Delta H 5966 mJ
146.8 J/g
Peak 307.3°C
-57.8 mW
Integration
Delta H13603 mJ
334.7 J/g
Peak 133.8°C
-28.0 mW
exo
50. mW
100.
200.
300.
400.
°C


S96T003760 DUP N2
39.354 mg
Rate: 10.0 °C/min
File: 00044.001 DSC METTLER 28-Jul-96
Ident: 0.0 222-S Laboratory
Integration
Delta H15223 mJ
386.8 J/g
Peak 131.0°C
-41.6 mW
Integration
Delta H 6513 mJ
165.5 J/g
Peak 301.3°C
-53.8 mW
Integration
Delta H 43 mJ
1.1 J/g
Peak 422.6°C
1.1 mW
exo
20. mW
100.
200.
300.
400.
°C


S96T003800 SAM N2
29.054 mg
Rate: 10.0 °C/min
File: 00038.001
Ident: 0.0
DSC METTLER 28-Jul-96
222-S Laboratory
Integration
Delta H 4501 mJ
154.9 J/g
Peak 84.3°C
-16.8 mW
Integration
Delta H 5206 mJ
179.2 J/g
Peak 305.3°C
-56.3 mW
exo>
50. mW
100.
200.
300.
400.
°C


S96T003800 DUP N2
28.534 mg
Rate: 10.0 °C/min
File: 00040.001 DSC METTLER 28-Jul-96
Ident: 0.0 222-S Laboratory
Integration
Delta H 5461 mJ
191.4 J/g
Peak 110.2°C
-17.2 mW
Integration
Delta H 5013 mJ
175.7 J/g
Peak 305.3°C
-55.7 mW
exo
20. mW
100.
200.
300.
400.
°C

LABCORE Data Entry Template for Worklist# 11175

Analyst: KRM **Instrument:** DSC0 1 **Book #** 12N 14-B

Method: LA-514-113 Rev/Mod C-1

Worklist Comment: S-109 DSC, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD	S96T003801			DSC-01	SOLID	28.45	26.2 *	N/A	Joules/g
96000961	S-109	2 SAMPLE	[redacted]	0		DSC-01	SOLID	N/A	Ø		Joules/g
96000961	S-109	3 DUP	[redacted]	0		DSC-01	SOLID	Ø	Ø	N/A	Joules/g
96000961	S-109	4 SAMPLE	S96T003839	0		DSC-01	SOLID	N/A	Ø		Joules/g
96000961	S-109	5 DUP	S96T003839	0		DSC-01	SOLID	Ø	Ø	N/A	Joules/g

LAD 8-12-96

Final page for worklist # 11175

[signature] 7-28-96
Analyst Signature **Date**

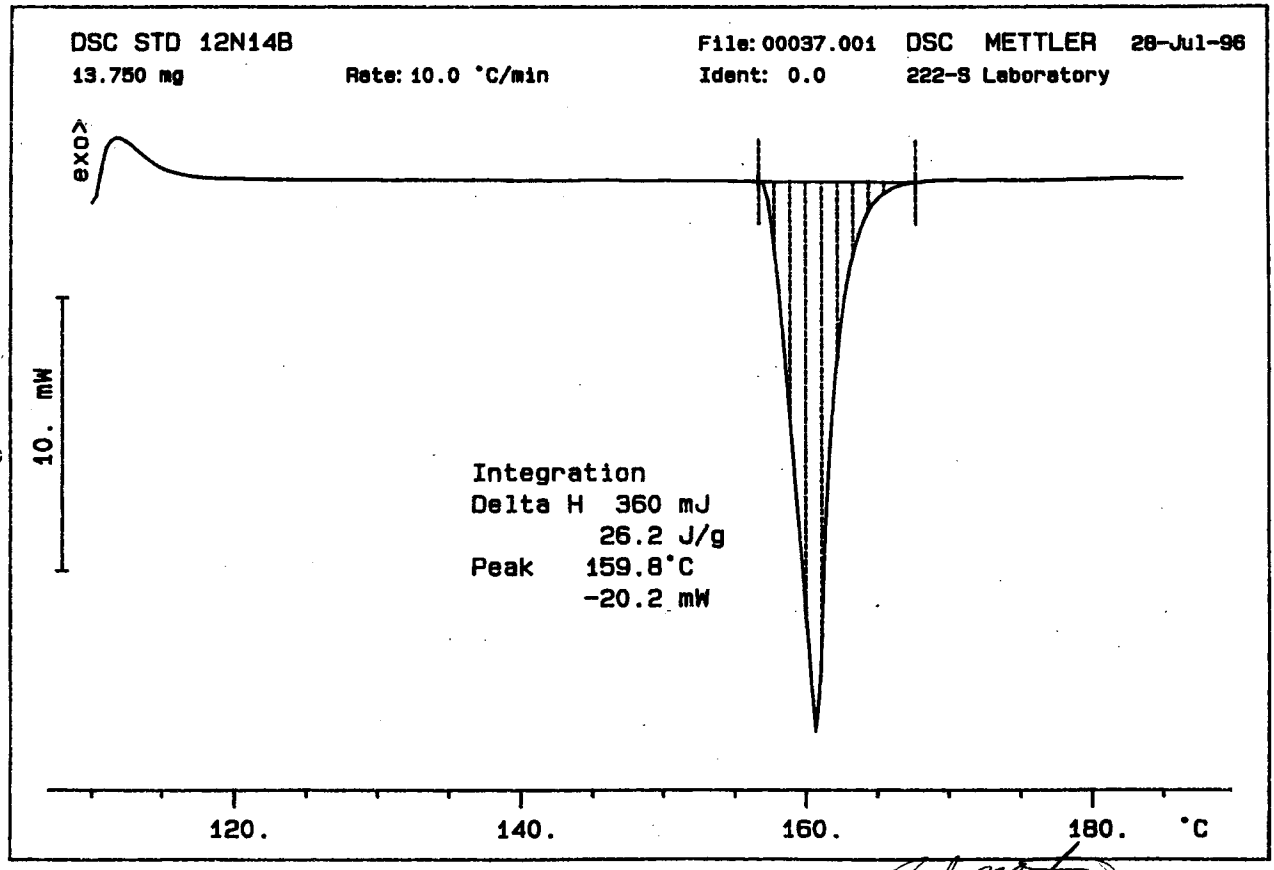
[signature] 7-29-96
Analyst Signature **Date**

Verified/Validated by
Blandina Valenzuela 7-31-96

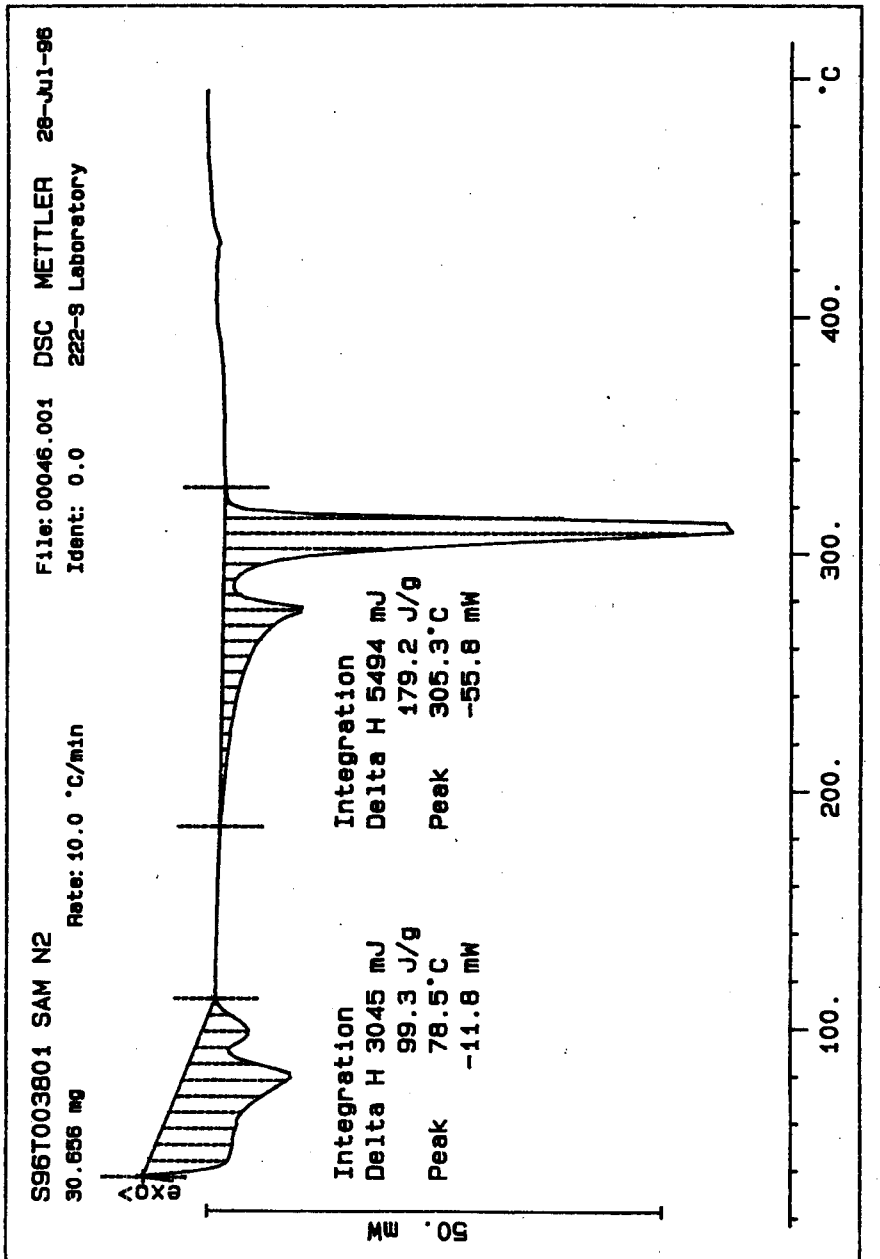
Data Entry Comments:

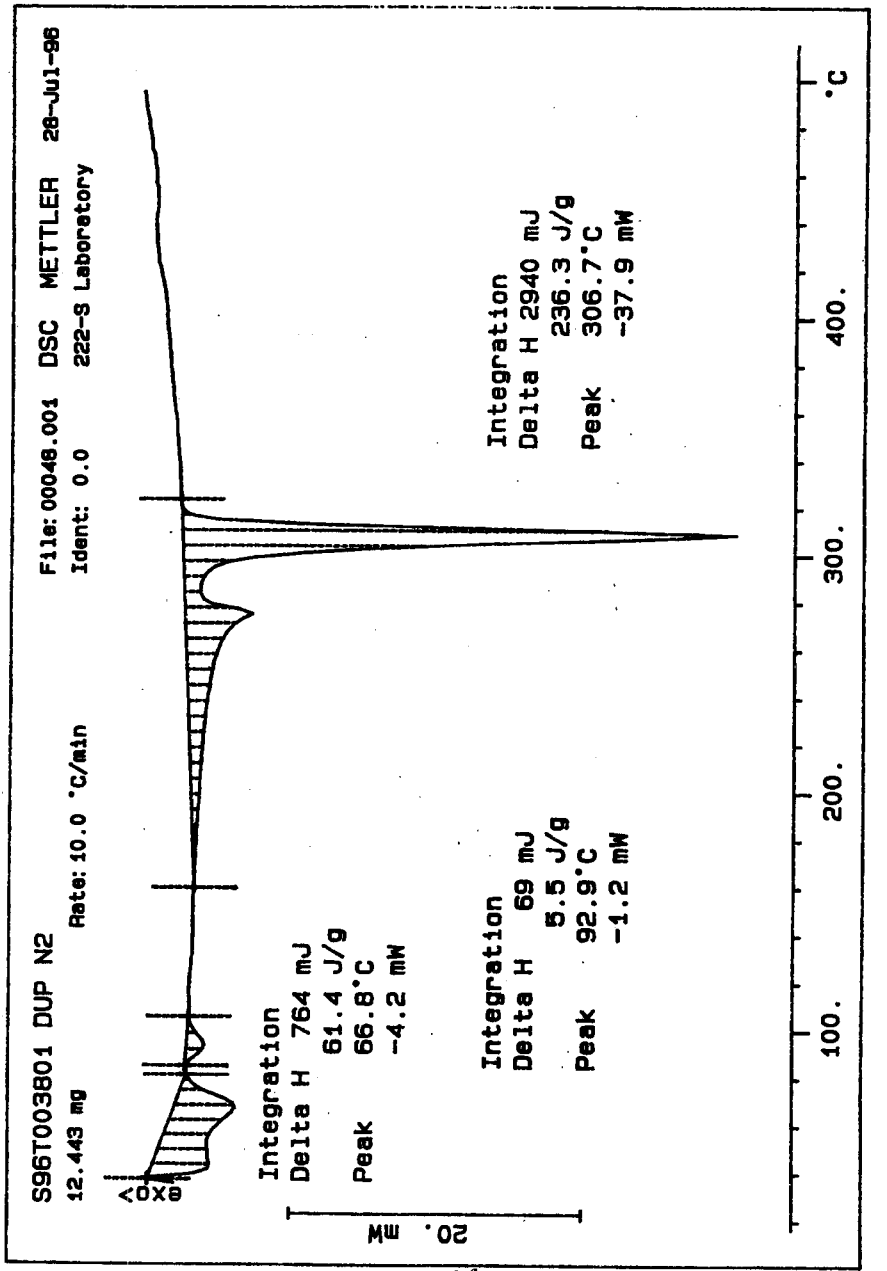
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

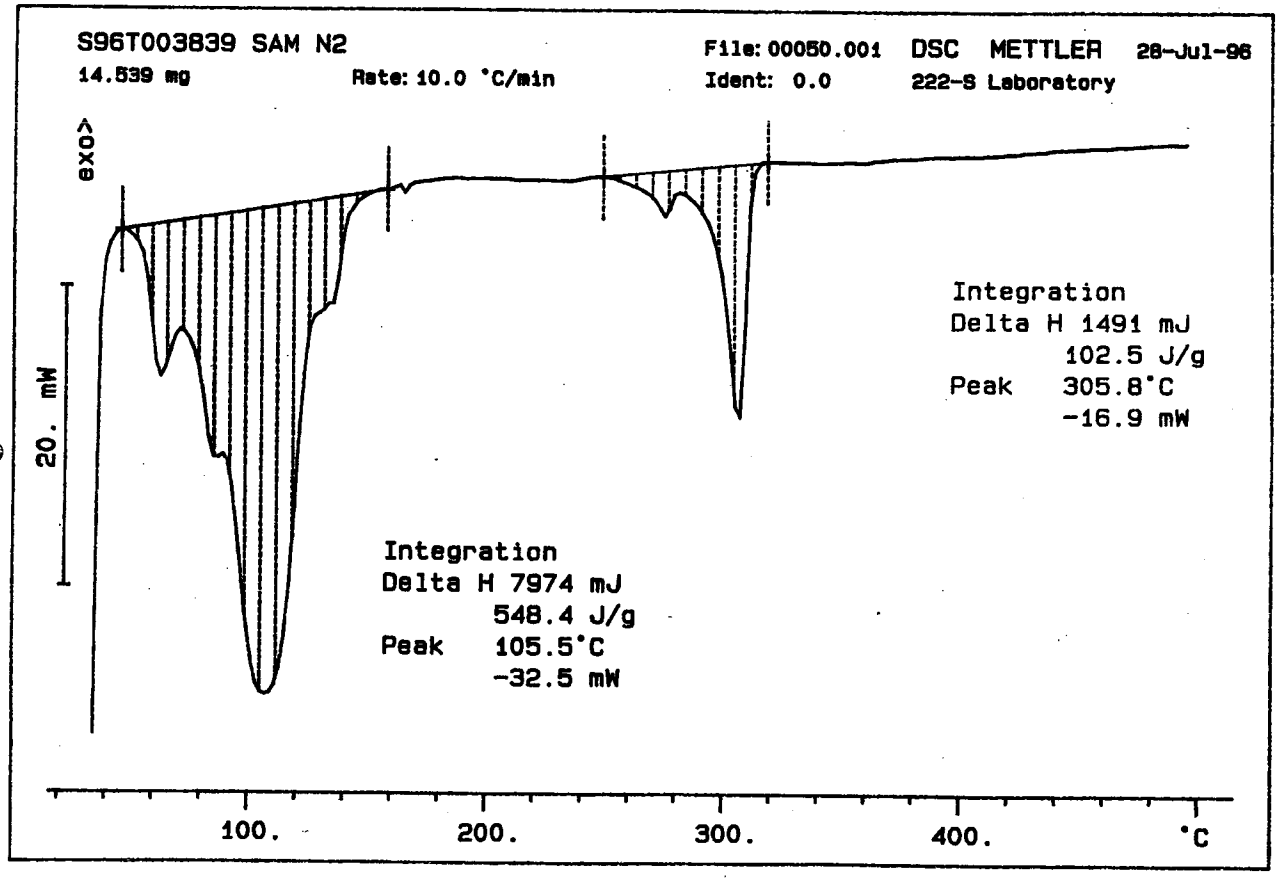
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 59 TO 63

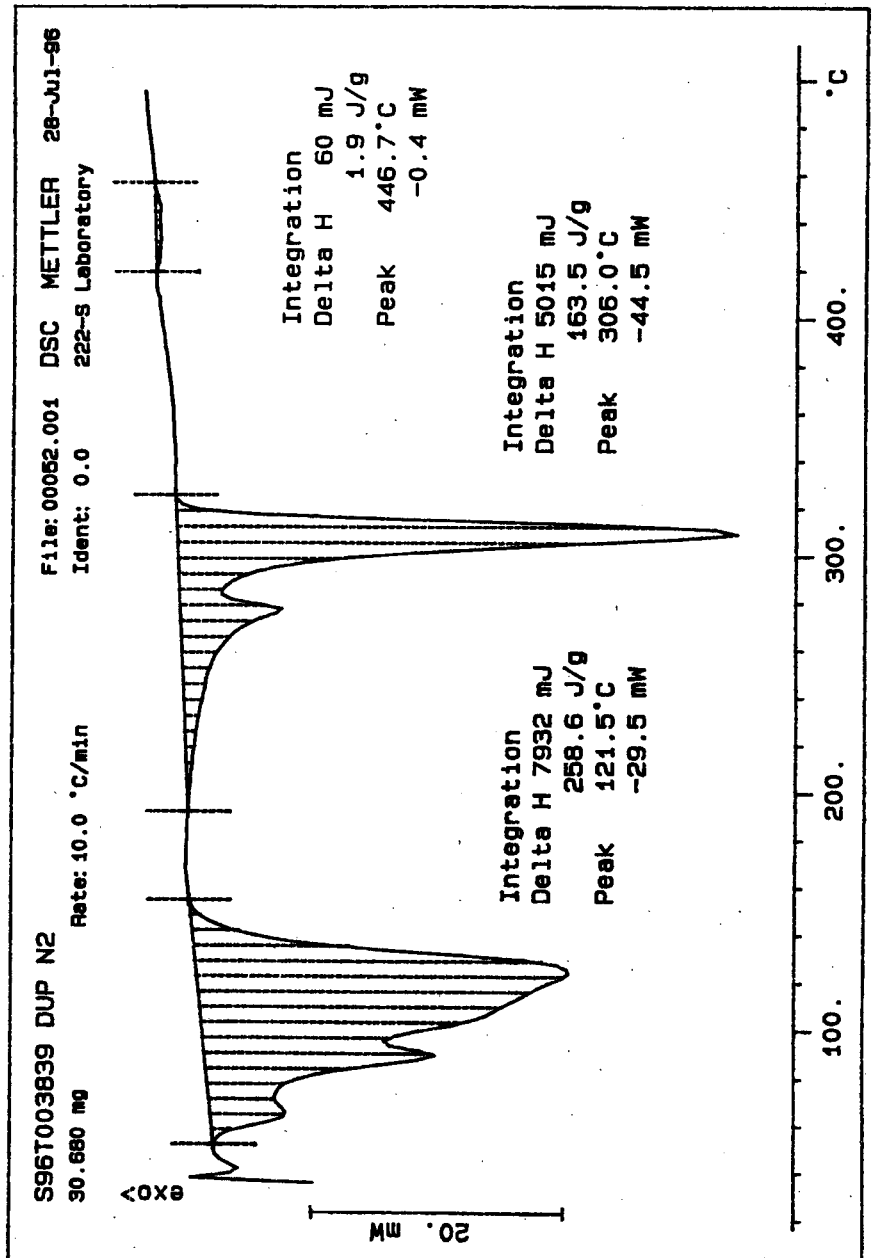


7-28-96


S96T003801 SAM N2
30.656 mg
Rate: 10.0 °C/min
File: 00046.001
Ident: 0.0
DSC METTLER 28-Jul-96
222-S Laboratory
exo
50. mW
Integration
Delta H 3045 mJ
99.3 J/g
Peak 78.5°C
-11.8 mW
Integration
Delta H 5494 mJ
179.2 J/g
Peak 305.3°C
-55.8 mW
100.
200.
300.
400.
°C


S96T003801 DUP N2
12.443 mg
Rate: 10.0 °C/min
File: 00048.001 DSC METTLER 28-Jul-96
Ident: 0.0 222-S Laboratory
EXO
20. mW
Integration
Delta H 764 mJ
61.4 J/g
Peak 66.8°C
-4.2 mW
Integration
Delta H 69 mJ
5.5 J/g
Peak 92.9°C
-1.2 mW
Integration
Delta H 2940 mJ
236.3 J/g
Peak 306.7°C
-37.9 mW
100.
200.
300.
400.
°C


S96T003839 SAM N2
14.539 mg
Rate: 10.0 °C/min
File: 00050.001
Ident: 0.0
DSC METTLER
222-S Laboratory
28-Jul-96
exo>
20. mW
Integration
Delta H 1491 mJ
102.5 J/g
Peak 305.8°C
-16.9 mW
Integration
Delta H 7974 mJ
548.4 J/g
Peak 105.5°C
-32.5 mW
100.
200.
300.
400.
°C


S96T003839 DUP N2
30.680 mg
Rate: 10.0 °C/min
File: 00052.001 DSC METTLER 28-Jul-96
Ident: 0.0 222-S Laboratory
Integration
Delta H 60 mJ
1.9 J/g
Peak 446.7°C
-0.4 mW
Integration
Delta H 5015 mJ
163.5 J/g
Peak 306.0°C
-44.5 mW
Integration
Delta H 7932 mJ
258.6 J/g
Peak 121.5°C
-29.5 mW
<exo
20. mW
100.
200.
300.
400.
°C

LABCORE Data Entry Template for Worklist# 11176

Analyst: KRM **Instrument:** DSC0 3 **Book #** 12N14B

Method: LA-514-114 Rev/Mod C-1

Worklist Comment: S-109 DSC, RUN UNDER N2. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-03	SOLID	28.45	26.75*	N/A	Joules/g
96000979	S-109	2	SAMPLE	S96T003922	0		DSC-03	SOLID	N/A	Ø		Joules/g
96000979	S-109	3	DUP	S96T003922	0		DSC-03	SOLID	Ø	Ø	N/A	Joules/g
96000979	S-109	4	SAMPLE	S96T003923	0		DSC-03	SOLID	N/A	Ø		Joules/g
96000979	S-109	5	DUP	S96T003923	0		DSC-03	SOLID	Ø	Ø	N/A	Joules/g

Final page for worklist # 11176

See attached for signatures
Analyst Signature **Date** 7-29-96 BDV

Analyst Signature **Date** 7-29-96

Verified/Validated by
Blandina
Valenzuela 8-1-96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

worklistrpt Version 2.1 05/15/95
07/25/96 14:01

LABCORE Data Entry Template for Worklist# 11176

Analyst: KRM **Instrument:** DSC03 **Book #** 17014A

Method: LA-514-113 Rev/Mod C1

Worklist Comment: S-109 DSC, RUN UNDER N2. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-01	SOLID			N/A	Joules/g
96000979	S-109	2	SAMPLE	[redacted]			DSC-01	SOLID	N/A			Joules/g
96000979	S-109	3	DUP	[redacted]			DSC-01	SOLID			N/A	Joules/g
96000979	S-109	4	SAMPLE	S96T003923	0		DSC-01	SOLID	N/A			Joules/g
96000979	S-109	5	DUP	S96T003923	0		DSC-01	SOLID			N/A	Joules/g

Final page for worklist # 11176

7-26-96

Analyst Signature **Date**

Analyst Signature **Date**

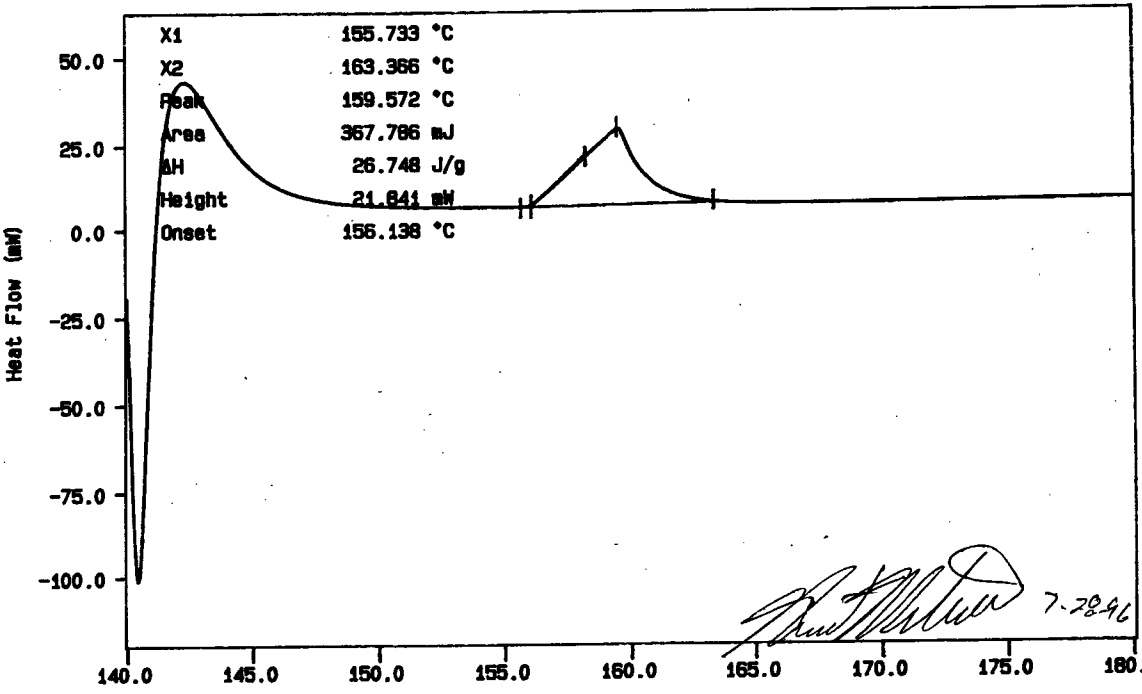
DSC-03 Instrument was used.

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

Curve 1: DSC
File info: IND072801 Sun Jul 28 04:50:23 1996
Sample Weight: 13.750 mg
12N14-B INDIUM AT 10C/MIN

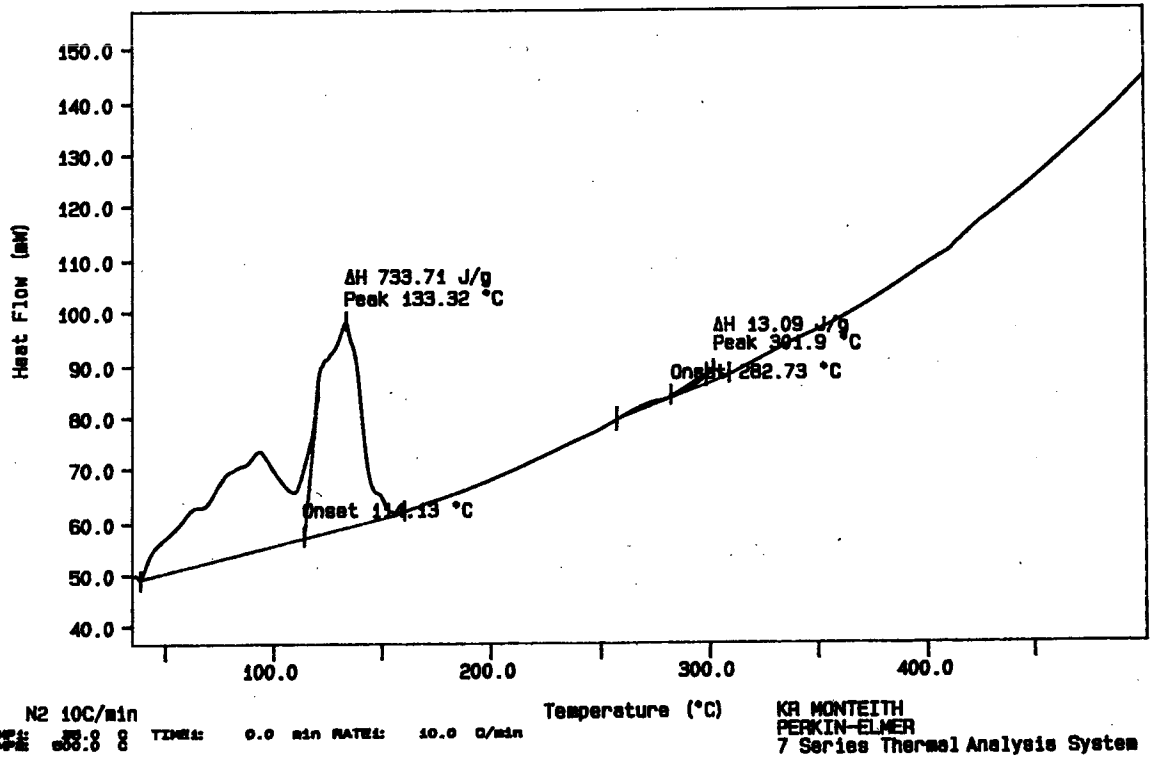
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 66 TO 70.



N2, EXOTHERM DOWN
TEMP1: 149.8 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 180.8 C
KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System

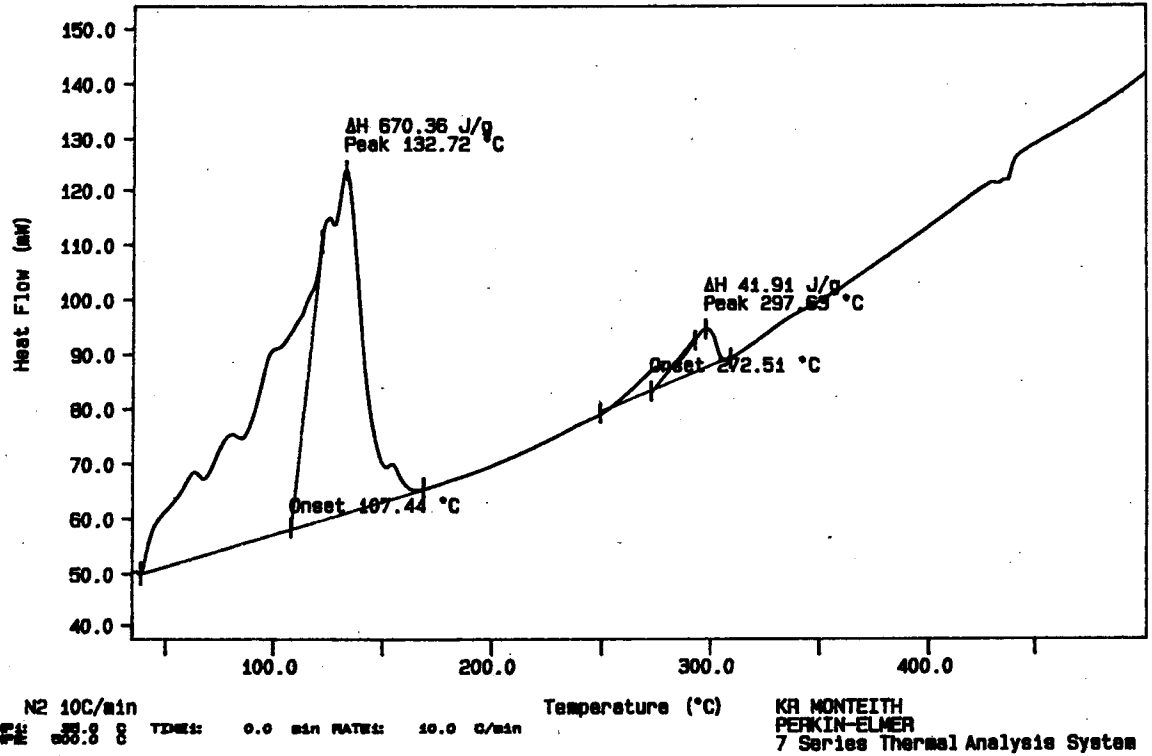
99

Curve 1: DSC
File info: SAM072806 Sun Jul 28 13:50:13 1996
Sample Weight: 14.240 mg
S96T003922

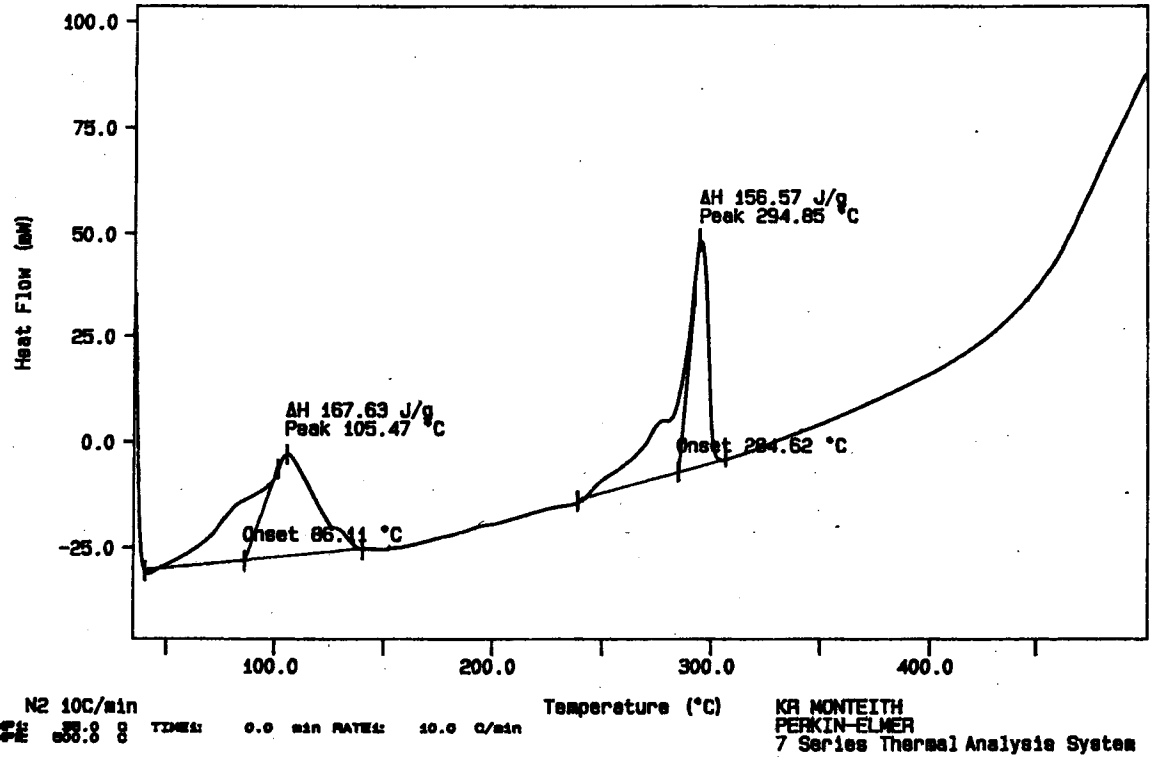


67

Curve 1: DSC
File info: SAM072807 Sun Jul 28 15:47:35 1996
Sample Weight: 27.560 mg
S96T003922 DUP



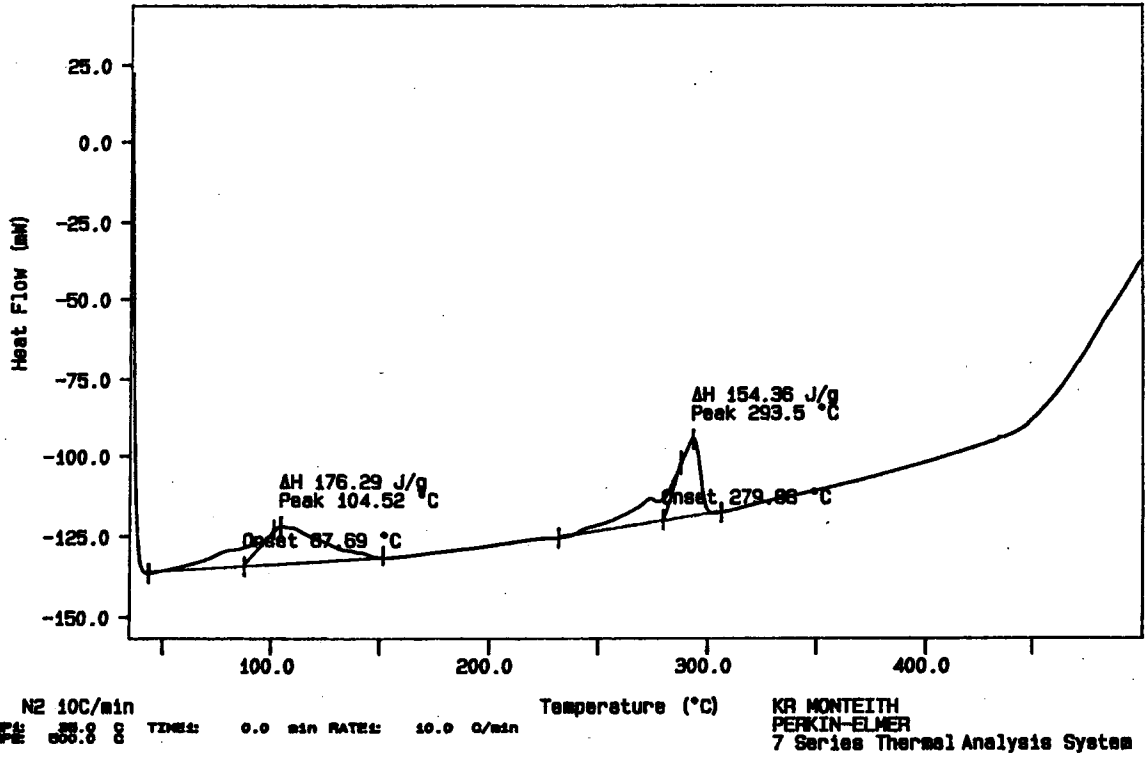
Curve 1: DSC
File info: SAM072808 Sun Jul 28 19:14:40 1996
Sample Weight: 34.360 mg
S96T003923 SAM



N2 10C/min
TEMP: 25.0 C TIME: 0.0 min RATE: 10.0 C/min
TEMP: 600.0 C

KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System

Curve 1: DSC
File info: SAM072809 Sun Jul 28 21:04:51 1996
Sample Weight: 18.030 mg
S96T003923 DUP



N2 10C/min
TEMP: 25.0 C TIME: 0.0 min RATE: 10.0 C/min
TEMP: 650.0 C
KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System

WHC-SD-WM-DP-194, REV. 0

LABCORE Data Entry Template for Worklist# 11177

Analyst: ADP **Instrument:** DSC0 3 **Book #** 12N14B

Method: LA-514-114 Rev/Mod C-1

Worklist Comment: S-109 DSC, RUN UNDER N2. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-03	SOLID	28.45	27.00*	N/A	Joules/g
96000979	S-109	2	SAMPLE	S96T003924	0		DSC-03	SOLID	N/A	Ø		Joules/g
96000979	S-109	3	DUP	S96T003924	0		DSC-03	SOLID	Ø	Ø	N/A	Joules/g
96000979	S-109	4	SAMPLE	S96T003925	0		DSC-03	SOLID	N/A	Ø		Joules/g
96000979	S-109	5	DUP	S96T003925	0		DSC-03	SOLID	Ø	Ø	N/A	Joules/g

Final page for worklist # 11177

See attached for Signatures
Analyst Signature Date 7-29-96

Analyst Signature Date 7-29-96

BDV

Verified/Validated by
Blandina Valenzuela 8-1-96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Data Entry Template for Worklist# 11177

Analyst: ASP **Instrument:** DSC0 **Book #** 12N14B

Method: LA-514-113 Rev/Mod C-1

Worklist Comment: S-109 DSC, RUN UNDER N2. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-01	SOLID			N/A	Joules/g
96000979	S-109	2	SAMPLE	S96T003924	0		DSC-01	SOLID	N/A			Joules/g
96000979	S-109	3	DUP	S96T003924	0		DSC-01	SOLID			N/A	Joules/g
96000979	S-109	4	SAMPLE	S96T003925	0		DSC-01	SOLID	N/A			Joules/g
96000979	S-109	5	DUP	S96T003925	0		DSC-01	SOLID			N/A	Joules/g

Final page for worklist # 11177

Anthony Punctor ASP 7-28-96
Analyst Signature **Date**

Analyst Signature **Date**

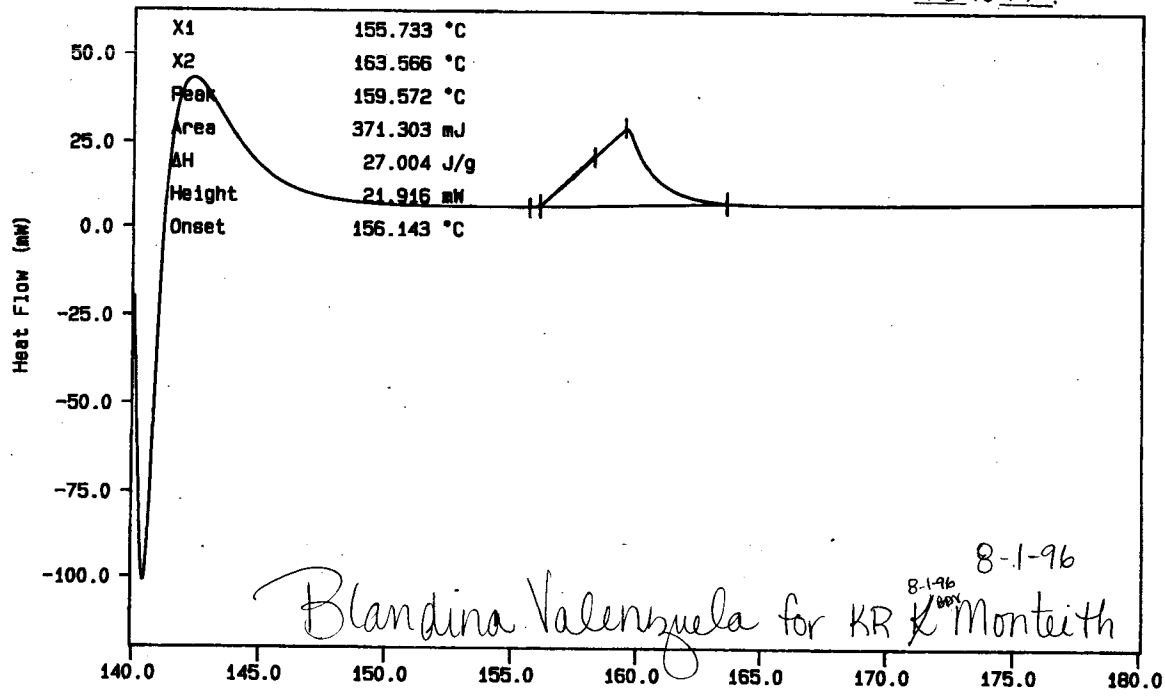
DSC-03 instrument was used.
7-29-96
Blandina Valenzuela

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

Curve 1: DSC
File info: IND072801 Sun Jul 28 04:50:23 1996
Sample Weight: 13.750 mg
12N14-B INDIUM AT 10C/MIN

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 73 TO 77.

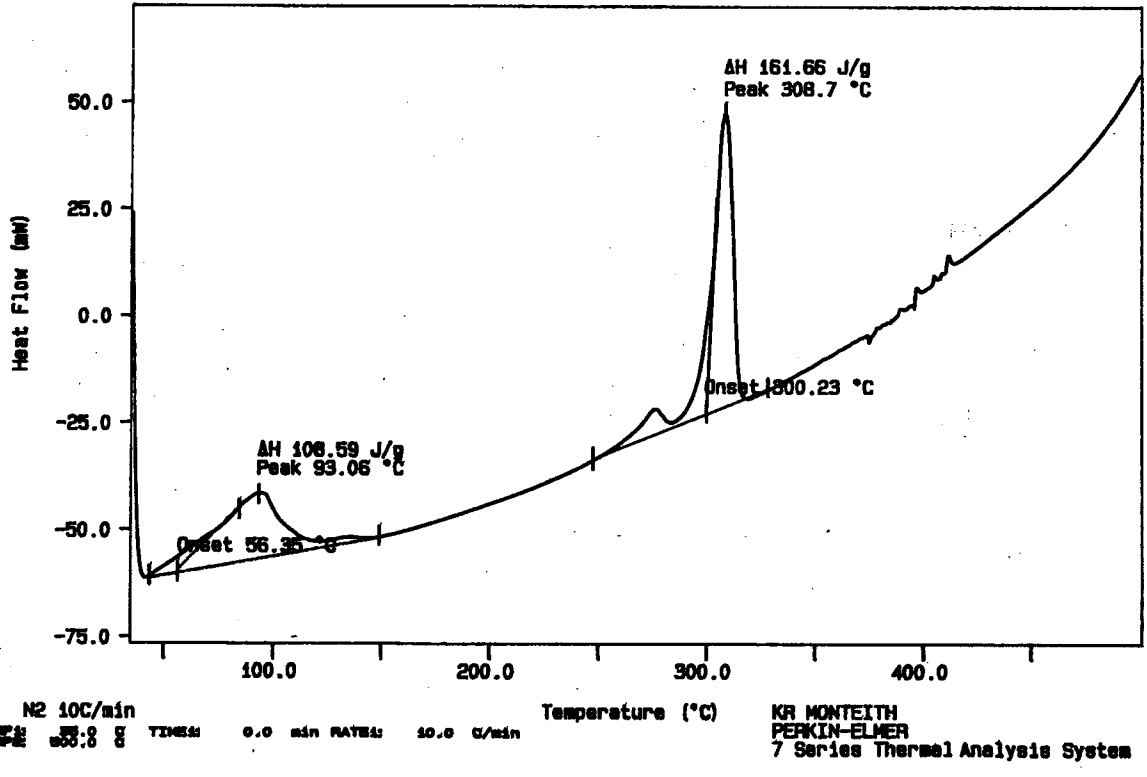


8-1-96
Blandina Valenzuela for KR Monteith 8-1-96

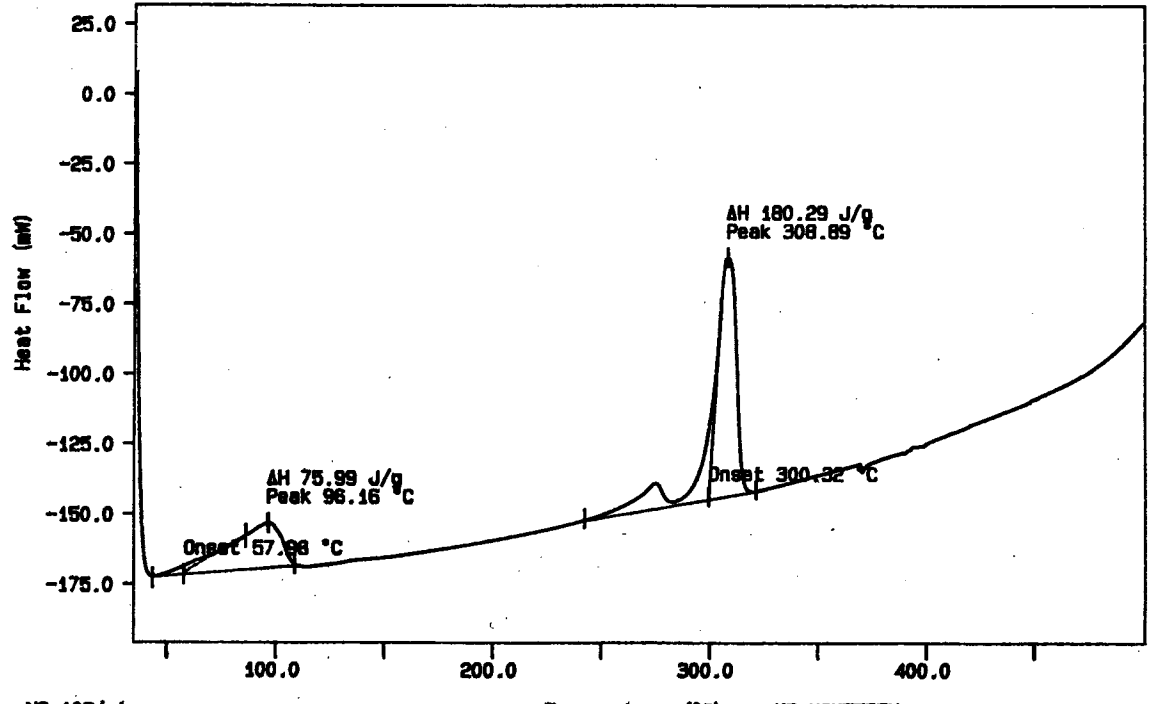
N2, EXOTHERM DOWN
TEMP1: 140.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 180.0 C

KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Jul 29 05:44:42 1996

Curve 1: DSC
File info: SAM072810 Sun Jul 28 22:21:28 1996
Sample Weight: 31.380 mg
S96T003924 SAM



Curve 1: DSC
File info: SAM072811 Sun Jul 28 23:29:27 1996
Sample Weight: 36.830 mg
S96T003924 DUP

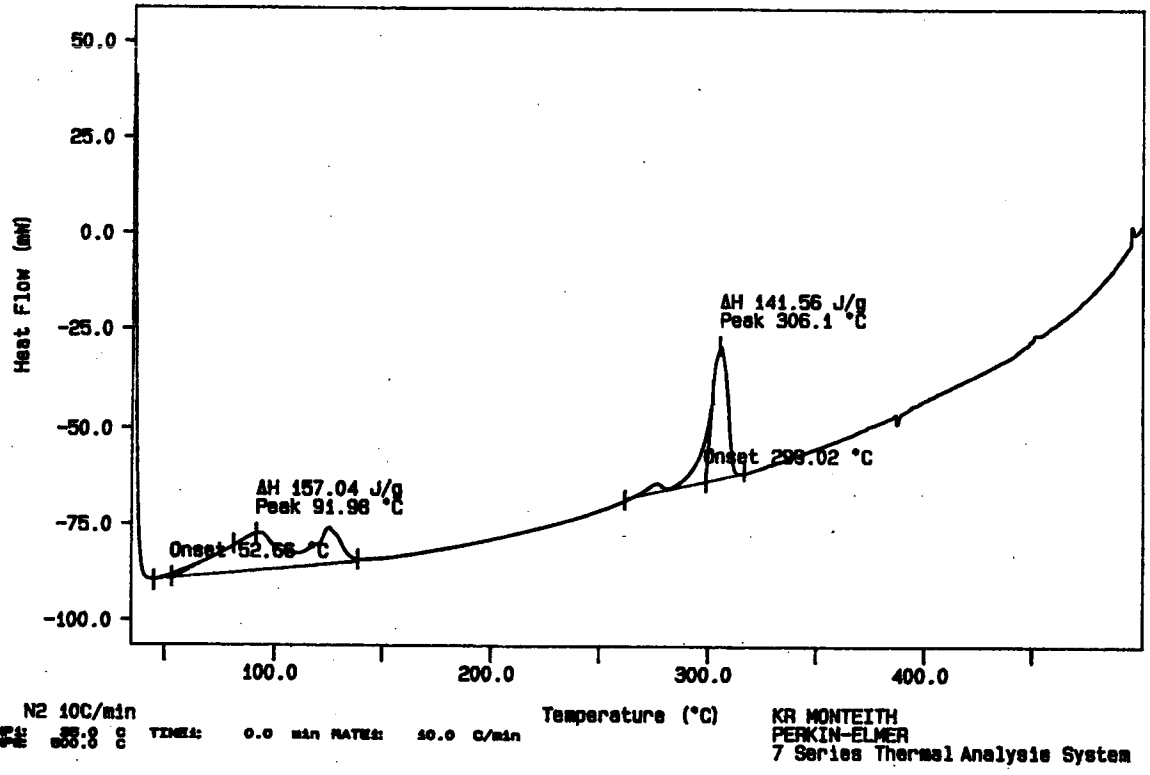


N2 10C/min
TEMP: 35.0 C TIME: 0.0 min RATE: 10.0 C/min
TEMP: 500.0 C
KA MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System

WHC-SD-WM-DP-194, REV. 0

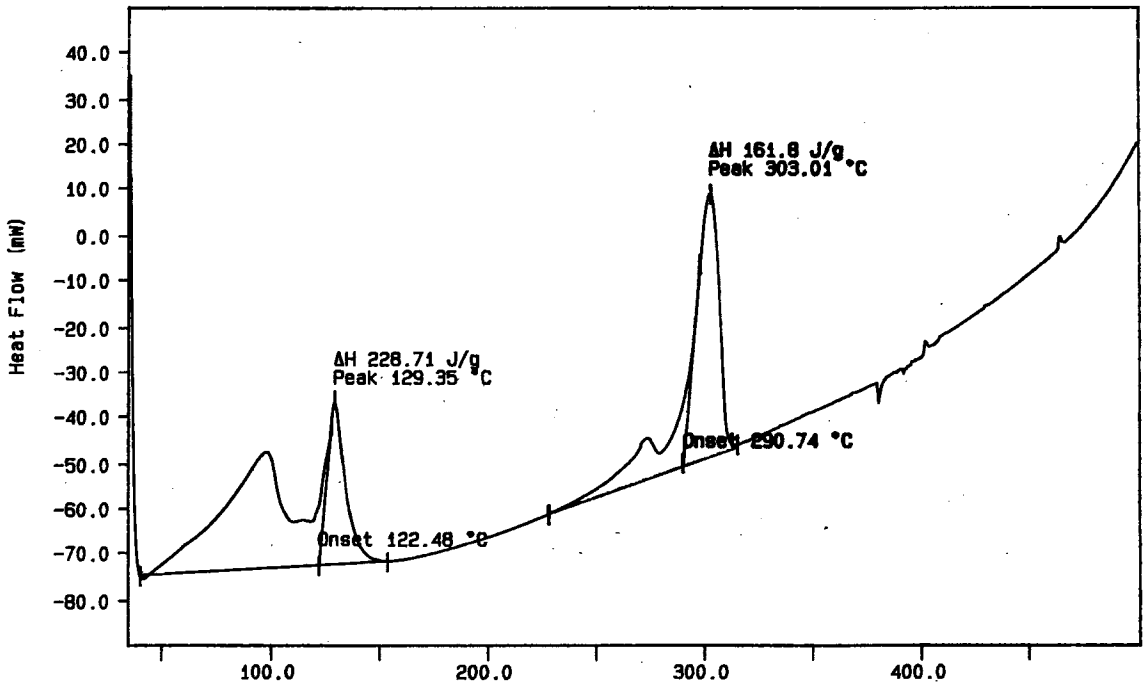
75

Curve 1: DSC
File info: SAM072812 Mon Jul 29 01:39:54 1996
Sample Weight: 16.140 mg
S96T003925 SAM



N2 10C/min
TEMP: 35.0 C TIME: 0.0 min RATE: 10.0 C/min
TEMP: 600.0 C
KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System

Curve 1: DSC
File info: SAM072813 Mon Jul 29 02:57:08 1996
Sample Weight: 34.780 mg
S96T003925 DUP



N2 10C/min
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 600.0 C

KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Jul 29 03:06:18 1996

LABCORE Data Entry Template for Worklist# 11178

Analyst: ADP **Instrument:** DSC0 1 **Book #** 12 N413

Method: LA-514-113 Rev/Mod C-1

Worklist Comment: S-109 DSC, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD				DSC-01	SOLID	28.45	26.2 *	N/A	Joules/g
96000979	S-109	2 SAMPLE	S96T003926	0		DSC-01	SOLID	N/A	1.2		Joules/g
96000979	S-109	3 DUP	S96T003926	0		DSC-01	SOLID	1.2	Ø	N/A	Joules/g
96000979	S-109	4 SAMPLE	S96T003927	0		DSC-01	SOLID	N/A	Ø		Joules/g
96000979	S-109	5 DUP	S96T003927	0		DSC-01	SOLID	Ø	30.5	N/A	Joules/g

Final page for worklist # 11178

Anthony Turner 07-28-96
Analyst Signature **Date**

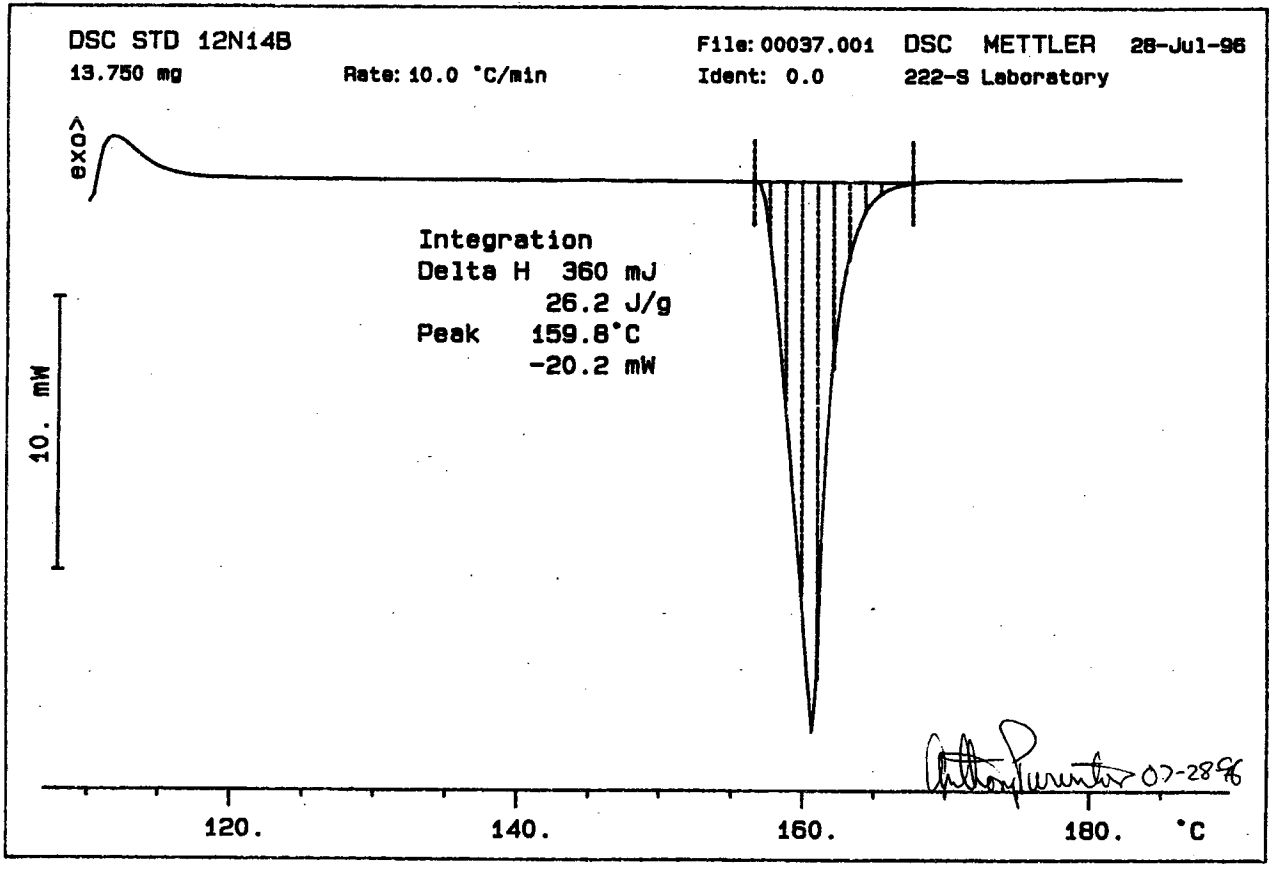
Stephen 7-29-96
Analyst Signature **Date**

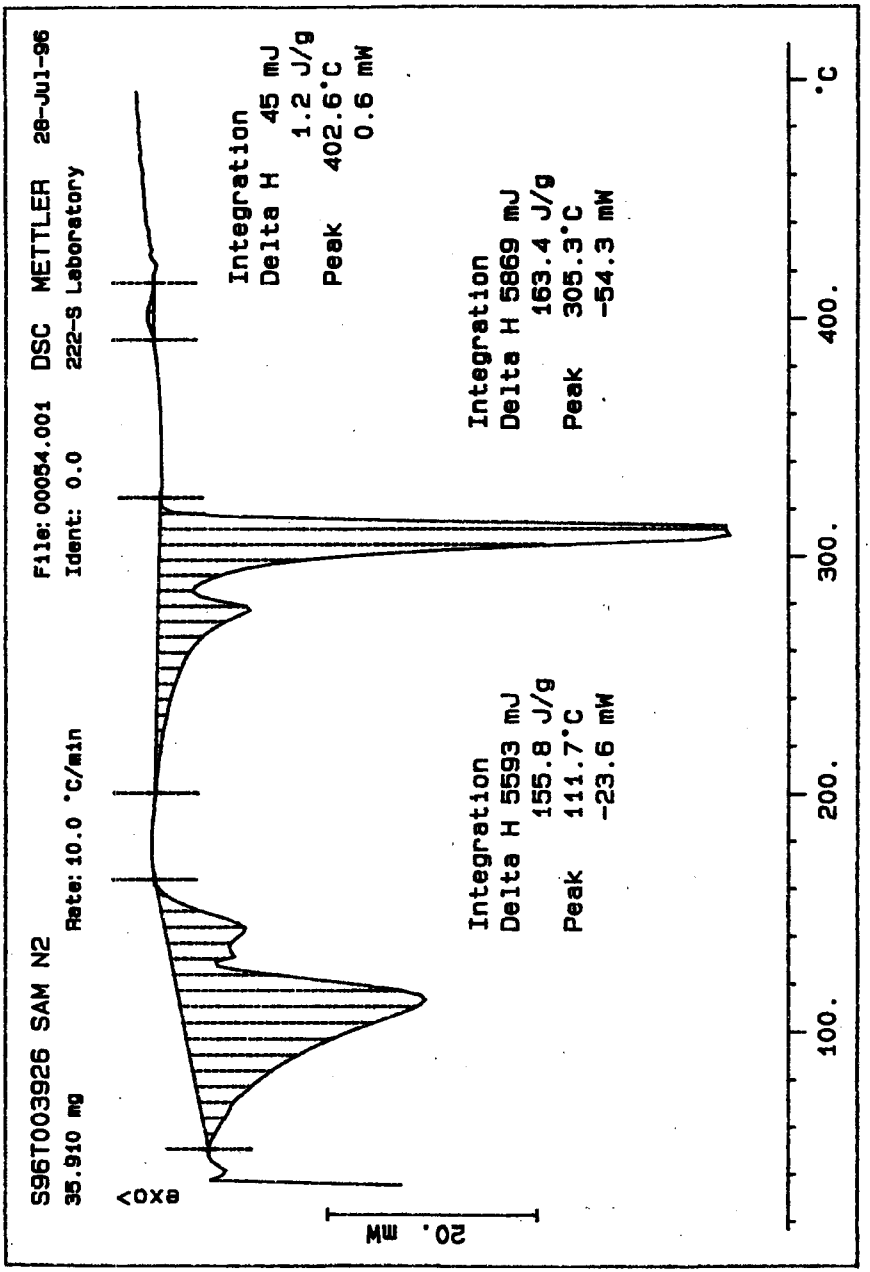
Verified/Validated by
Blandina
Valenzuela
7-31-96

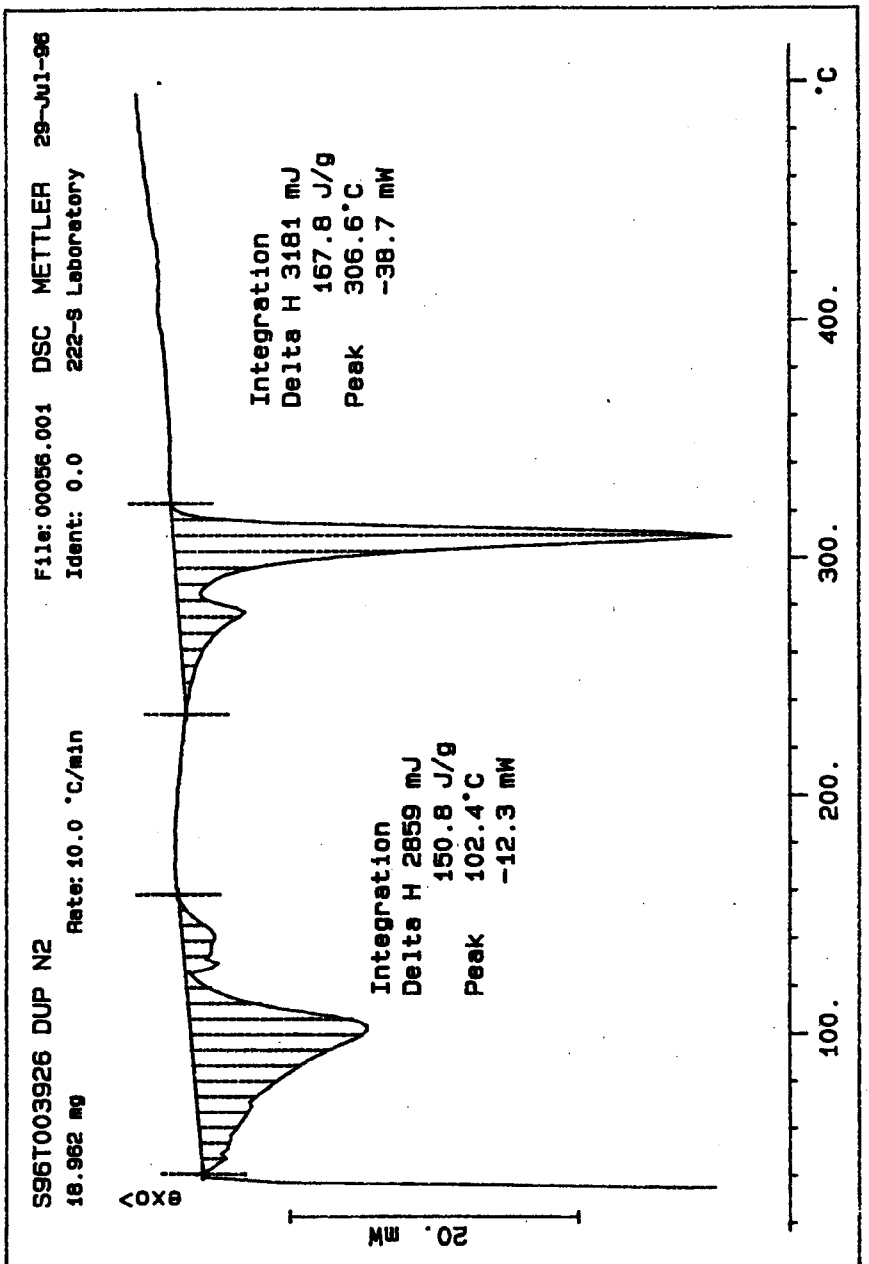
Data Entry Comments:

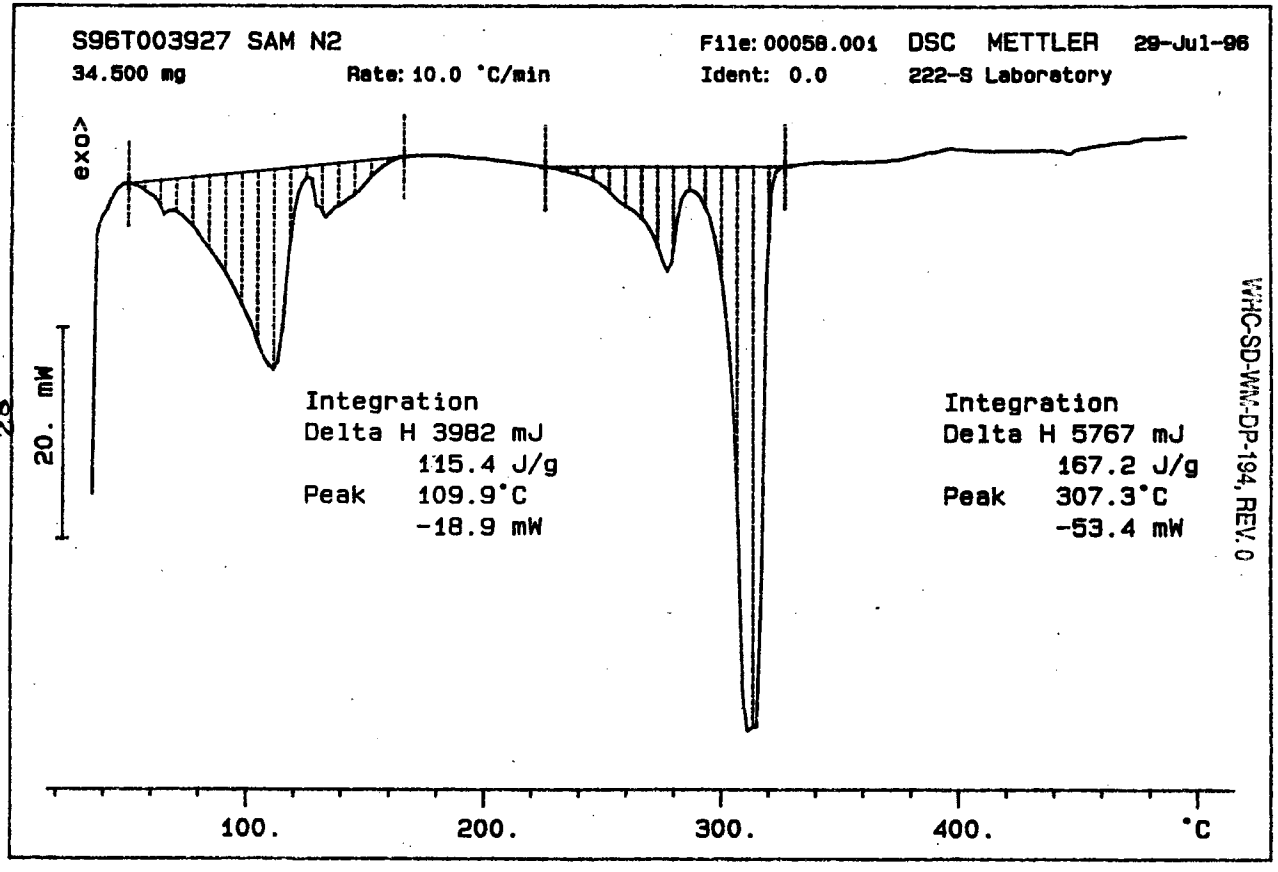
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

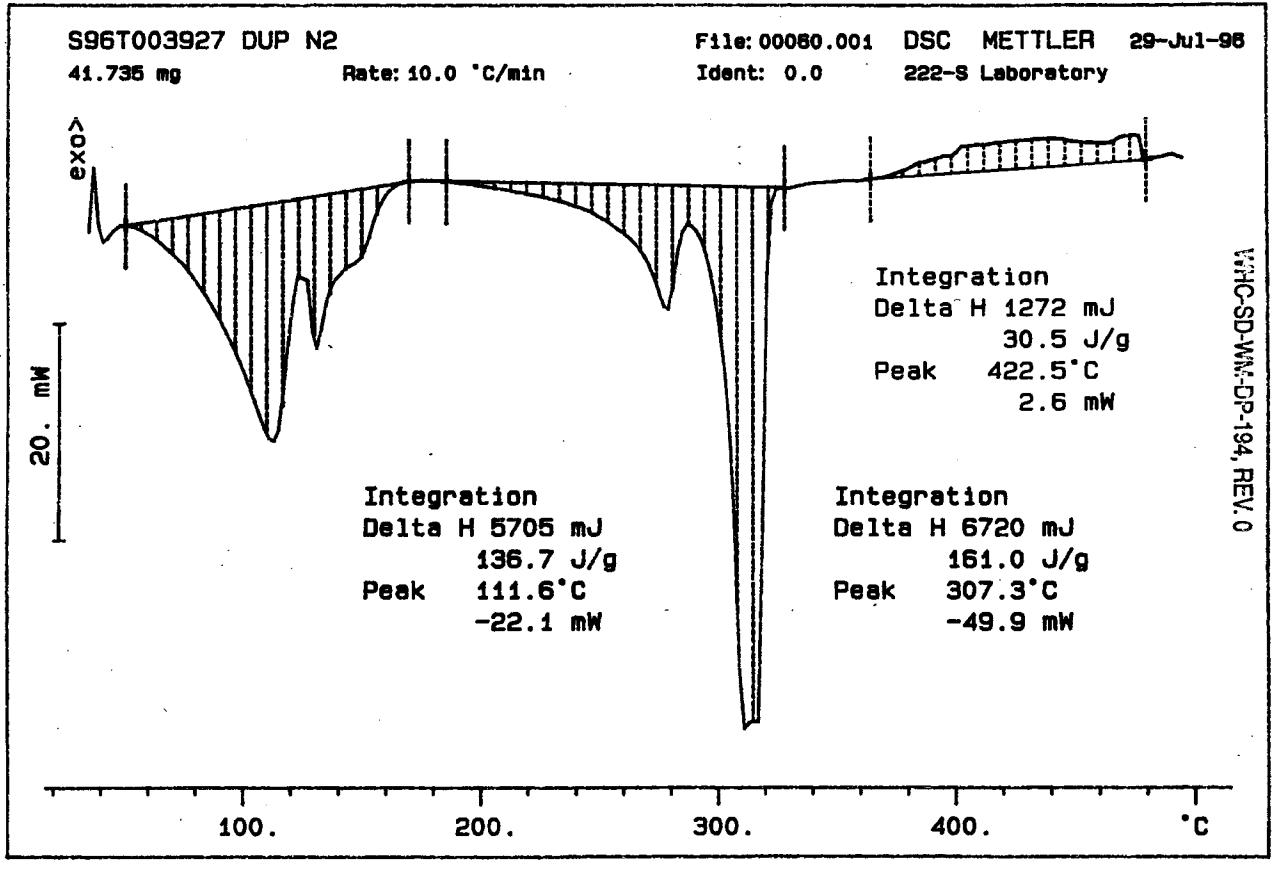
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 79 TO 83




S96T003926 SAM N2
35.910 mg
Rate: 10.0 °C/min
File: 00054.001 DSC METTLER 28-Jul-96
Ident: 0.0 222-S Laboratory
Integration
Delta H 45 mJ
1.2 J/g
Peak 402.6°C
0.6 mW
Integration
Delta H 5869 mJ
163.4 J/g
Peak 305.3°C
-54.3 mW
Integration
Delta H 5593 mJ
155.8 J/g
Peak 111.7°C
-23.6 mW
exo>
20. mW
100.
200.
300.
400.
°C


S96T003926 DUP N2
18.962 mg
Rate: 10.0 °C/min
File: 00056.001 DSC METTLER 29-Jul-96
Ident: 0.0 222-S Laboratory
Integration
Delta H 3181 mJ
167.8 J/g
Peak 306.6°C
-38.7 mW
Integration
Delta H 2859 mJ
150.8 J/g
Peak 102.4°C
-12.3 mW
exo>
20. mW
100.
200.
300.
400.
°C


S96T003927 SAM N2
34.500 mg
Rate: 10.0 °C/min
File: 00058.001
Ident: 0.0
DSC METTLER 29-Jul-96
222-S Laboratory
exo>
20. mW
Integration
Delta H 3982 mJ
115.4 J/g
Peak 109.9°C
-18.9 mW
Integration
Delta H 5767 mJ
167.2 J/g
Peak 307.3°C
-53.4 mW
100.
200.
300.
400.
°C
WHC-SD-WM-DP-194, REV. 0



LABCORE Data Entry Template for Worklist# 11309

Analyst: KRM **Instrument:** DSC0 1 **Book #** 12N4B

Method: LA-514-113 Rev/Mod C-1

Worklist Comment: S-109 DSC, RUN UNDER N2. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-01	SOLID	28.45	28.2	N/A	Joules/g
96000979	S-109	2	SAMPLE	S96T004017	0		DSC-01	SOLID	N/A	31.7		Joules/g
96000979	S-109	3	DUP	S96T004017	0		DSC-01	SOLID	31.7	47.8	N/A	Joules/g

Final page for worklist # 11309

Analyst Signature 7-31-96 Date

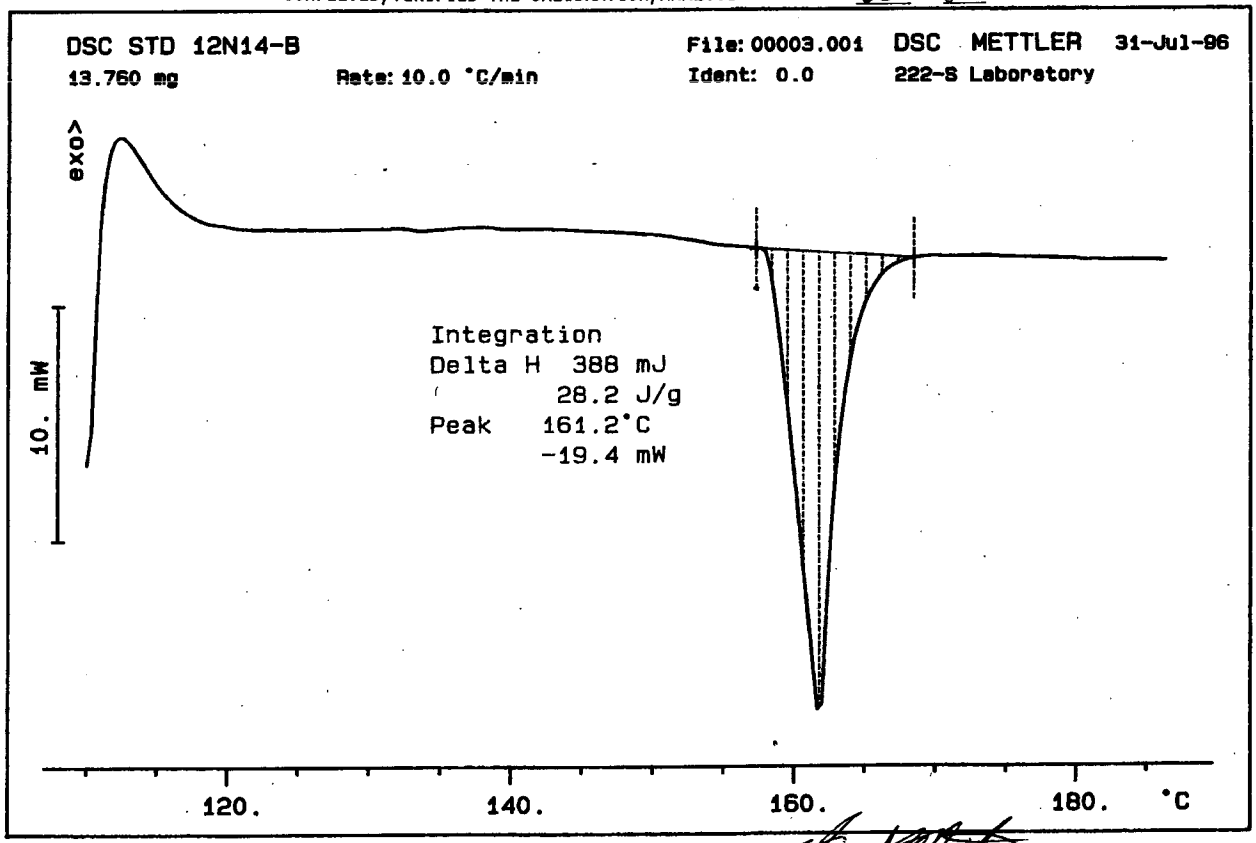
Analyst Signature 8-1-96 Date

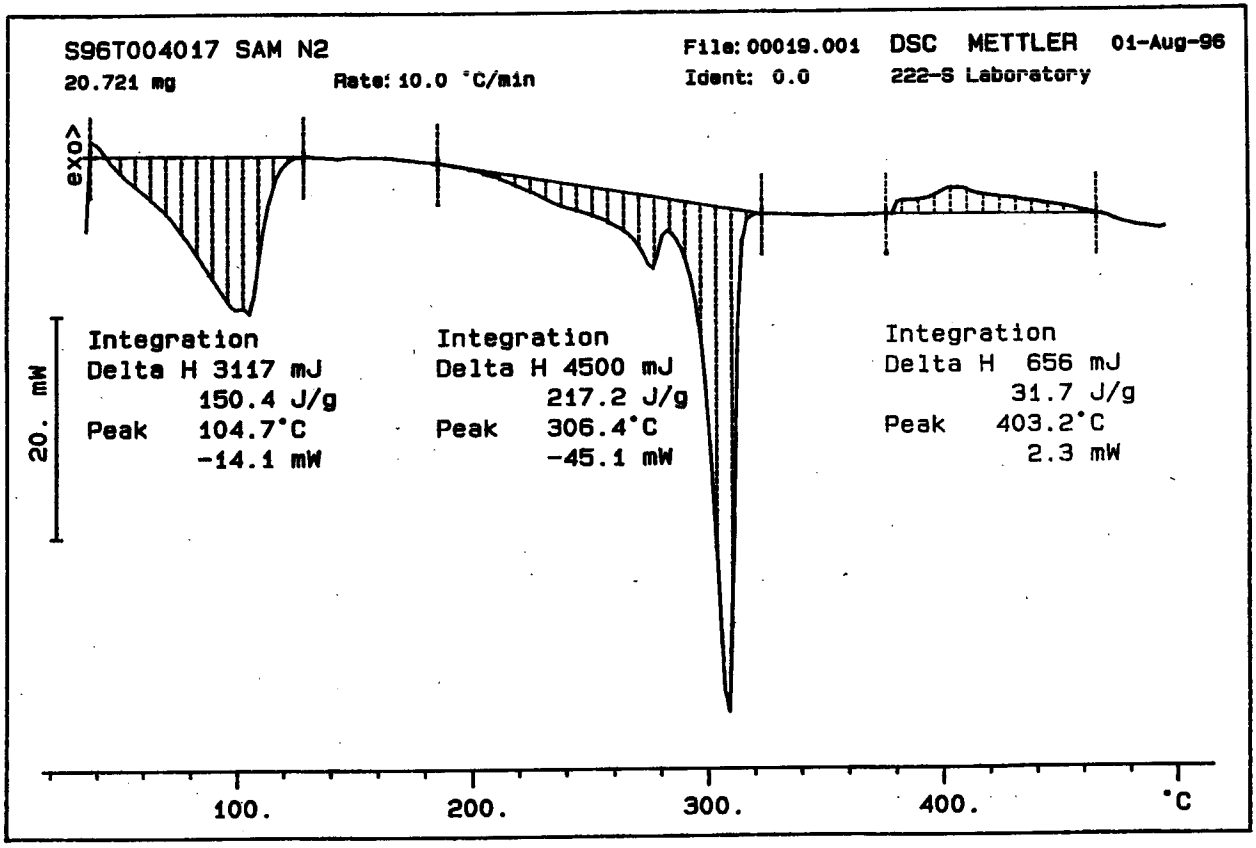
Verified by Blandina Valenzuela 8-6-96

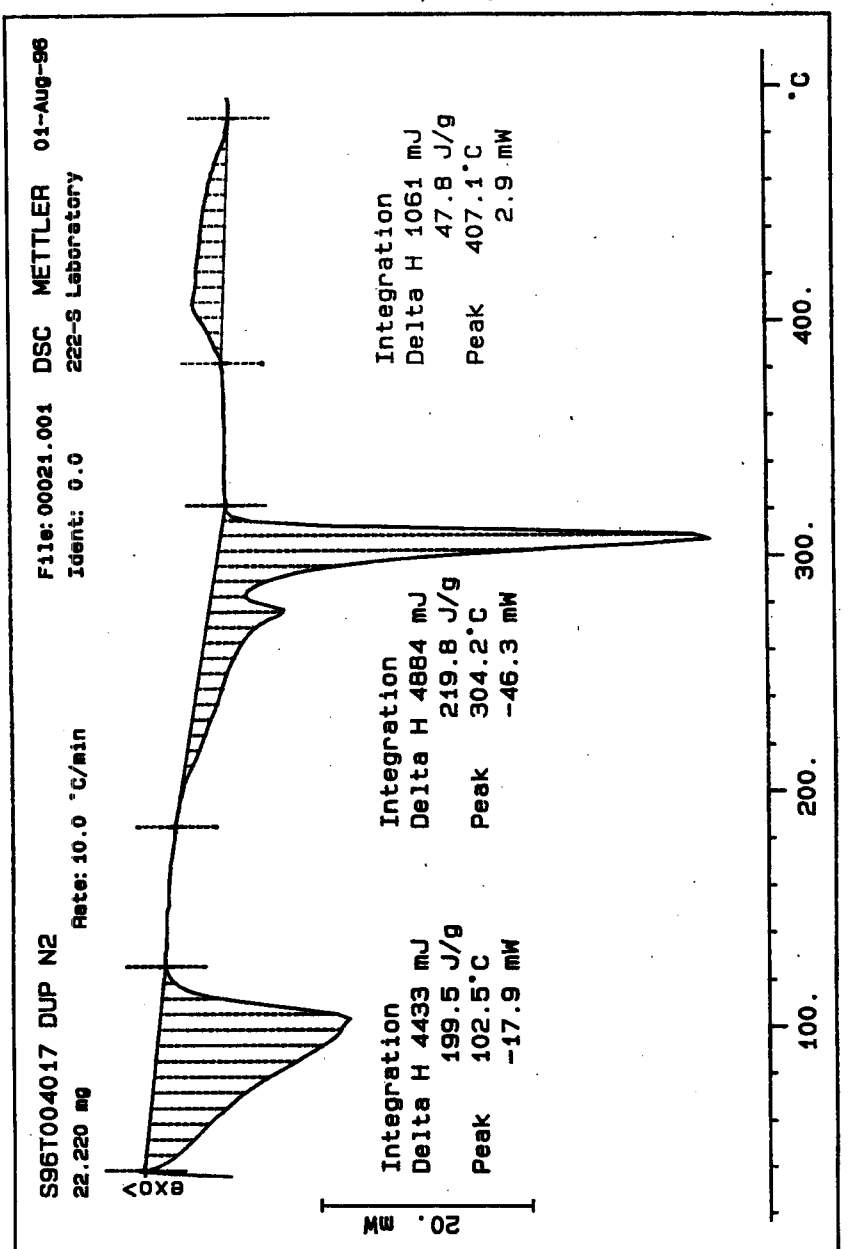
Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 85 TO 87.






S96T004017 DUP N2
22.220 mg
Rate: 10.0 °C/min
File: 00021.001
Ident: 0.0
DSC METTLER 01-Aug-96
222-S Laboratory
Integration
Delta H 4433 mJ
199.5 J/g
Peak 102.5°C
-17.9 mW
Integration
Delta H 4884 mJ
219.8 J/g
Peak 304.2°C
-46.3 mW
Integration
Delta H 1061 mJ
47.8 J/g
Peak 407.1°C
2.9 mW
20. mW
exo>
100.
200.
300.
400.
°C

LABCORE Data Entry Template for Worklist# 11599

Analyst: BDV **Instrument:** DSC01 **Book #** —

Method: LA-514-113 Rev/Mod —

Worklist Comment: Dry DSC for S-109. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
96000979	S-109	1	SAMPLE	S96T003734	0		DSC-02	SOLID	N/A	Ø		Joules/g Dry
96000979	S-109	2	DUP	S96T003734	0		DSC-02	SOLID	Ø	Ø	N/A	Joules/g Dry
96000961	S-109	3	SAMPLE	S96T003800	0		DSC-02	SOLID	N/A	Ø		Joules/g Dry
96000961	S-109	4	DUP	S96T003800	0		DSC-02	SOLID	Ø	Ø	N/A	Joules/g Dry
96000961	S-109	5	SAMPLE	S96T003801	0		DSC-02	SOLID	N/A	Ø		Joules/g Dry
96000961	S-109	6	DUP	S96T003801	0		DSC-02	SOLID	Ø	Ø	N/A	Joules/g Dry
96000961	S-109	7	SAMPLE	S96T003839	0		DSC-02	SOLID	N/A	Ø		Joules/g Dry
96000961	S-109	8	DUP	S96T003839	0		DSC-02	SOLID	Ø	Ø	N/A	Joules/g Dry
96000979	S-109	9	SAMPLE	S96T003759	0		DSC-02	SOLID	N/A	Ø		Joules/g Dry
96000979	S-109	10	DUP	S96T003759	0		DSC-02	SOLID	Ø	Ø	N/A	Joules/g Dry
96000979	S-109	11	SAMPLE	S96T003760	0		DSC-02	SOLID	N/A	.9		Joules/g Dry
96000979	S-109	12	DUP	S96T003760	0		DSC-02	SOLID	.9	1.2	N/A	Joules/g Dry
96000979	S-109	13	SAMPLE	S96T003922	0		DSC-02	SOLID	N/A	Ø		Joules/g Dry
96000979	S-109	14	DUP	S96T003922	0		DSC-02	SOLID	Ø	Ø	N/A	Joules/g Dry

Final page for worklist # 11599

Blandina Valenzuela
Analyst Signature **Date** 8-6-96

Analyst Signature **Date**

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Data Entry Template for Worklist# 11600

Analyst: BDV **Instrument:** DSC01 **Book #** ——

Method: LA-514-113 Rev/Mod ——

Worklist Comment: Dry DSC for S-109. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
96000979	S-109	1	SAMPLE	S96T003923	0		DSC-02	SOLID	N/A	Ø		Joules/g Dry
96000979	S-109	2	DUP	S96T003923	0		DSC-02	SOLID	Ø	Ø	N/A	Joules/g Dry
96000979	S-109	3	SAMPLE	S96T003924	0		DSC-02	SOLID	N/A	Ø		Joules/g Dry
96000979	S-109	4	DUP	S96T003924	0		DSC-02	SOLID	Ø	Ø	N/A	Joules/g Dry
96000979	S-109	5	SAMPLE	S96T003925	0		DSC-02	SOLID	N/A	Ø		Joules/g Dry
96000979	S-109	6	DUP	S96T003925	0		DSC-02	SOLID	Ø	Ø	N/A	Joules/g Dry
96000979	S-109	7	SAMPLE	S96T003926	0		DSC-02	SOLID	N/A	1.3		Joules/g Dry
96000979	S-109	8	DUP	S96T003926	0		DSC-02	SOLID	1.3	Ø	N/A	Joules/g Dry
96000979	S-109	9	SAMPLE	S96T003927	0		DSC-02	SOLID	N/A	Ø		Joules/g Dry
96000979	S-109	10	DUP	S96T003927	0		DSC-02	SOLID	Ø	32.5	N/A	Joules/g Dry
96000979	S-109	11	SAMPLE	S96T004017	0		DSC-02	SOLID	N/A	34.3		Joules/g Dry
96000979	S-109	12	DUP	S96T004017	0		DSC-02	SOLID	34.3	51.7	N/A	Joules/g Dry

Final page for worklist # 11600

Blandina Valenzuela
Analyst Signature **Date** 8-6-96

Analyst Signature **Date**

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Data Entry Template for Worklist# 11661

Analyst: EAL **Instrument:** DSC0 1 **Book #** 12N14B

Method: LA-514-113 Rev/Mod C-1

Worklist Comment: S-109 FOR DSC PLEASE RUN UNDER N2

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD				DSC-01	LIQUID	28.45	26.9	N/A	Joules/g
96000961	S-109	2 SAMPLE	S96T004023	0		DSC-01	LIQUID	N/A	Ø		Joules/g
96000961	S-109	3 DUP	S96T004023	0		DSC-01	LIQUID	Ø	Ø	N/A	Joules/g
96000961	S-109	4 SAMPLE	S96T004033	0		DSC-01	LIQUID	N/A	Ø		Joules/g
96000961	S-109	5 DUP	S96T004033	0		DSC-01	LIQUID	Ø	Ø	N/A	Joules/g

Final page for worklist # 11661

A. Lambert 08-06-96
Analyst Signature **Date**

Stan Peterson 8-7-96
Analyst Signature **Date**

Verified / Validated by
Blandina Valenzuela 8-8-96

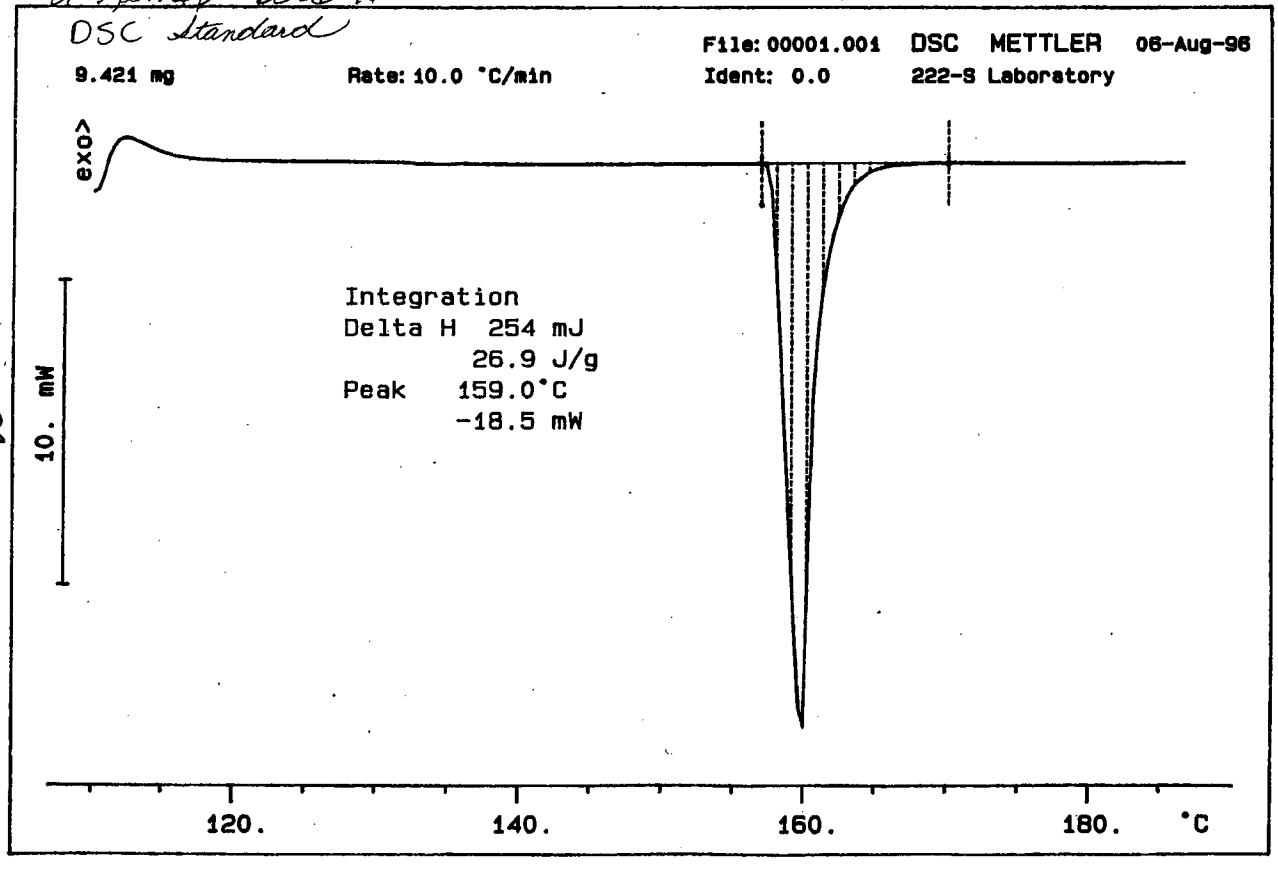
Data Entry Comments:

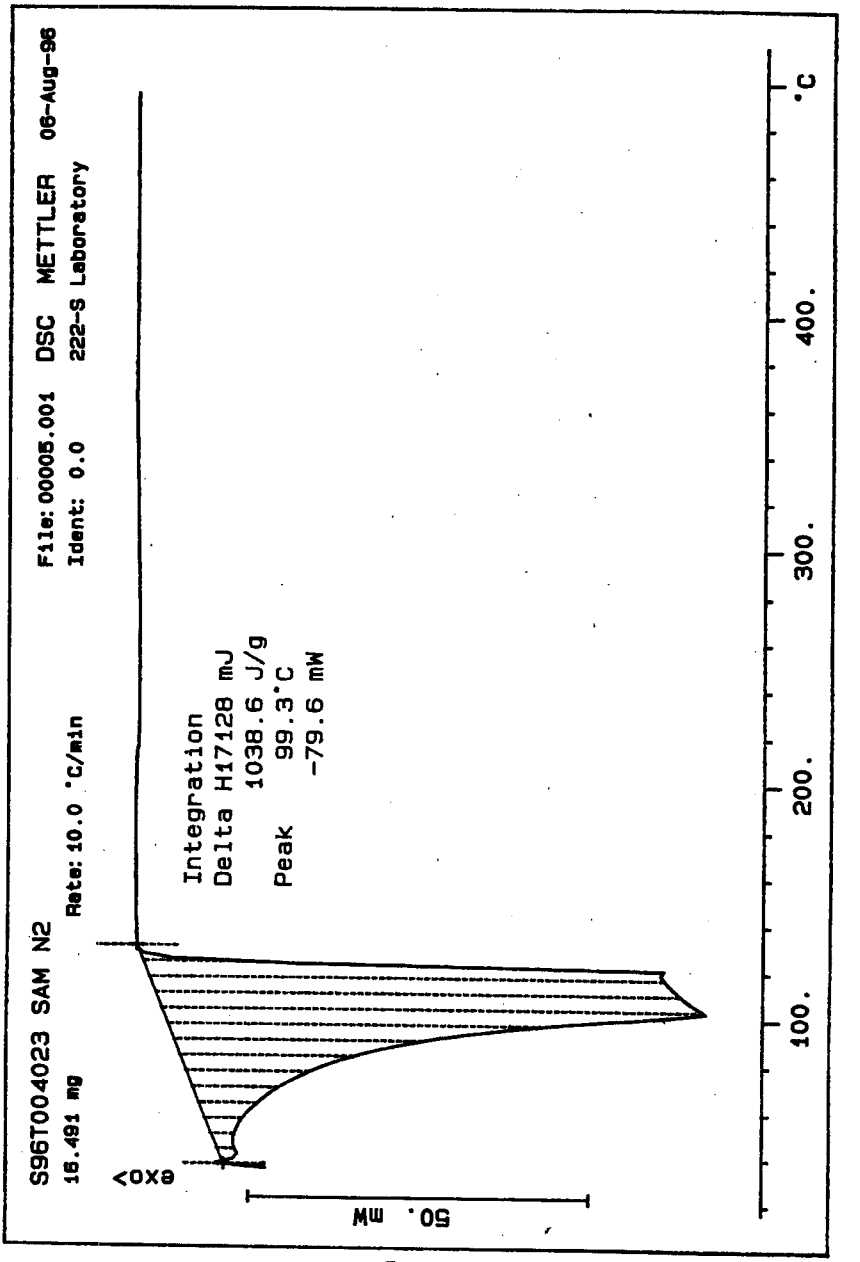
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

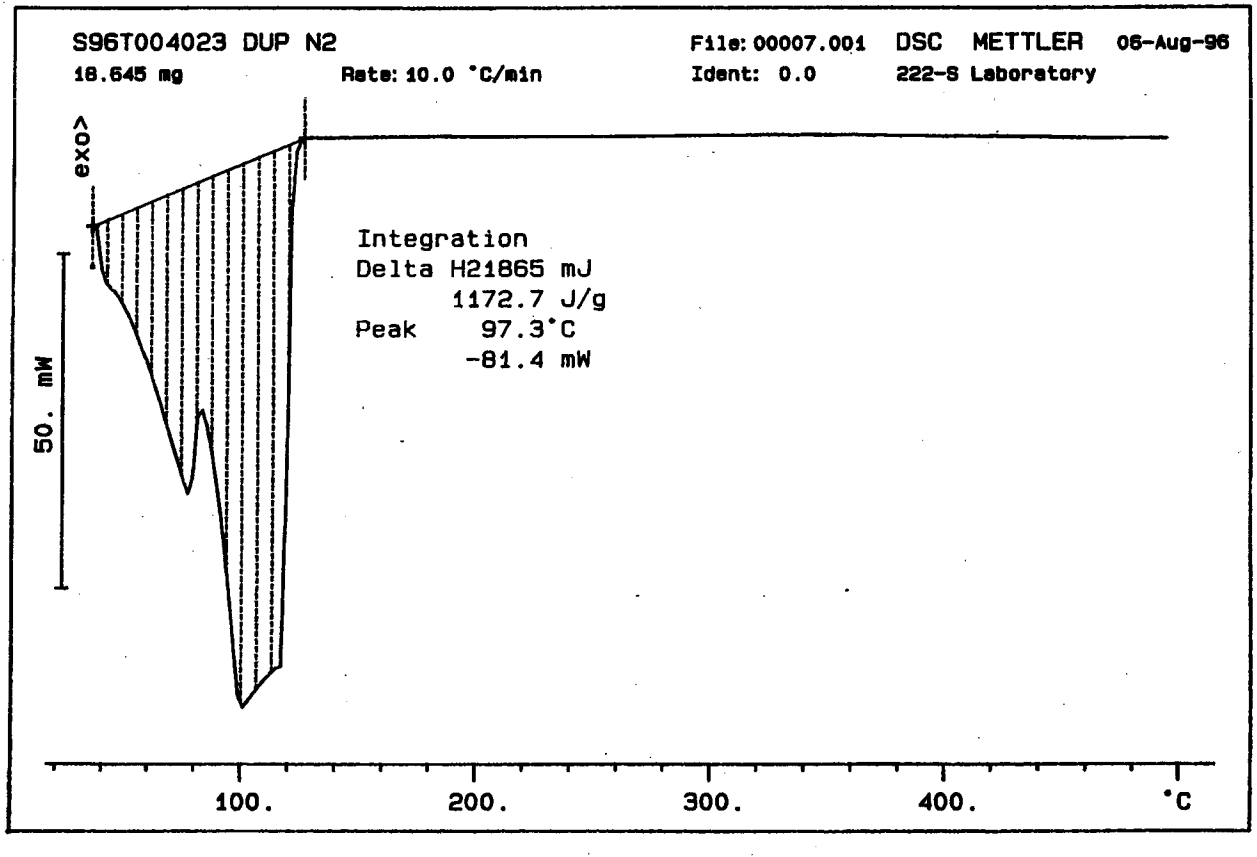
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 91 TO 95.

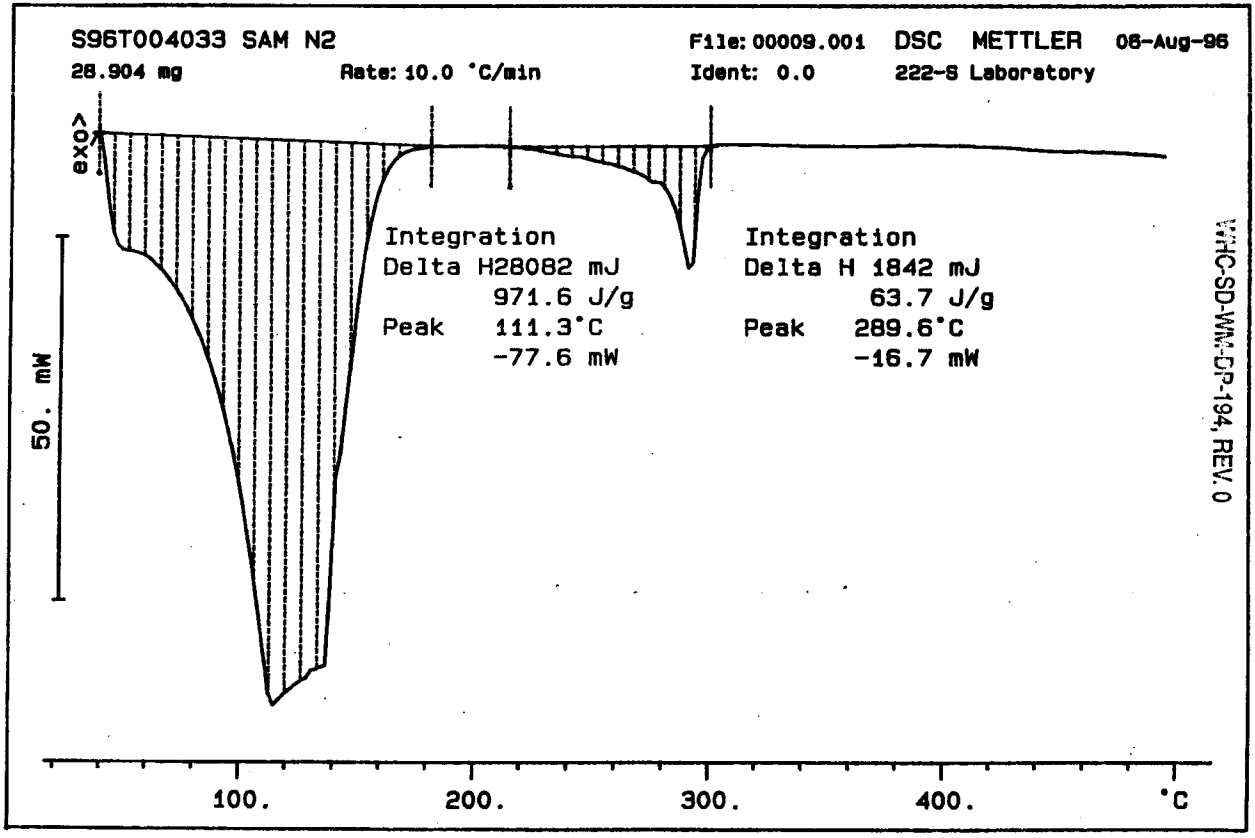
A. Lambert 08-06-96

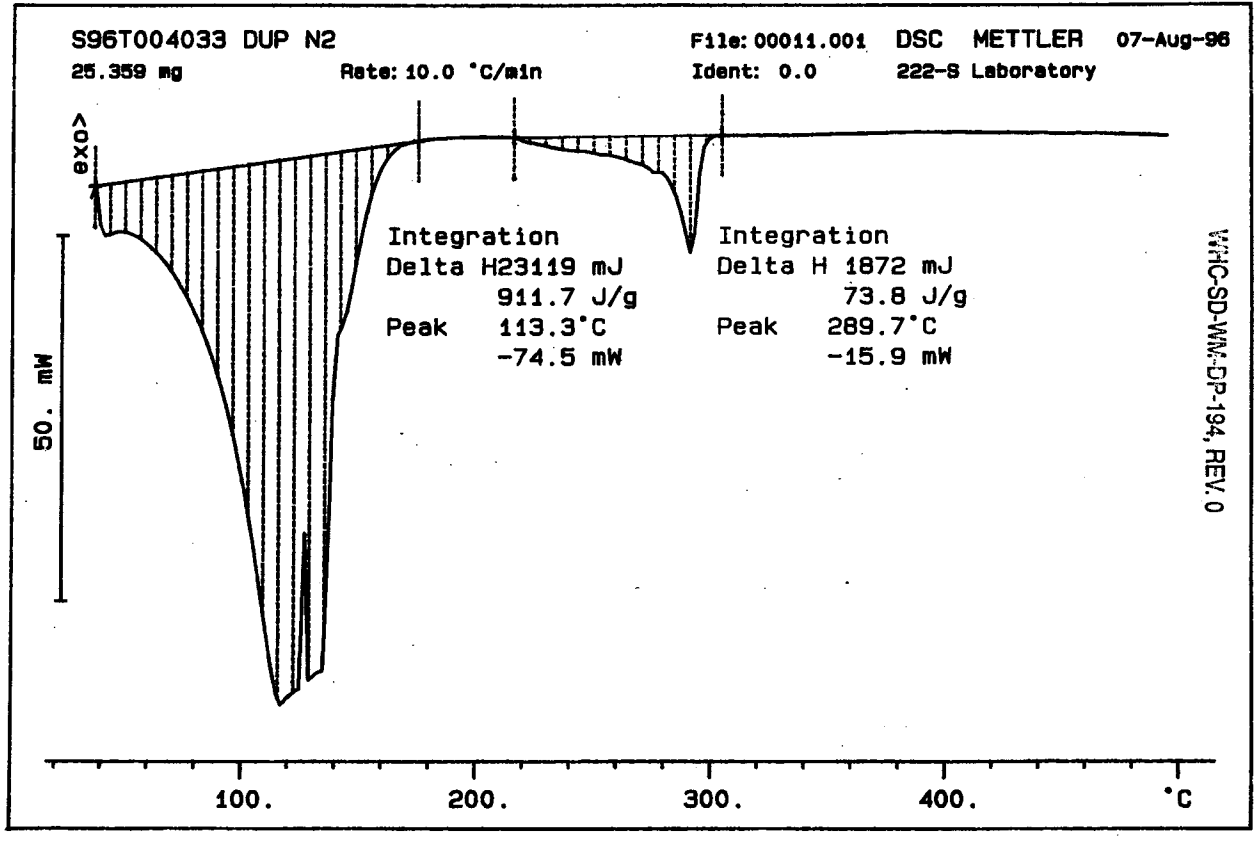
DSC Standard




S96T004023 SAM N2
16.491 mg
Rate: 10.0 °C/min
File: 00005.001
Ident: 0.0
DSC METTLER 06-Aug-96
222-S Laboratory
Integration
Delta H17128 mJ
1038.6 J/g
Peak 99.3°C
-79.6 mW
exo>
50. mW
100.
200.
300.
400.
°C


S96T004023 DUP N2
File: 00007.001 DSC METTLER 06-Aug-96
18.645 mg
Rate: 10.0 °C/min
Ident: 0.0
222-S Laboratory
exo>
50. mW
Integration
Delta H21865 mJ
1172.7 J/g
Peak 97.3°C
-81.4 mW
100.
200.
300.
400.
°C


S96T004033 SAM N2
28.904 mg
Rate: 10.0 °C/min
File: 00009.001
Ident: 0.0
DSC METTLER
222-S Laboratory
08-Aug-96
exo>
50. mW
Integration
Delta H28082 mJ
971.6 J/g
Peak 111.3°C
-77.6 mW
Integration
Delta H 1842 mJ
63.7 J/g
Peak 289.6°C
-16.7 mW
100.
200.
300.
400.
°C
WHC-SD-WM-DP-194, REV. 0


S96T004033 DUP N2
25.359 mg
Rate: 10.0 °C/min
File: 00011.001
Ident: 0.0
DSC METTLER
07-Aug-96
222-S Laboratory
exo
50. mW
Integration
Delta H23119 mJ
911.7 J/g
Peak 113.3°C
-74.5 mW
Integration
Delta H 1872 mJ
73.8 J/g
Peak 289.7°C
-15.9 mW
100.
200.
300.
400.
°C
WHC-SD-WM-DP-194, REV. 0

LABCORE Data Entry Template for Worklist# 11664

Analyst: EAL **Instrument:** DSC0 1 **Book #** ~~12N14A~~ 12N14B 8-8-96 ROY

Method: LA-514-113 Rev/Mod C-1

Worklist Comment: S-109 FOR DSC PLEASE RUN UNDER N2

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-01	SOLID	28.45	26.6	N/A	Joules/g
96000961	S-109	2	SAMPLE	S96T004035	0		DSC-01	SOLID	N/A	Ø		Joules/g
96000961	S-109	3	DUP	S96T004035	0		DSC-01	SOLID	Ø	Ø	N/A	Joules/g
		4	STD				DSC-01	SOLID	28.45	28.9	N/A	Joules/g
96000961	S-109	5	SAMPLE	S96T004036	0		DSC-01	SOLID	N/A	9.5		Joules/g
96000961	S-109	6	DUP	S96T004036	0		DSC-01	SOLID	9.5	8.9	N/A	Joules/g

Final page for worklist # 11664

See attached for signatures

Analyst Signature **Date** 8-7-96 **Analyst Signature** **Date**

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Data Entry Template for Worklist# 11664

Analyst: EAH/SMF **Instrument:** DSC0 _____ **Book #** _____

Method: LA-514-113 Rev/Mod _____

Worklist Comment: S-109 FOR DSC PLEASE RUN UNDER N2

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-01	SOLID	_____	_____	N/A	Joules/g
96000961	S-109	2	SAMPLE	S96T004035	0		DSC-01	SOLID	N/A	_____	_____	Joules/g
96000961	S-109	3	DUP	S96T004035	0		DSC-01	SOLID	_____	_____	N/A	Joules/g
96000961	S-109	4	SAMPLE	S96T004036	0		DSC-01	SOLID	N/A	_____	_____	Joules/g
96000961	S-109	5	DUP	S96T004036	0		DSC-01	SOLID	_____	_____	N/A	Joules/g

Final page for worklist # 11664

A Lambert 08-07-96
Analyst Signature **Date**
Susie M. Fulton

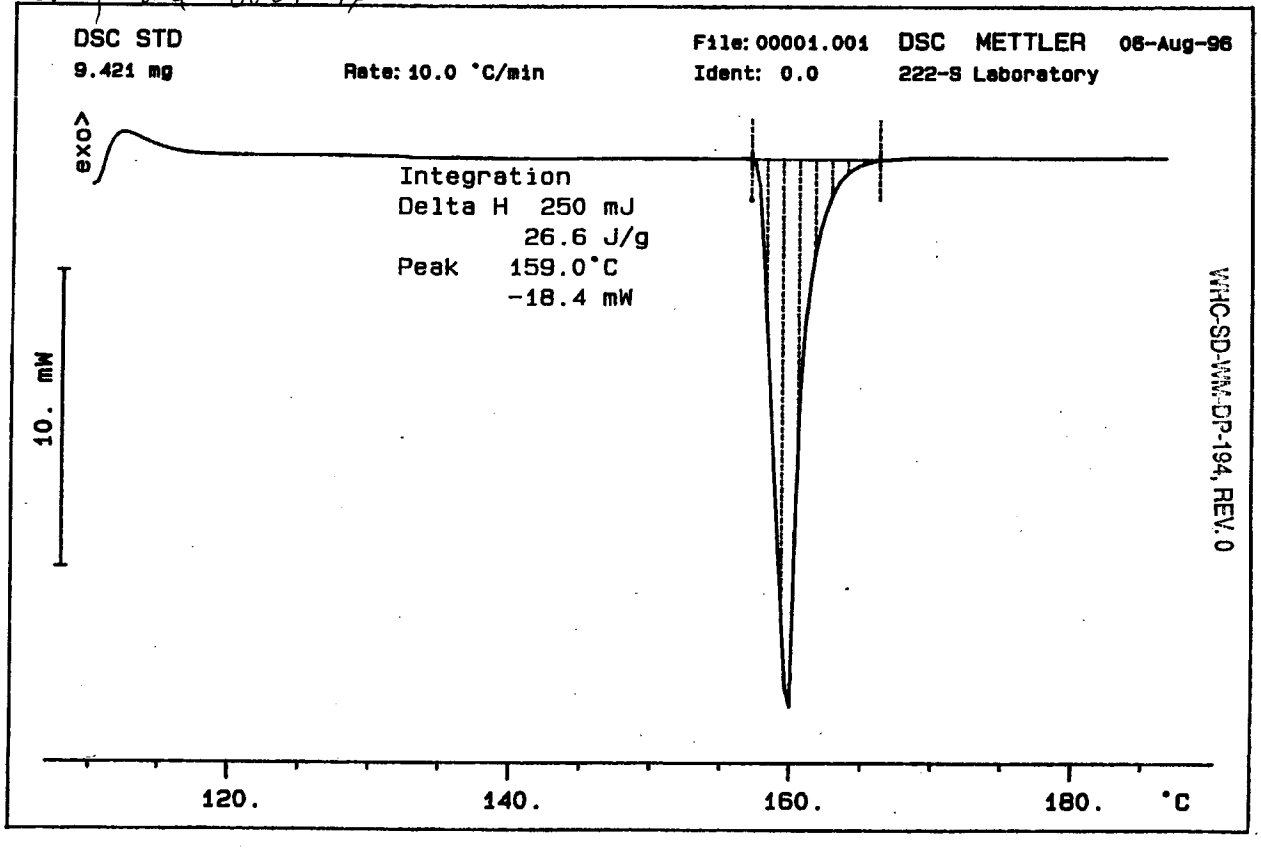
_____
Analyst Signature **Date**

Data Entry Comments:

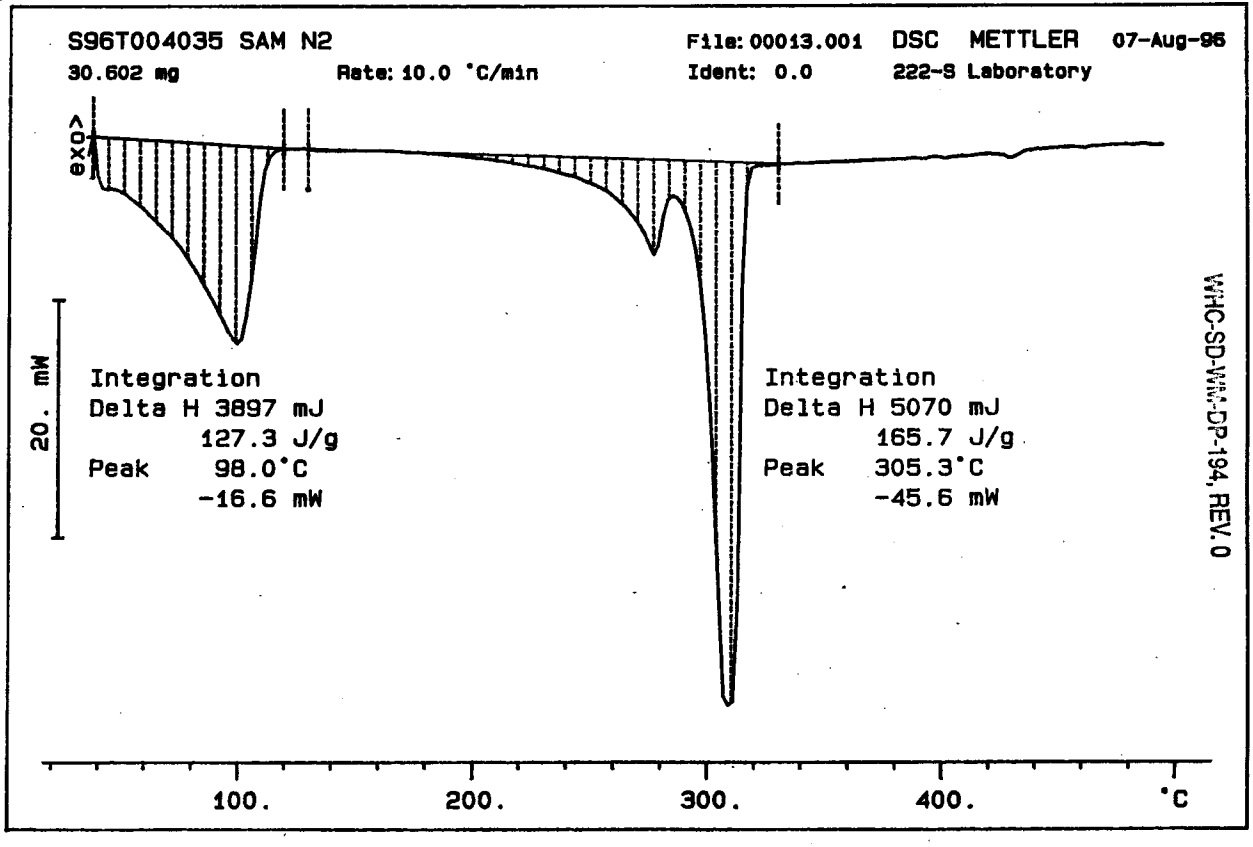
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

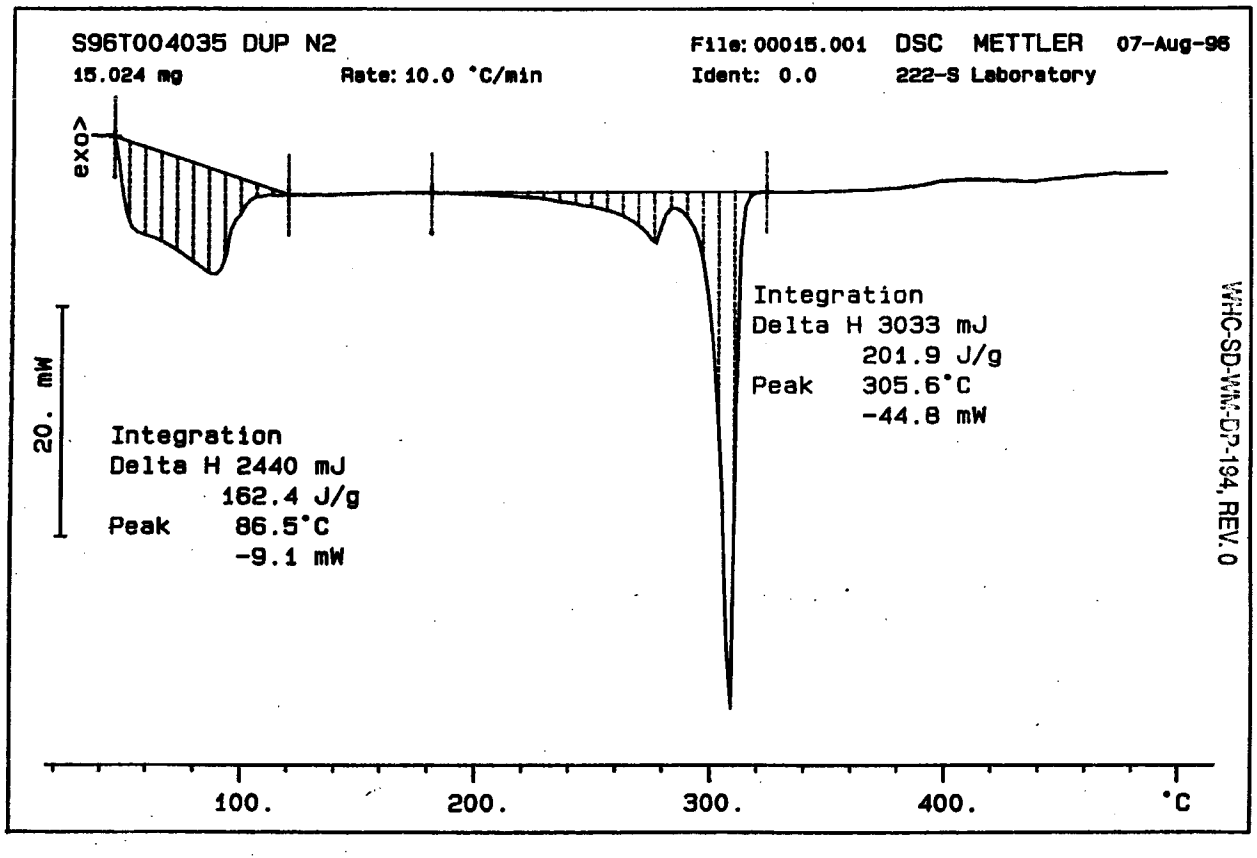
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 98 TO 103.

A. Lambel 08-07-96

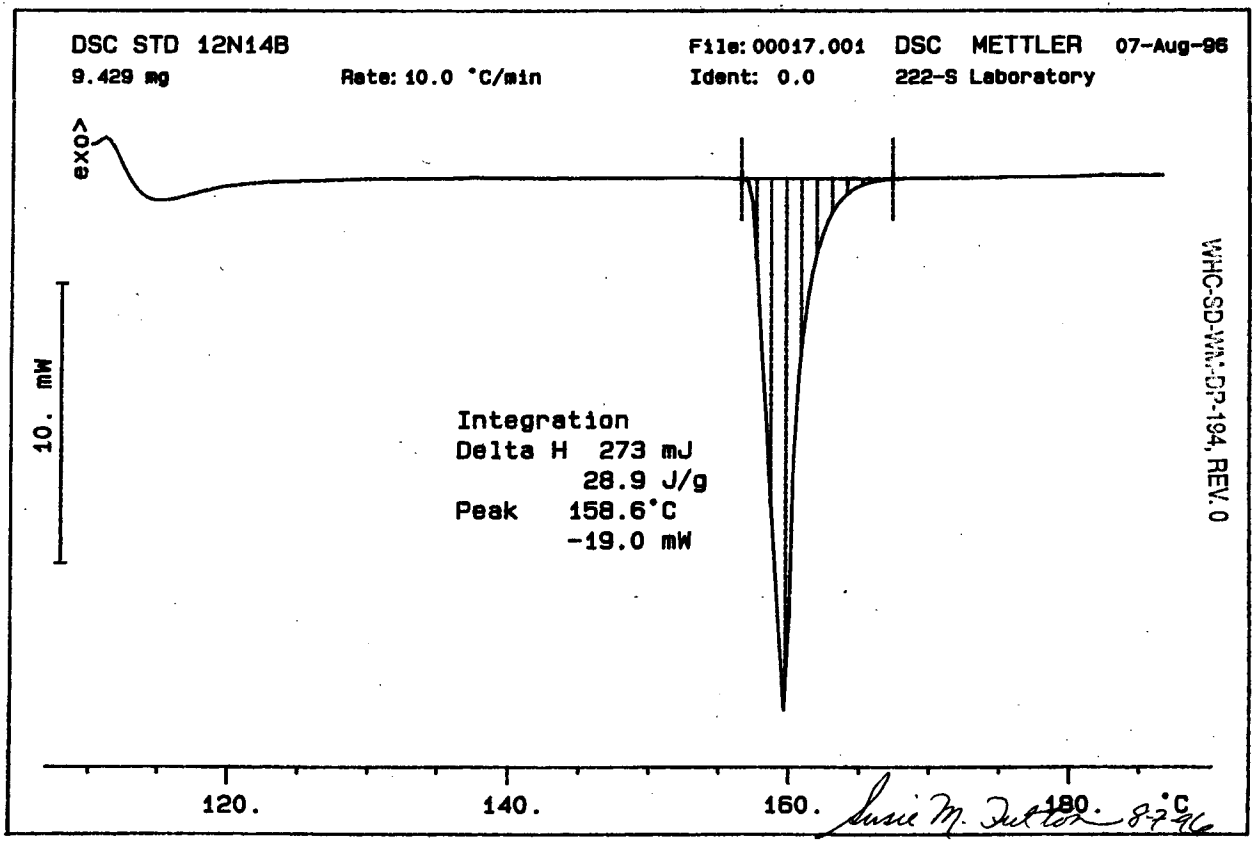


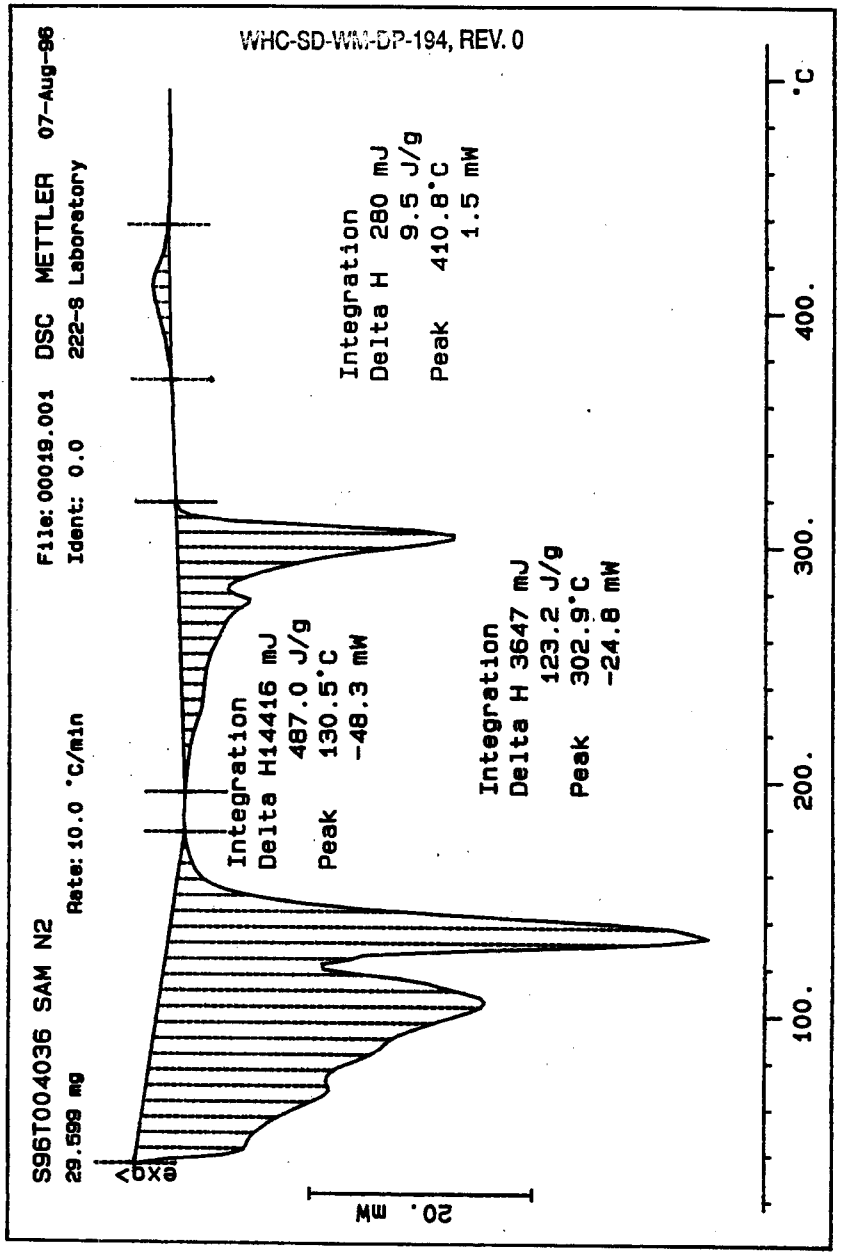
WHC-SD-WM-DP-194, REV.0

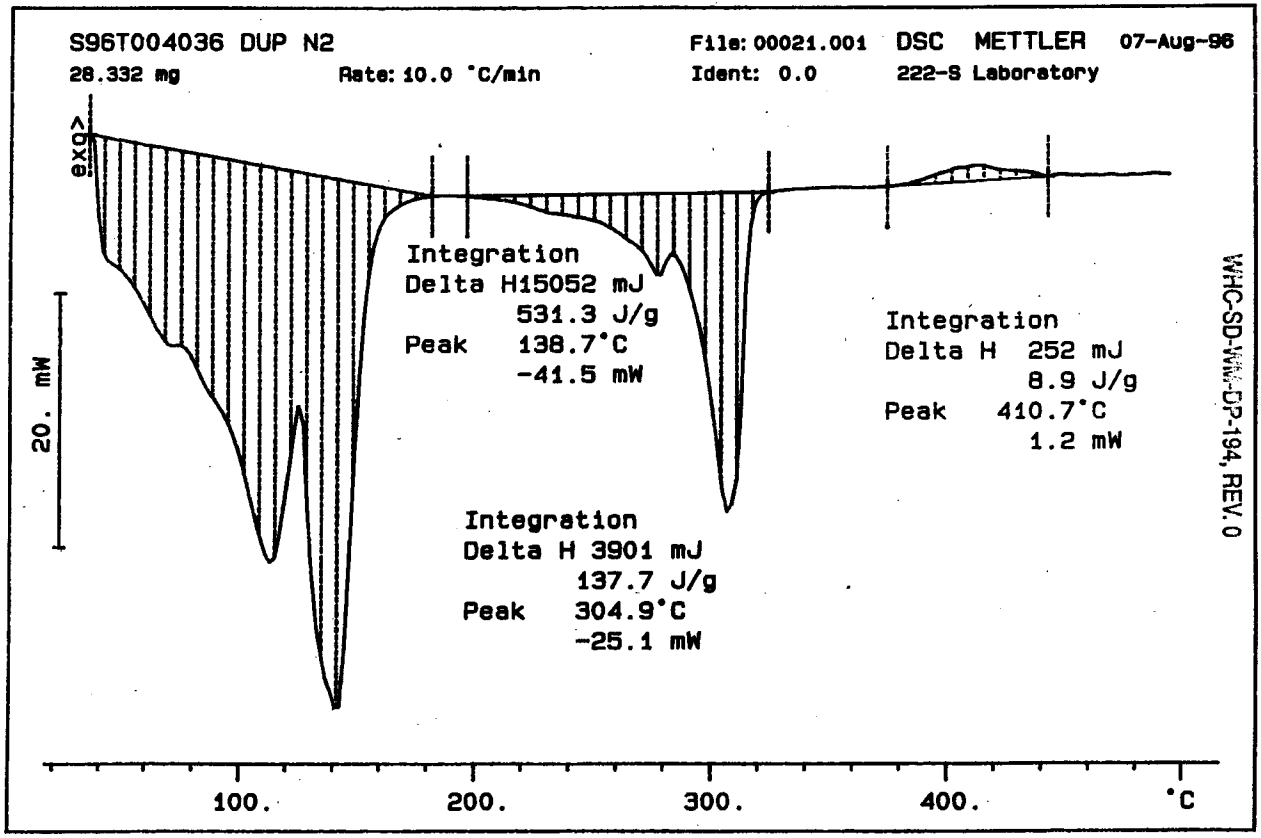

S96T004035 SAM N2
30.602 mg
Rate: 10.0 °C/min
File: 00013.001
Ident: 0.0
DSC METTLER
222-S Laboratory
07-Aug-96
exo
20. mW
Integration
Delta H 3897 mJ
127.3 J/g
Peak 98.0°C
-16.6 mW
Integration
Delta H 5070 mJ
165.7 J/g
Peak 305.3°C
-45.6 mW
100.
200.
300.
400.
°C
WHC-SD-WM-DP-194, REV.0


S96T004035 DUP N2
15.024 mg
Rate: 10.0 °C/min
File: 00015.001
Ident: 0.0
DSC METTLER
07-Aug-96
222-S Laboratory
exo>
20. mW
Integration
Delta H 2440 mJ
162.4 J/g
Peak 86.5°C
-9.1 mW
Integration
Delta H 3033 mJ
201.9 J/g
Peak 305.6°C
-44.8 mW
100.
200.
300.
400.
°C
WHC-SD-WM-DP-194, REV.0

100


DSC STD 12N14B
9.429 mg
Rate: 10.0 °C/min
File: 00017.001
Ident: 0.0
DSC METTLER
222-S Laboratory
07-Aug-96
exo
10. mW
Integration
Delta H 273 mJ
28.9 J/g
Peak 158.6°C
-19.0 mW
120.
140.
160.
180.
°C
WHC-SD-WM-DP-194, REV. 0


S96T004036 SAM N2
29.599 mg
Rate: 10.0 °C/min
File: 00019.001 DSC METTLER 07-Aug-96
Ident: 0.0 222-S Laboratory
Integration
Delta H 280 mJ
9.5 J/g
Peak 410.8°C
1.5 mW
Integration
Delta H14416 mJ
487.0 J/g
Peak 130.5°C
-48.3 mW
Integration
Delta H 3647 mJ
123.2 J/g
Peak 302.9°C
-24.8 mW
exo
20. mW
100.
200.
300.
400.
°C


S96T004036 DUP N2
28.332 mg
Rate: 10.0 °C/min
File: 00021.001
Ident: 0.0
DSC METTLER 07-Aug-96
222-S Laboratory
exo
20. mW
Integration
Delta H15052 mJ
531.3 J/g
Peak 138.7°C
-41.5 mW
Integration
Delta H 252 mJ
8.9 J/g
Peak 410.7°C
1.2 mW
Integration
Delta H 3901 mJ
137.7 J/g
Peak 304.9°C
-25.1 mW
100.
200.
300.
400.
°C
WHC-SD-WM-DP-194, REV.0

worklistrpt Version 2.1 05/15/95
08/07/96 08:46

LABCORE Data Entry Template for Worklist# 11699

Analyst: BDV **Instrument:** DSC01 **Book #** ——

Method: LA-514-113 Rev/Mod ——

Worklist Comment: Dry DSC for S-109. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
96000961	S-109	1	SAMPLE	S96T004035	0		DSC-02	SOLID	N/A	Ø		Joules/g Dry
96000961	S-109	2	DUP	S96T004035	0		DSC-02	SOLID	Ø	Ø	N/A	Joules/g Dry
96000961	S-109	3	SAMPLE	S96T004036	0		DSC-02	SOLID	N/A	11.77		Joules/g Dry
96000961	S-109	4	DUP	S96T004036	0		DSC-02	SOLID	11.77	11.03	N/A	Joules/g Dry
96000961	S-109	5	SAMPLE	S96T004023	0		DSC-02	LIQUID	N/A	Ø		Joules/g Dry
96000961	S-109	6	DUP	S96T004023	0		DSC-02	LIQUID	Ø	Ø	N/A	Joules/g Dry
96000961	S-109	7	SAMPLE	S96T004033	0		DSC-02	LIQUID	N/A	Ø		Joules/g Dry
96000961	S-109	8	DUP	S96T004033	0		DSC-02	LIQUID	Ø	Ø	N/A	Joules/g Dry

Final page for worklist # 11699

Blandina Valenzuela
Analyst Signature **Date** 8.8.96

Analyst Signature **Date**

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Data Entry Template for Worklist# 11163

Analyst: KRM **Instrument:** TGA03 **Book #** 82N8A

Method: LA-514-114 Rev/Mod C-1

Worklist Comment: S-109 TGA, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD				TGA-03	SOLID	59.2	59.2*	N/A	%
96000979	S-109	2 SAMPLE	S96T003734	0		TGA-03	SOLID	N/A	7.09		%
96000979	S-109	3 DUP	S96T003734	0		TGA-03	SOLID	7.09	5.26	N/A	%
96000979	S-109	4 SAMPLE	S96T003759	0		TGA-03	SOLID	N/A	11.03		%
96000979	S-109	5 DUP	S96T003759	0		TGA-03	SOLID	11.03	10.44	N/A	%

Final page for worklist # 11163

See Attached for Signatures
Analyst Signature Date

Stan Pete 7-29-96
Analyst Signature Date

Verified / Validated by
Blandina
Valenzuela 7.31.96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Data Entry Template for Worklist# 11163

Analyst: KRM **Instrument:** TGA0 3 **Book #** B2N8A

Method: LA-560-112 Rev/Mod C-1

Worklist Comment: S-109 TGA, RUN UNDER N2. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-01	SOLID			N/A	%
96000979	S-109	2	SAMPLE	S96T003734	0		TGA-01	SOLID	N/A			%
96000979	S-109	3	DUP	S96T003734	0		TGA-01	SOLID			N/A	%
96000979	S-109	4	SAMPLE	S96T003759	0		TGA-01	SOLID	N/A			%
96000979	S-109	5	DUP	S96T003759	0		TGA-01	SOLID			N/A	%

Final page for worklist # 11163

Analyst Signature Date 7-30-96

Analyst Signature Date

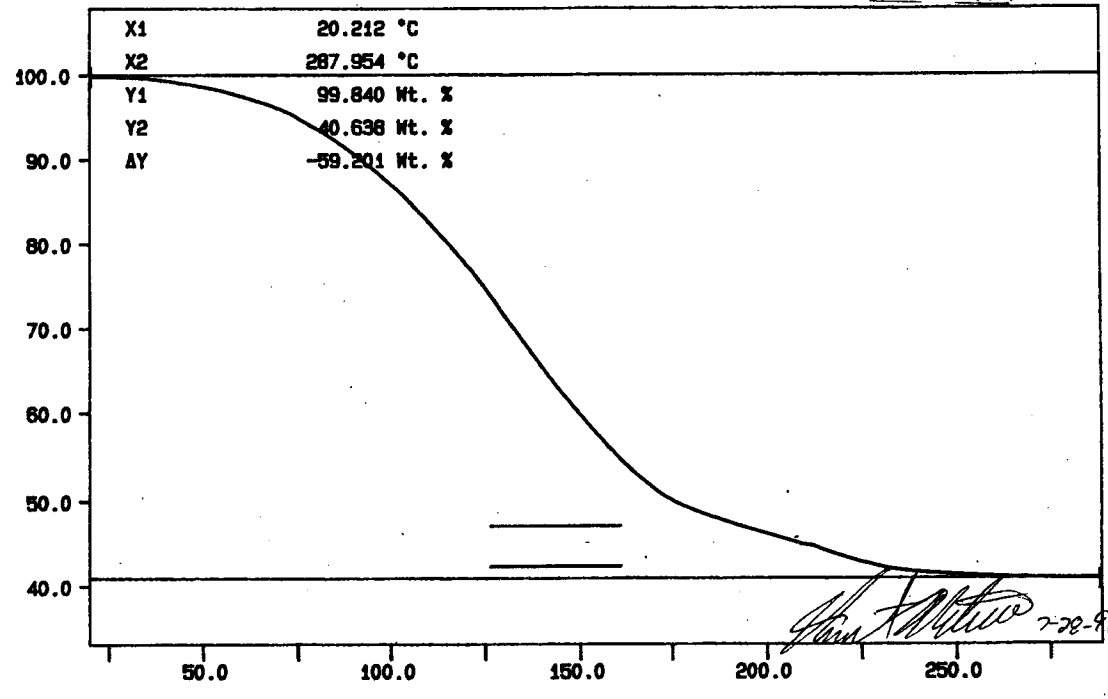
TGA-03 instrument was used.

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

Curve 1: TGA
File info: TER072801 Sun Jul 28 05:16:07 1996
Sample Weight: 21.803 mg
TGA STD 82N8-A

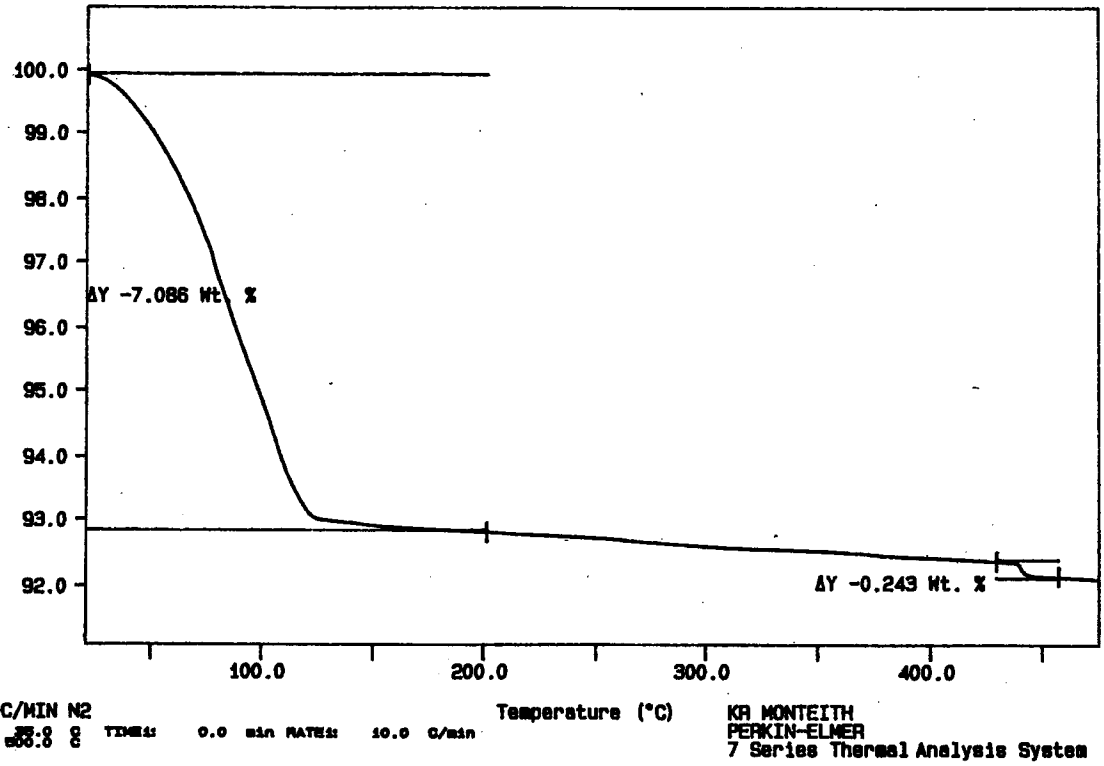
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 107 TO 111.



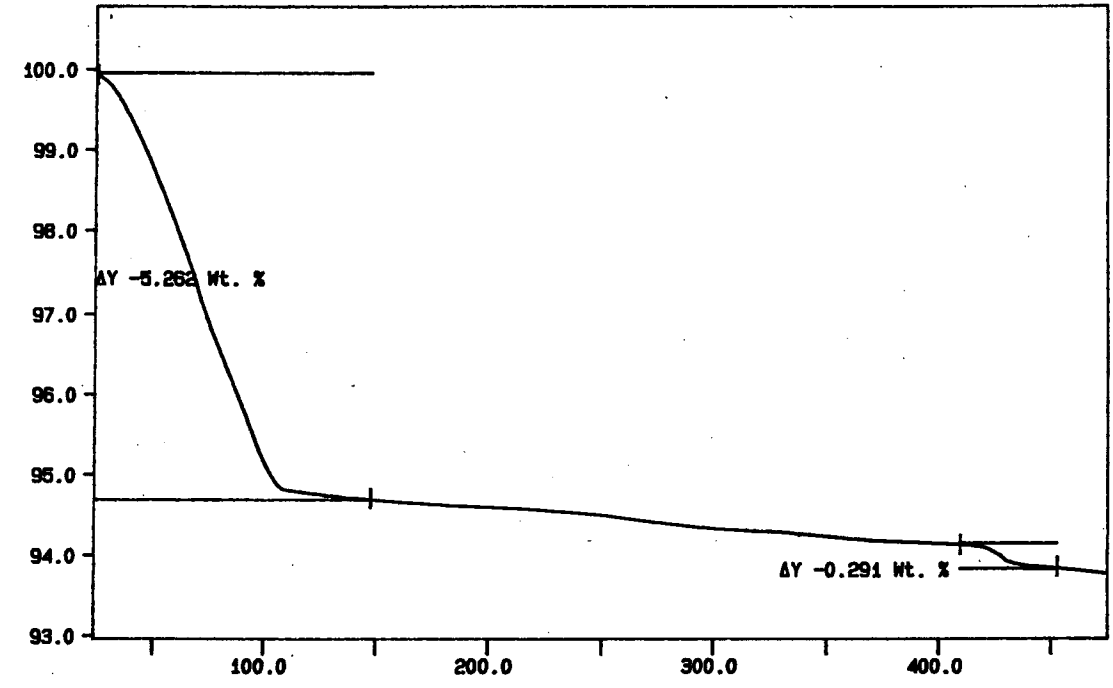
N2 10C/MIN
TEMP1: 30.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 300.0 C
KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System

107

Curve 1: TGA
File info: S96T072804 Sun Jul 28 10:11:05 1996
Sample Weight: 21.035 mg
S96T003734

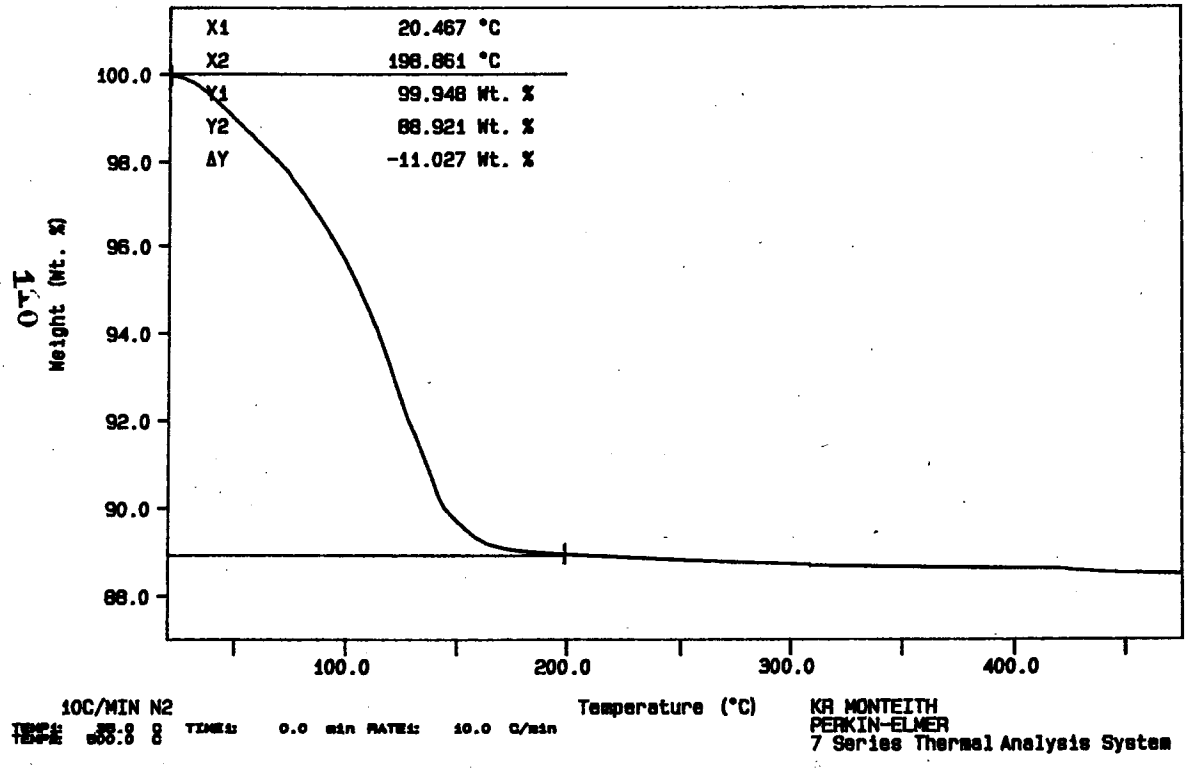


Curve 1: TGA
File info: SAM072805 Sun Jul 28 12:40:30 1996
Sample Weight: 15.085 mg
S96T003734 DUP



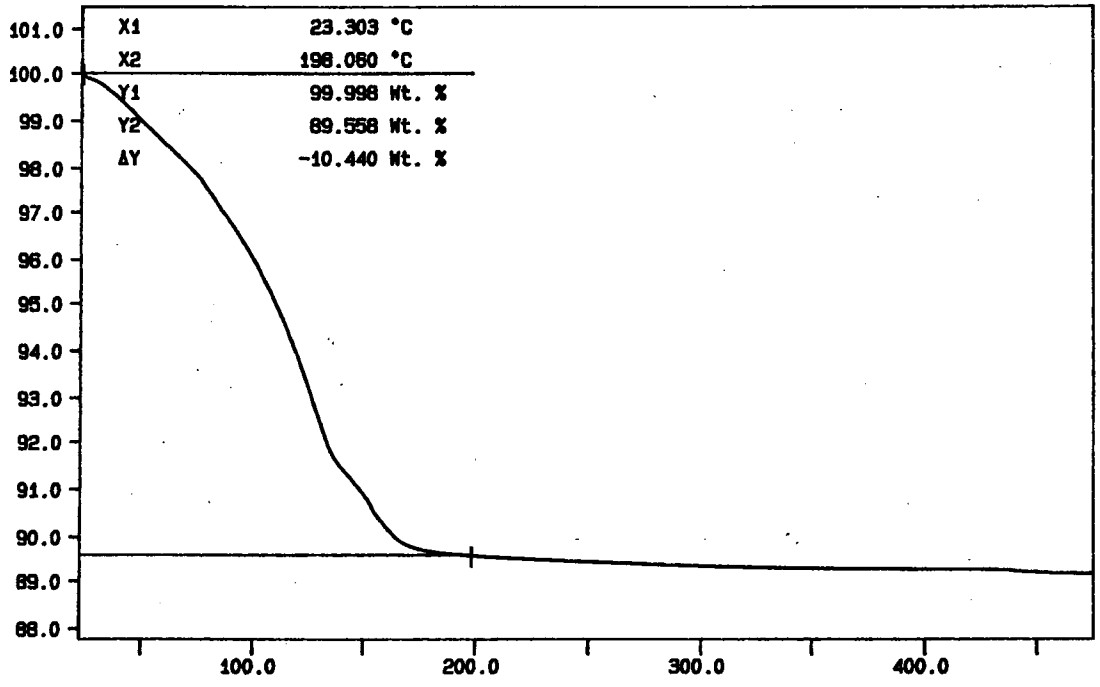
10C/MIN N2
TIME: 0.0 min RATE: 10.0 C/min
KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System

Curve 1: TGA
File info: SAM072802 Sun Jul 28 06:30:04 1996
Sample Weight: 26.473 mg
S96T003759



WHC-SD-WM-DP-194, REV. 0

Curve 1: TGA
File info: SAM072803 Sun Jul 28 08:52:27 1996
Sample Weight: 33.277 mg
S96T003759 DUP



10C/MIN N2
TEMP: 30.0 C TIME: 0.0 min RATE: 10.0 C/min
TEMP: 600.0 C

KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System

111

WHC-SD-WM-DP-194, REV. 0

LABCORE Data Entry Template for Worklist# 11164

Analyst: KRM **Instrument:** TGA0 1 **Book #** 82NBA

Method: LA-560-112 Rev/Mod B-1

Worklist Comment: S-109 TGA, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD				TGA-01	SOLID	59.2	58.44	* N/A	%
96000979	S-109	2 SAMPLE	S96T003760	0		TGA-01	SOLID	N/A	10.50		%
96000979	S-109	3 DUP	S96T003760	0		TGA-01	SOLID	10.50	12.08	N/A	%
96000961	S-109	4 SAMPLE	S96T003800	0		TGA-01	SOLID	N/A	4.31		%
96000961	S-109	5 DUP	S96T003800	0		TGA-01	SOLID	4.31	.94	N/A	%

Final page for worklist # 11164

Analyst Signature 7-28-96 Date

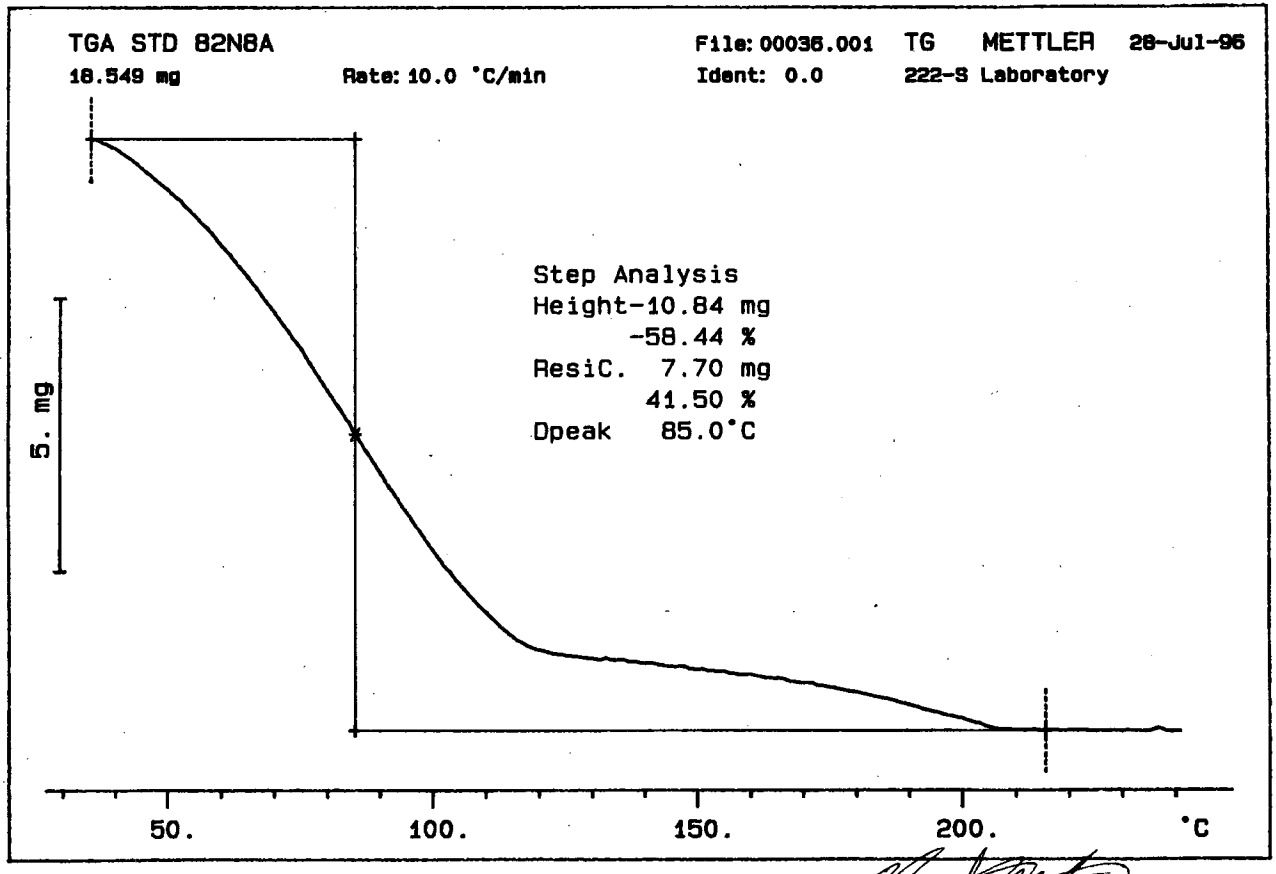
Analyst Signature 7-29-96 Date

Verified/Validated by
Blandina Valenzuela 8-1-96

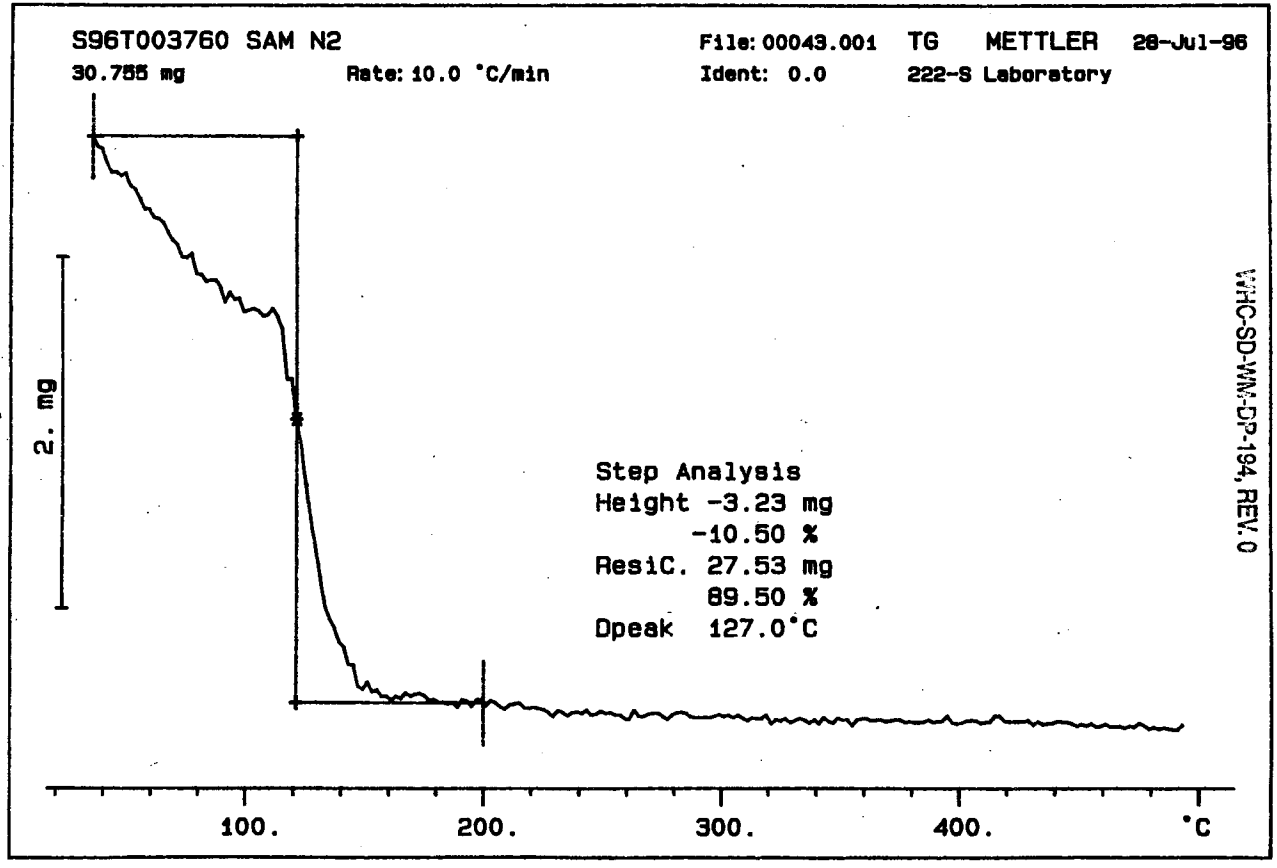
Data Entry Comments:

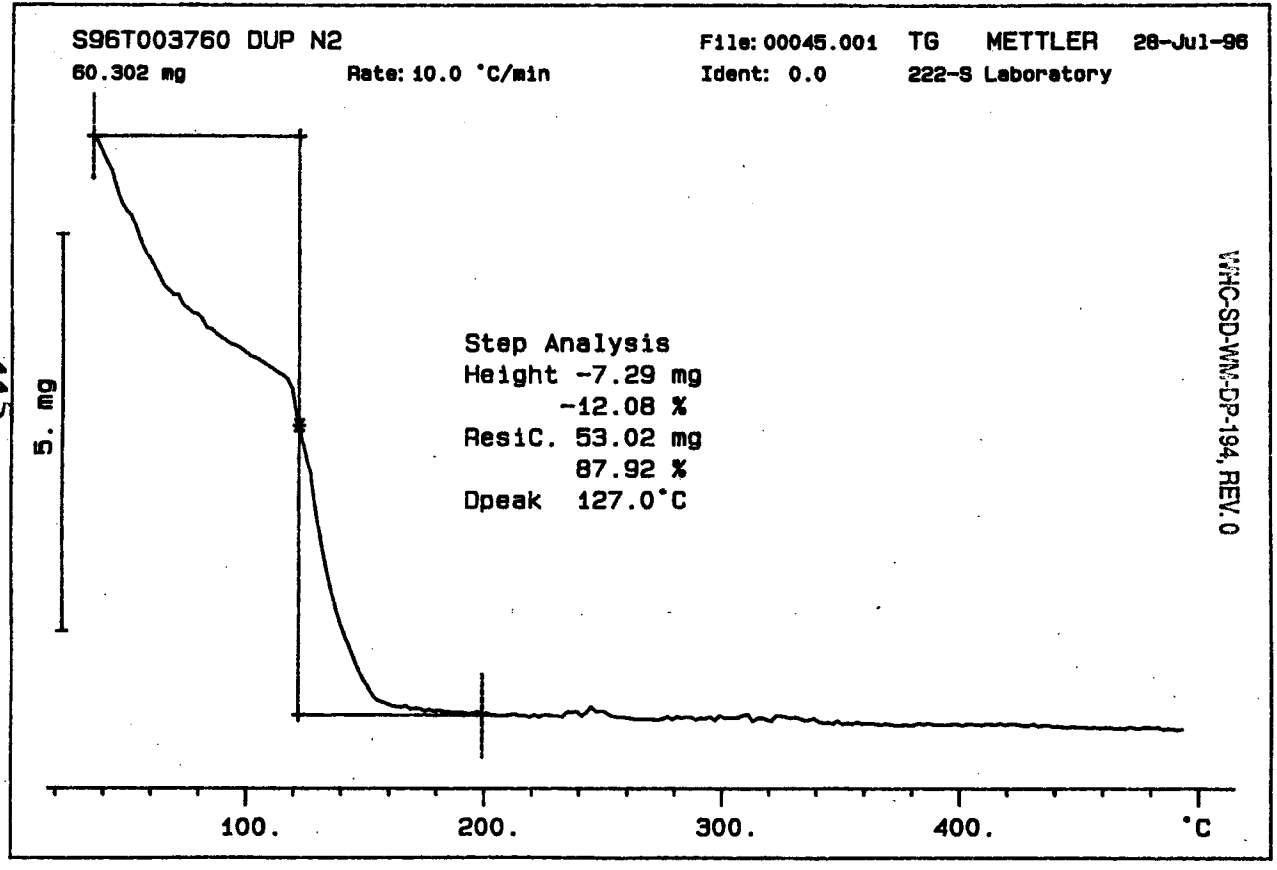
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

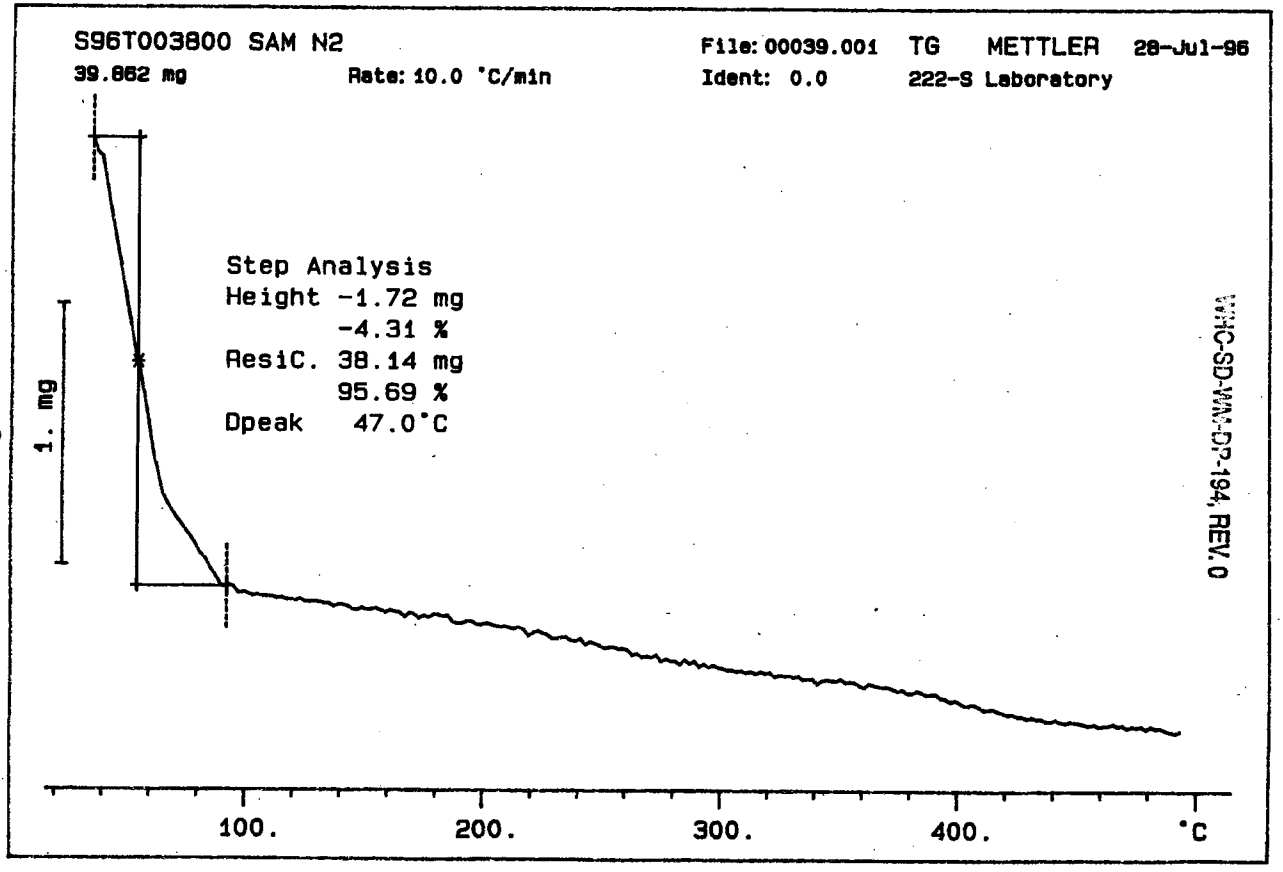
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 113 TO 117.

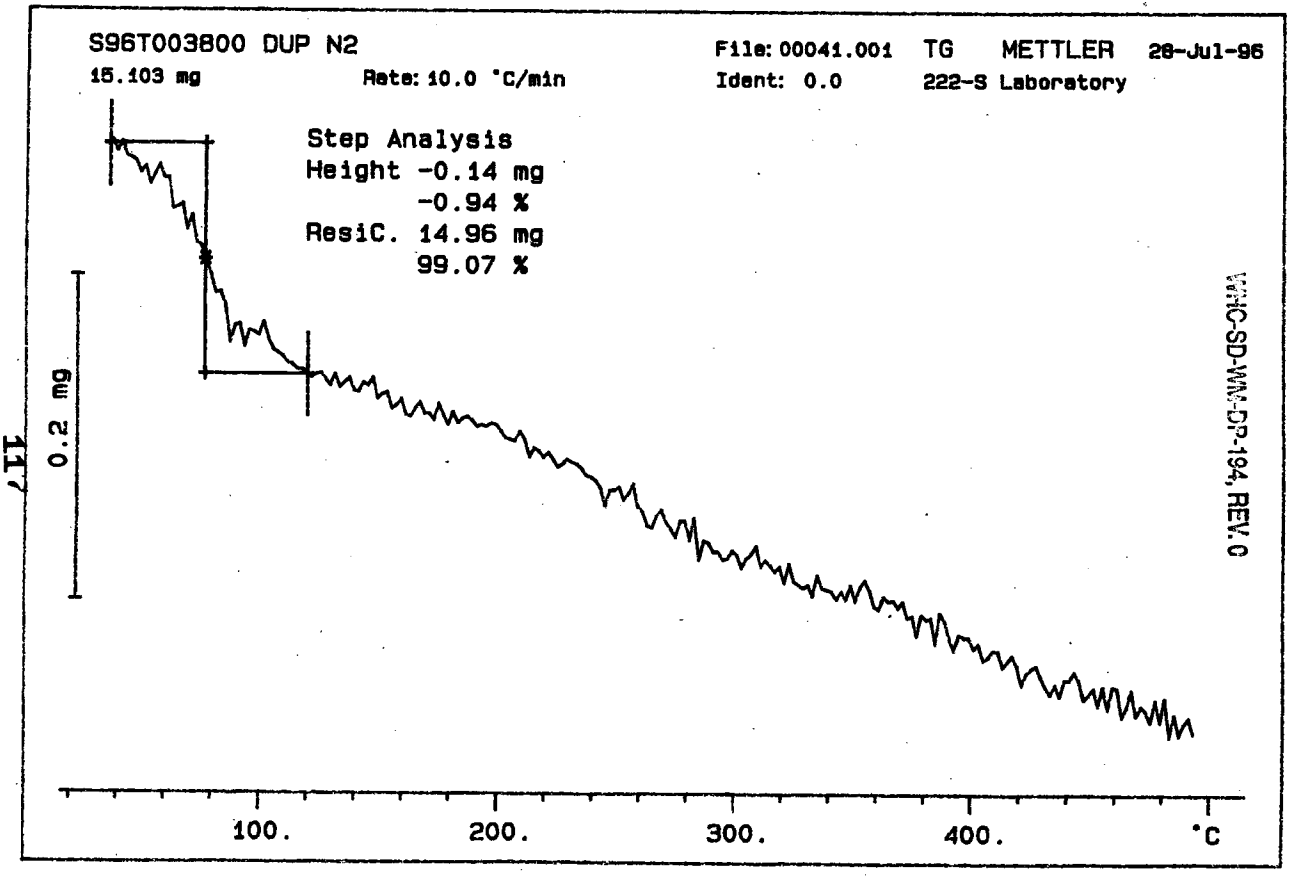


7-28-96


S96T003760 SAM N2
30.755 mg
Rate: 10.0 °C/min
File: 00043.001
Ident: 0.0
TG METTLER 28-Jul-96
222-S Laboratory
2. mg
Step Analysis
Height -3.23 mg
-10.50 %
ResiC. 27.53 mg
89.50 %
Dpeak 127.0°C
100.
200.
300.
400.
°C


S96T003760 DUP N2
60.302 mg
Rate: 10.0 °C/min
File: 00045.001 TG METTLER 28-Jul-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height -7.29 mg
-12.08 %
ResiC. 53.02 mg
87.92 %
Dpeak 127.0°C
5. mg
100.
200.
300.
400.
°C


S96T003800 SAM N2
39.862 mg
Rate: 10.0 °C/min
File: 00039.001 TG METTLER 28-Jul-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height -1.72 mg
-4.31 %
ResiC. 38.14 mg
95.69 %
Dpeak 47.0°C
1. mg
100.
200.
300.
400.
°C
WHC-SD-WM-DP-194, REV.0


S96T003800 DUP N2
15.103 mg
Rate: 10.0 °C/min
File: 00041.001 TG METTLER 28-Jul-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height -0.14 mg
-0.94 %
ResiC. 14.96 mg
99.07 %
0.2 mg
100.
200.
300.
400.
°C
WHC-SD-WM-DP-194, REV.0

LABCORE Data Entry Template for Worklist# 11165

Analyst: KRM **Instrument:** TGA0 1 **Book #** 82N8A

Method: LA-560-112 Rev/Mod B-1

Worklist Comment: S-109 TGA, RUN UNDER N2. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD	S96T003801			TGA-01	SOLID	59.2	58.46*	N/A	%
96000961	S-109	2	SAMPLE	[redacted]	0		TGA-01	SOLID	N/A	1.00		%
96000961	S-109	3	DUP	[redacted] S96T003801			TGA-01	SOLID	1.00	1.56	N/A	%
96000961	S-109	4	SAMPLE	S96T003839	0		TGA-01	SOLID	N/A	6.87		%
96000961	S-109	5	DUP	S96T003839	0		TGA-01	SOLID	6.87	8.86	N/A	%

LAD 8-2-96

Final page for worklist # 11165

[signature] 7-28-96
Analyst Signature **Date**

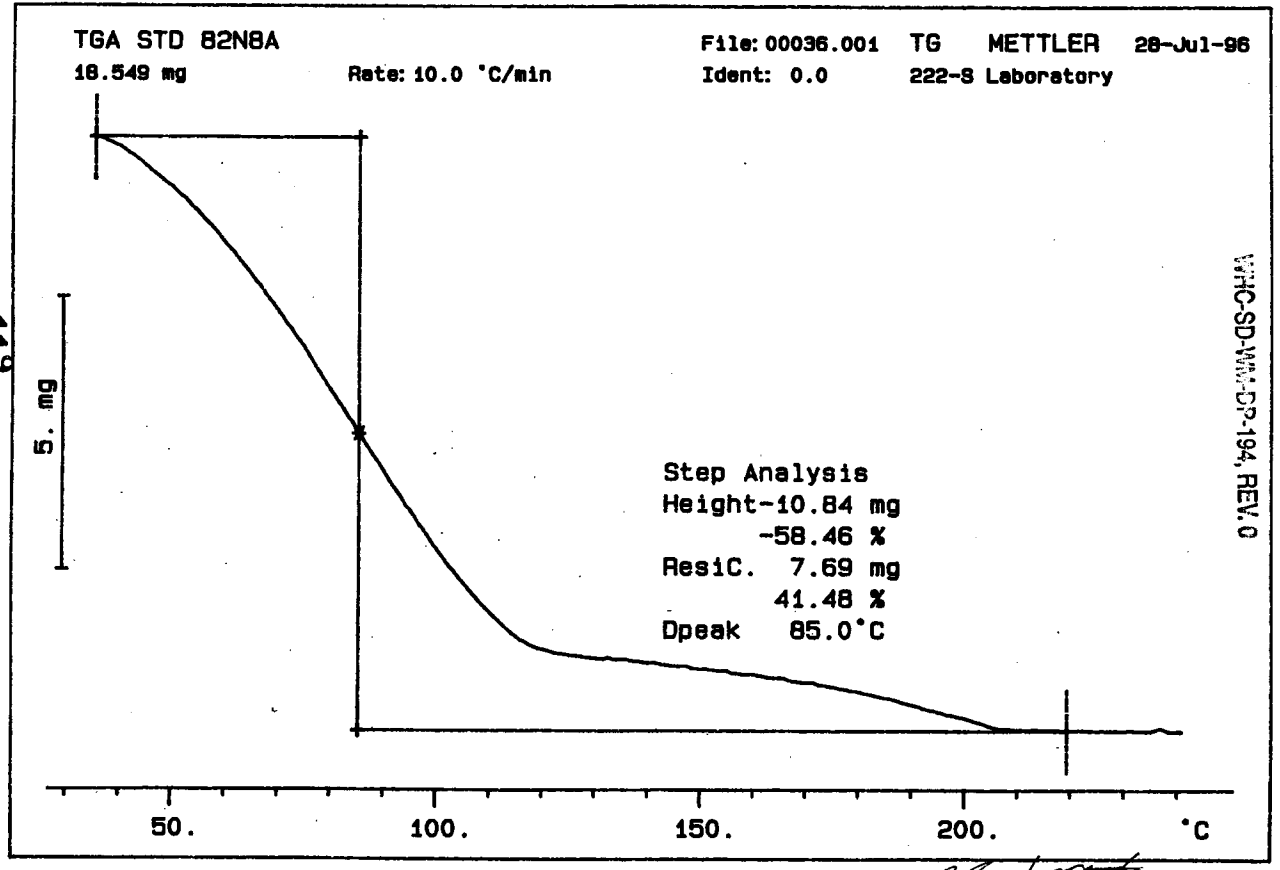
[signature] 7-29-96
Analyst Signature **Date**

Verified/Validated by
Blandina
Valenzuela 8-1-96

Data Entry Comments:

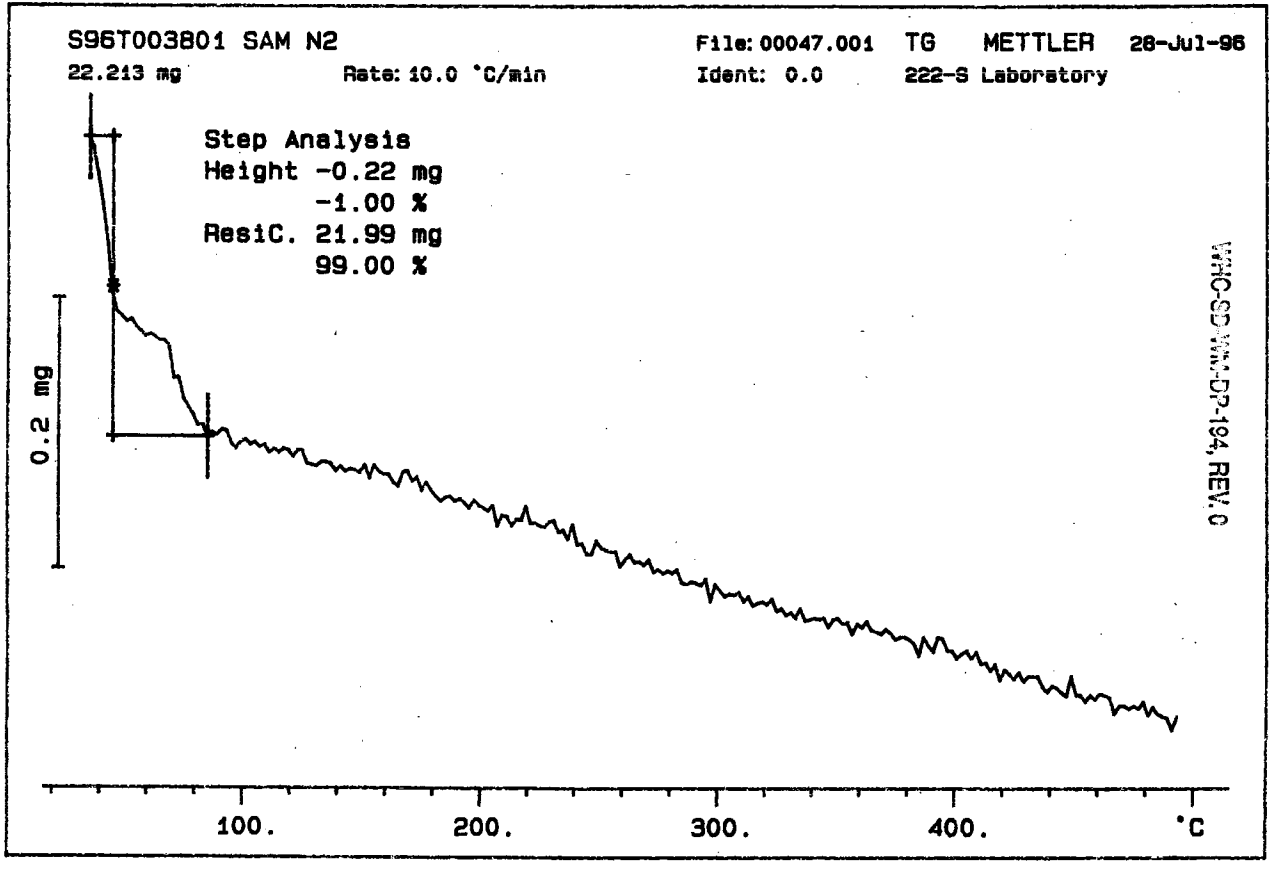
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

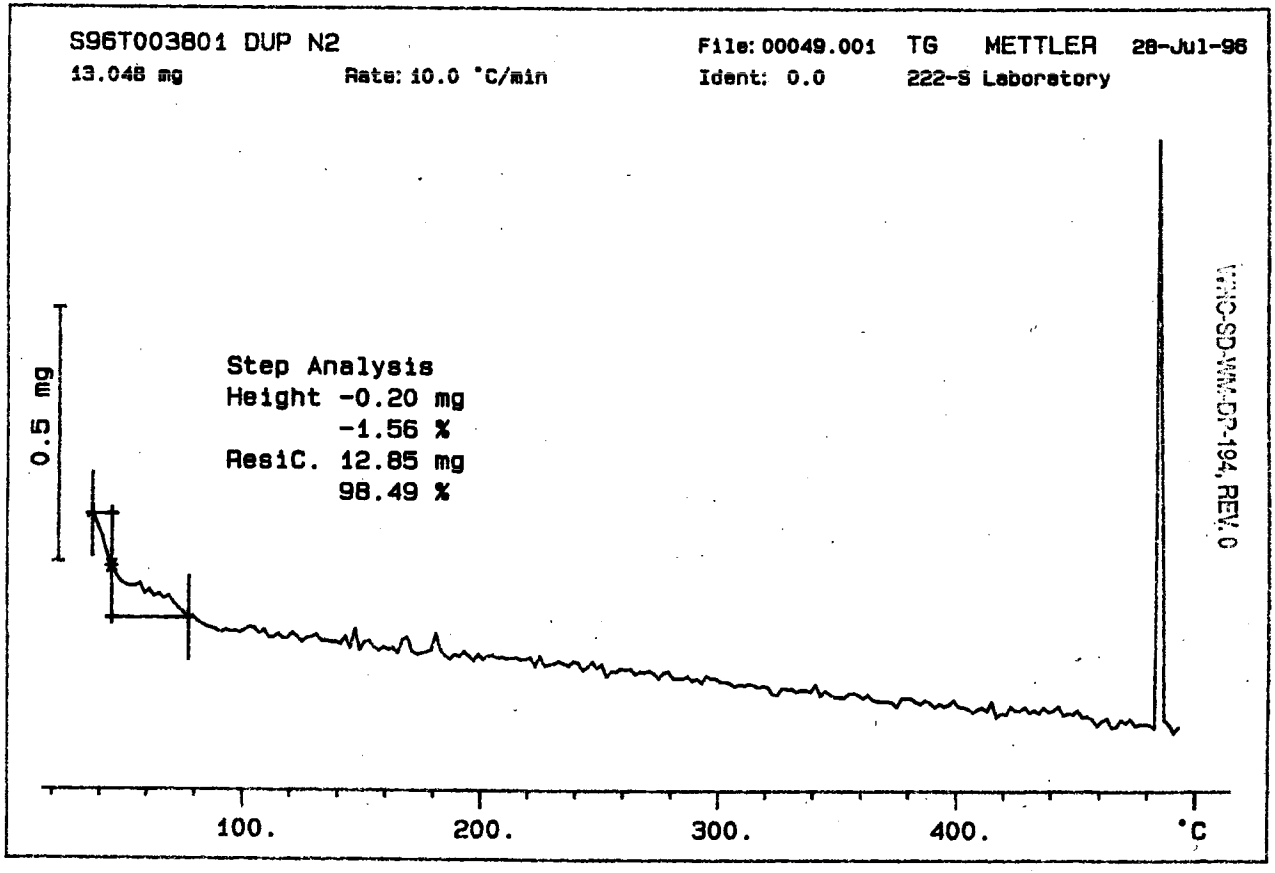
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 119 TO 123.

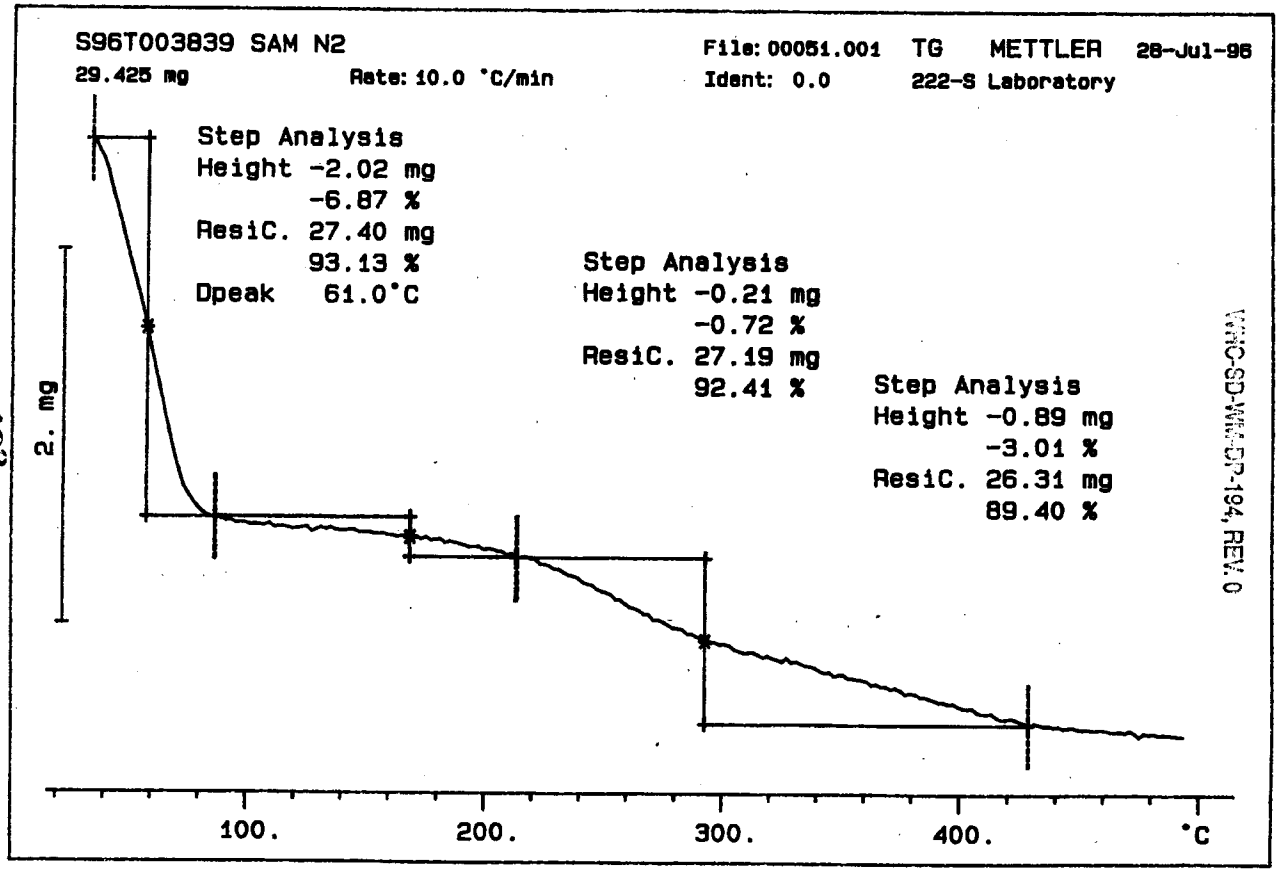


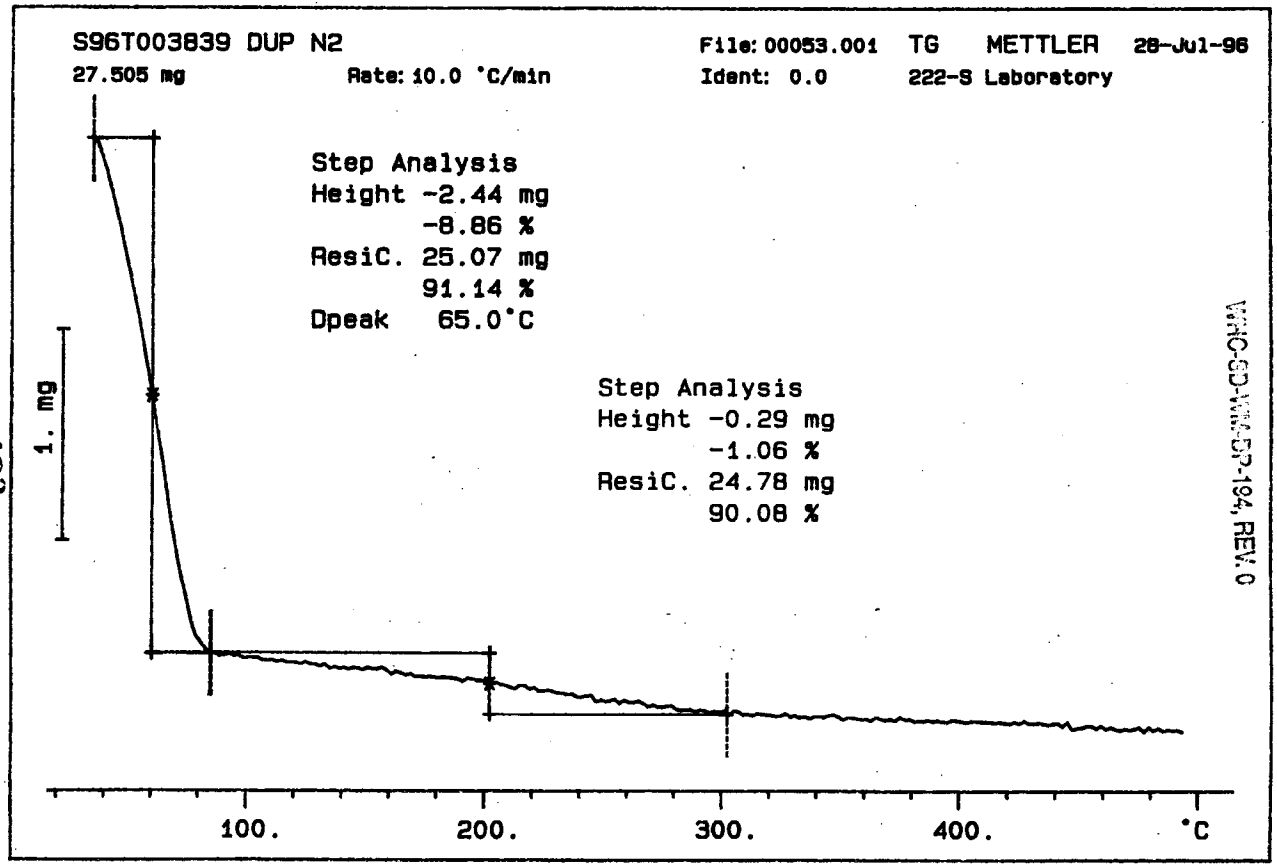
WHC-SD-WM-DP-194, REV. 0

7-28-96


S96T003801 SAM N2
22.213 mg
Rate: 10.0 °C/min
File: 00047.001
TG
METTLER
28-Jul-96
Ident: 0.0
222-S Laboratory
Step Analysis
Height -0.22 mg
-1.00 %
ResiC. 21.99 mg
99.00 %
0.2 mg
100.
200.
300.
400.
°C


S96T003801 DUP N2
13.048 mg
Rate: 10.0 °C/min
File: 00049.001 TG METTLER 28-Jul-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height -0.20 mg
-1.56 %
ResiC. 12.85 mg
98.49 %
6w 5.0 mg
100.
200.
300.
400.
°C





worklistrpt Version 2.1 05/15/95
07/29/96 14:11

LABCORE Data Entry Template for Worklist# 11166

Analyst: KRM **Instrument:** TGA0 3 **Book #** 82N8A

Method: LA-514-114 Rev/Mod C-1

Worklist Comment: S-109 TGA, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD				TGA-03	SOLID	59.2	59.20*	N/A	%
96000979	S-109	2 SAMPLE	S96T003922	0		TGA-03	SOLID	N/A	18.90		%
96000979	S-109	3 DUP	S96T003922	0		TGA-03	SOLID	18.90	27.27	N/A	%
96000979	S-109	4 SAMPLE	S96T003923	0		TGA-03	SOLID	N/A	7.19		%
96000979	S-109	5 DUP	S96T003923	0		TGA-03	SOLID	7.19	7.21	N/A	%

Final page for worklist # 11166

See attached for signatures
Analyst Signature Date 7-29-96

Analyst Signature Date 7-29-96

Verified / Validated by
Blandina Valenzuela
7-31-96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Data Entry Template for Worklist# 11166

Analyst: KRM **Instrument:** TGA0 3 **Book #** 82NBA

Method: LA-560-112 Rev/Mod Q-1

Worklist Comment: S-109 TGA, RUN UNDER N2. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD	S96T003922			TGA-01	SOLID			N/A	%
96000979	S-109	2	SAMPLE	[redacted]	0		TGA-01	SOLID	N/A			%
96000979	S-109	3	DUP	[redacted] LAD 8/14	0		TGA-01	SOLID			N/A	%
96000979	S-109	4	SAMPLE	S96T003923	0		TGA-01	SOLID	N/A			%
96000979	S-109	5	DUP	S96T003923	0		TGA-01	SOLID			N/A	%

Final page for worklist # 11166

7-28-96

Analyst Signature Date

Analyst Signature Date

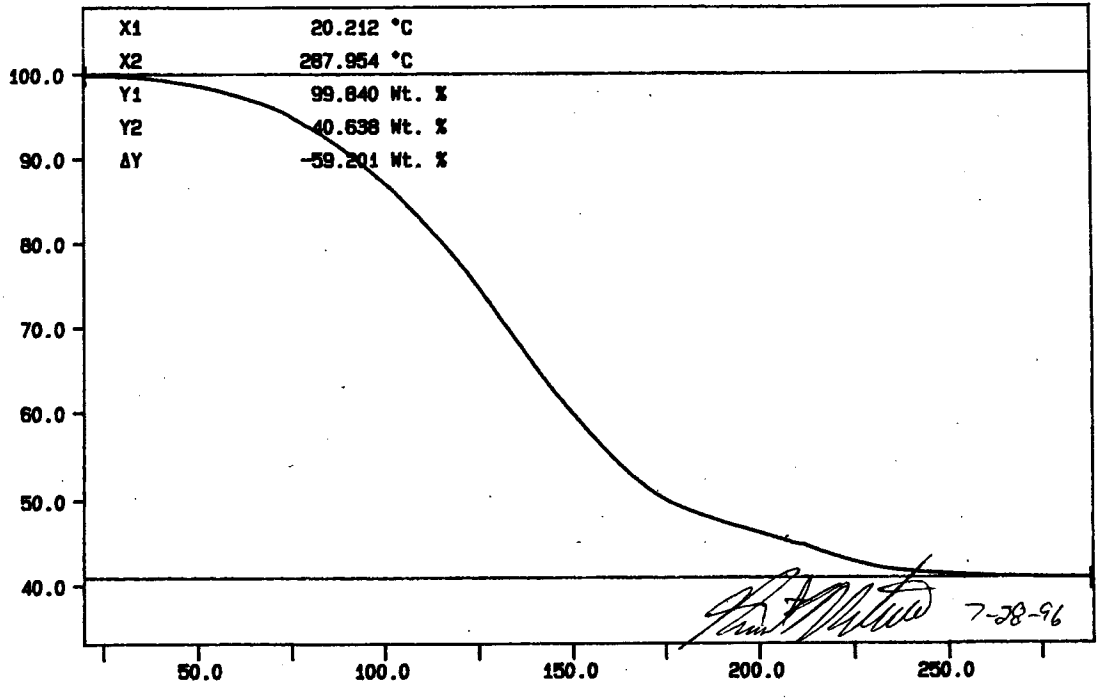
TGA-03 Instrument was Used

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

Curve 1: TGA
File info: TER072801 Sun Jul 28 05:16:07 1996
Sample Weight: 21.803 mg
TGA STD 82N8-A

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 126 TO 130.

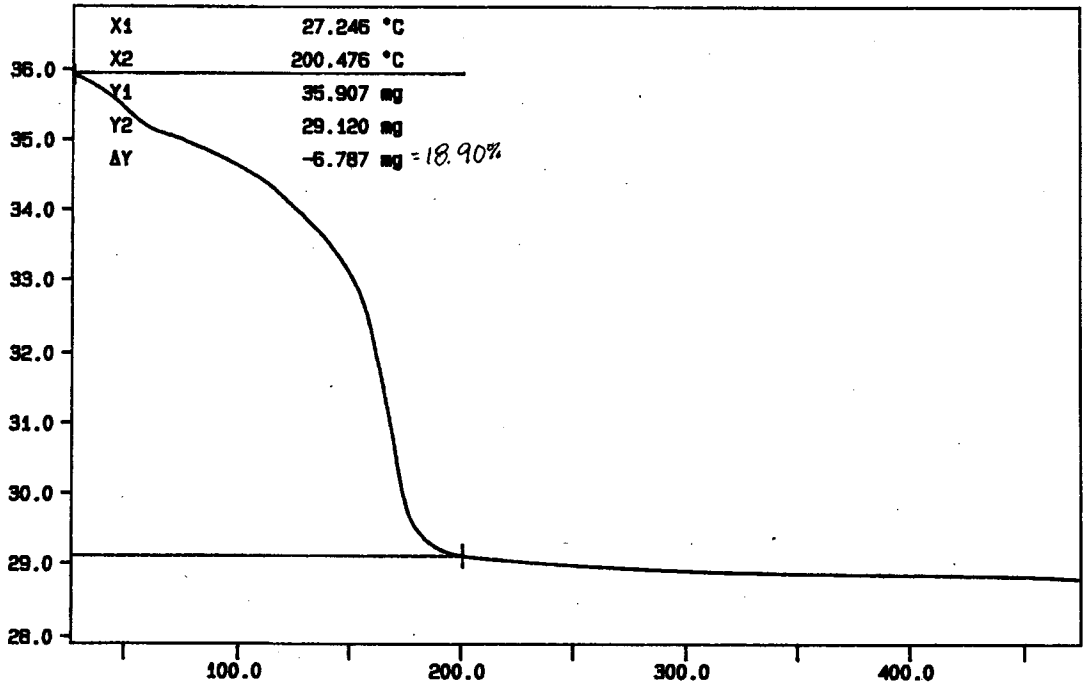


N2 10C/MIN
TEMP1: 25.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 250.0 C

KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System

126

Curve 1: TGA
File info: SAM072806 Sun Jul 28 13:50:37 1996
Sample Weight: 35.926 mg
S96T003922

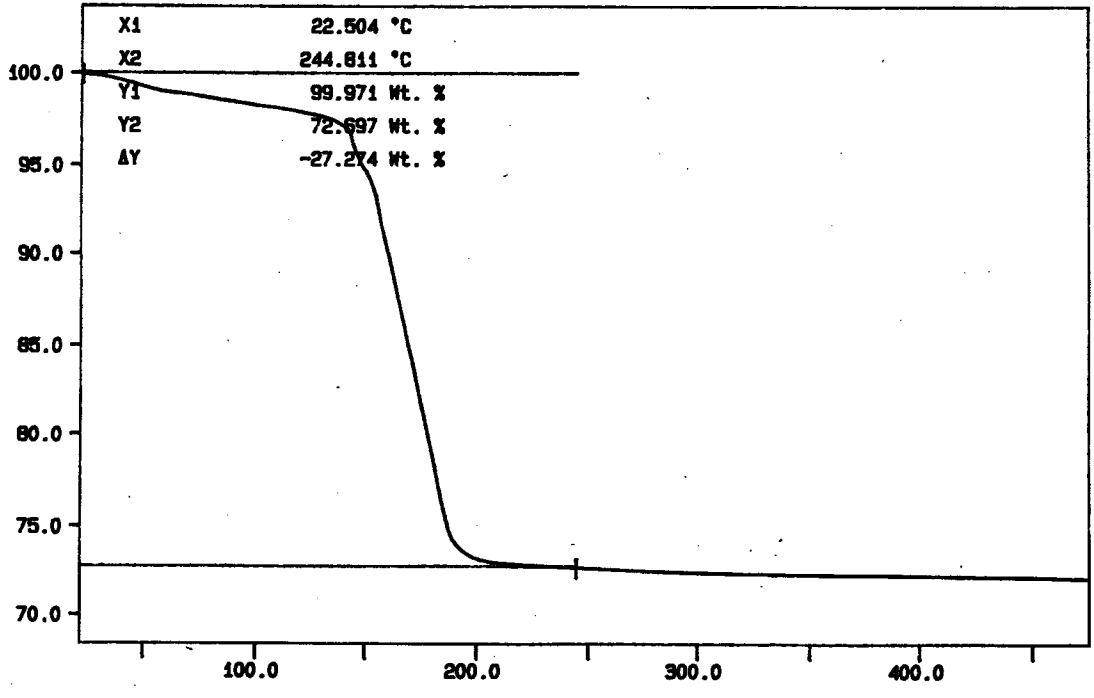


10C/MIN N2
TEMP: 25.0 C TIME: 0.0 min RATE: 10.0 C/min
TEMP: 600.0 C

KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System

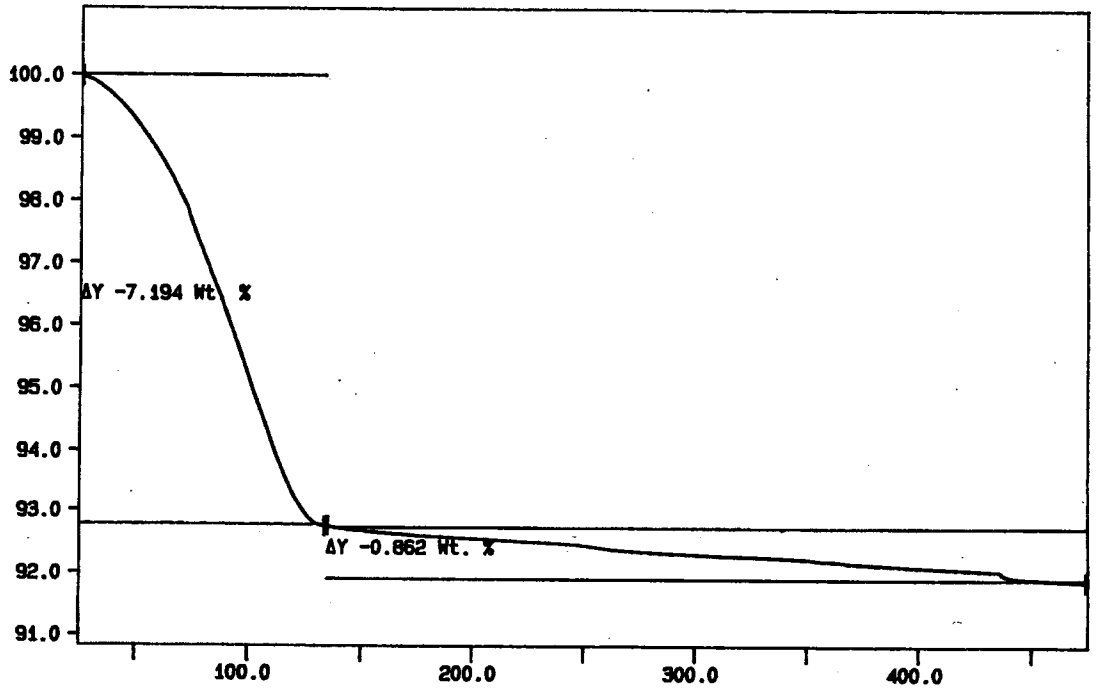
12.

Curve 1: TGA
File info: SAM072807 Sun Jul 28 15:47:35 1996
Sample Weight: 36.759 mg
S96T003922 DUP



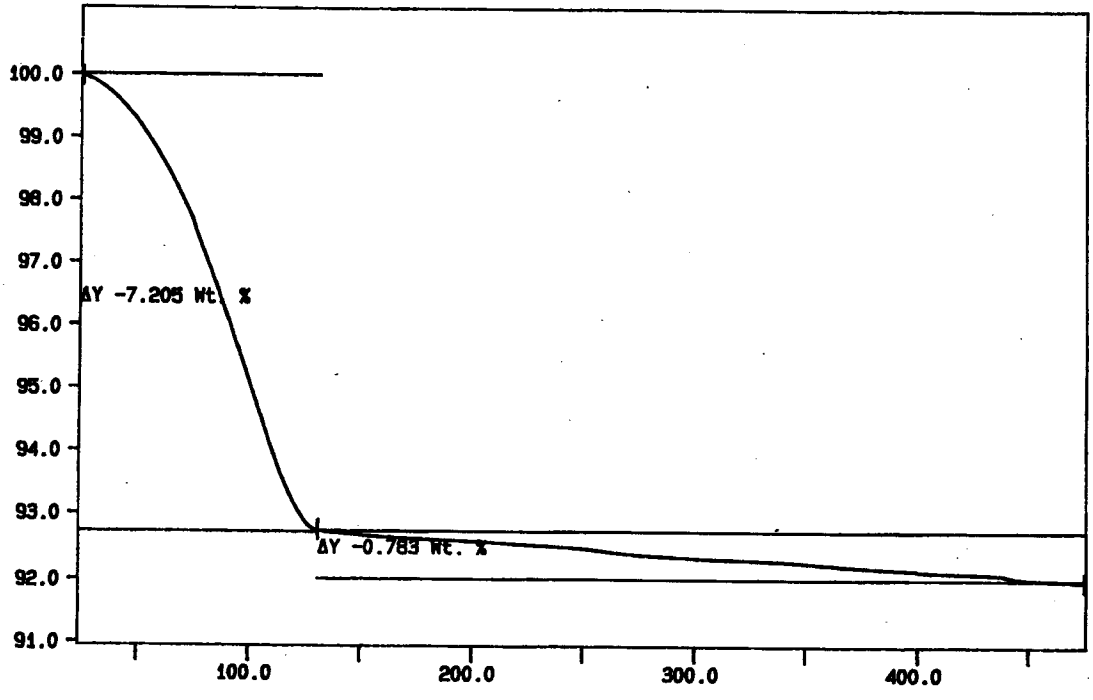
10C/MIN N2
TIME: 0.0 min RATE: 10.0 C/min
KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System

Curve 1: TGA
File info: SAM072808 Sun Jul 28 19:07:55 1996
Sample Weight: 23.243 mg
S96T003923 SAM



10C/MIN N2
TIME: 0.0 min RATE: 10.0 C/min
KA MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System

Curve 1: TGA
File info: SAM072809 Sun Jul 28 21:01:59 1996
Sample Weight: 25.766 mg
S96T003923 DUP N2



10C/MIN N2
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 600.0 C

KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System

150

LABCORE Data Entry Template for Worklist# 11167

Analyst: ADP **Instrument:** TGA0 3 **Book #** 82N8A

Method: LA-514-114 Rev/Mod C-1

Worklist Comment: S-109 TGA, RUN UNDER N2. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-03	SOLID	59.20	59.20*	N/A	%
96000979	S-109	2	SAMPLE	S96T003924	0		TGA-03	SOLID	N/A	7.15		%
96000979	S-109	3	DUP	S96T003924	0		TGA-03	SOLID	7.15	6.69	N/A	%
96000979	S-109	4	SAMPLE	S96T003925	0		TGA-03	SOLID	N/A	12.79		%
96000979	S-109	5	DUP	S96T003925	0		TGA-03	SOLID	12.79	10.74	N/A	%

Final page for worklist # 11167

See attached for Signatures
Analyst Signature Date 7-29-96

Analyst Signature Date 7-29-96

BDR.

Verified/Validated by
Blandina Valenzuela 8-1-96

Data Entry Comments: S96T003925 results were the sum of two weight loss steps.

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Data Entry Template for Worklist# 11167

Analyst: _____ **Instrument:** TGA0 _____ **Book #** 82N87

Method: LA-560-112 Rev/Mod C-1

Worklist Comment: S-109 TGA, RUN UNDER N2. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-01	SOLID			N/A	%
96000979	S-109	2	SAMPLE	S96T003924	0		TGA-01	SOLID	N/A			%
96000979	S-109	3	DUP	S96T003924	0		TGA-01	SOLID			N/A	%
96000979	S-109	4	SAMPLE	S96T003925	0		TGA-01	SOLID	N/A			%
96000979	S-109	5	DUP	S96T003925	0		TGA-01	SOLID			N/A	%

Final page for worklist # 11167

Anthony Turuta 7-28-96
Analyst Signature **Date**

_____
Analyst Signature **Date**

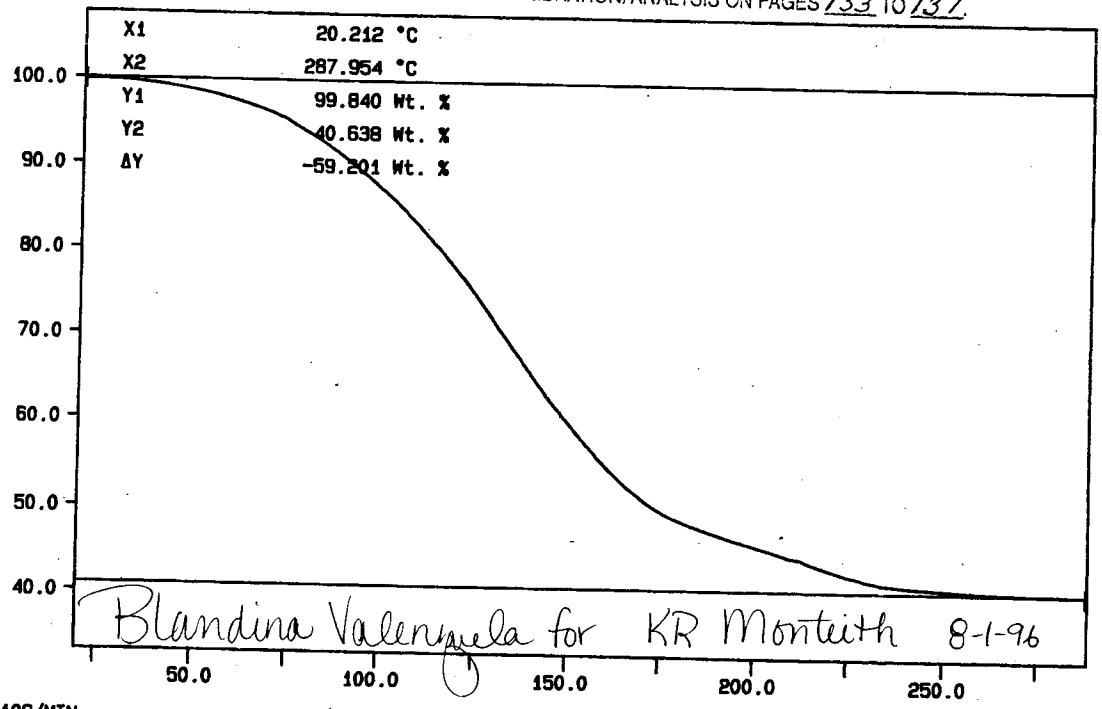
TGA-03 instrument was used.
7-29-96
Blandina Valenzuela

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

Curve 1: TGA
File info: TER072801 Sun Jul 28 05:16:07 1996
Sample Weight: 21.803 mg
TGA STD 82N8-A

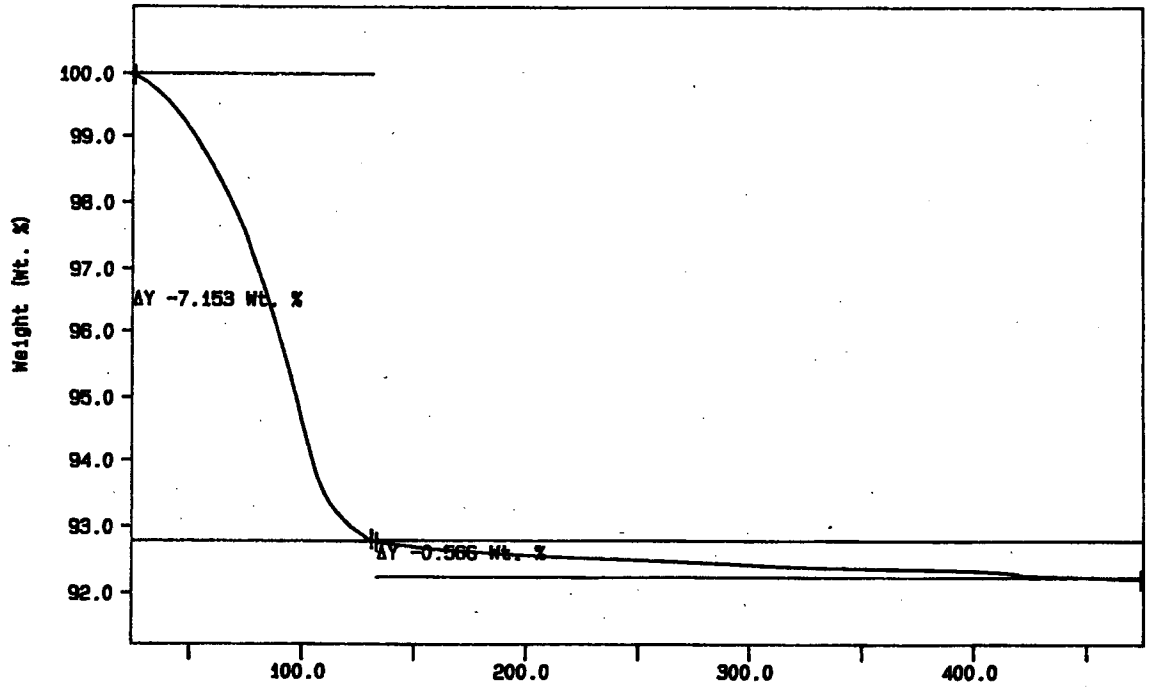
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 133 TO 137.



N2 10C/MIN
TEMP1: 30.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 300.0 C

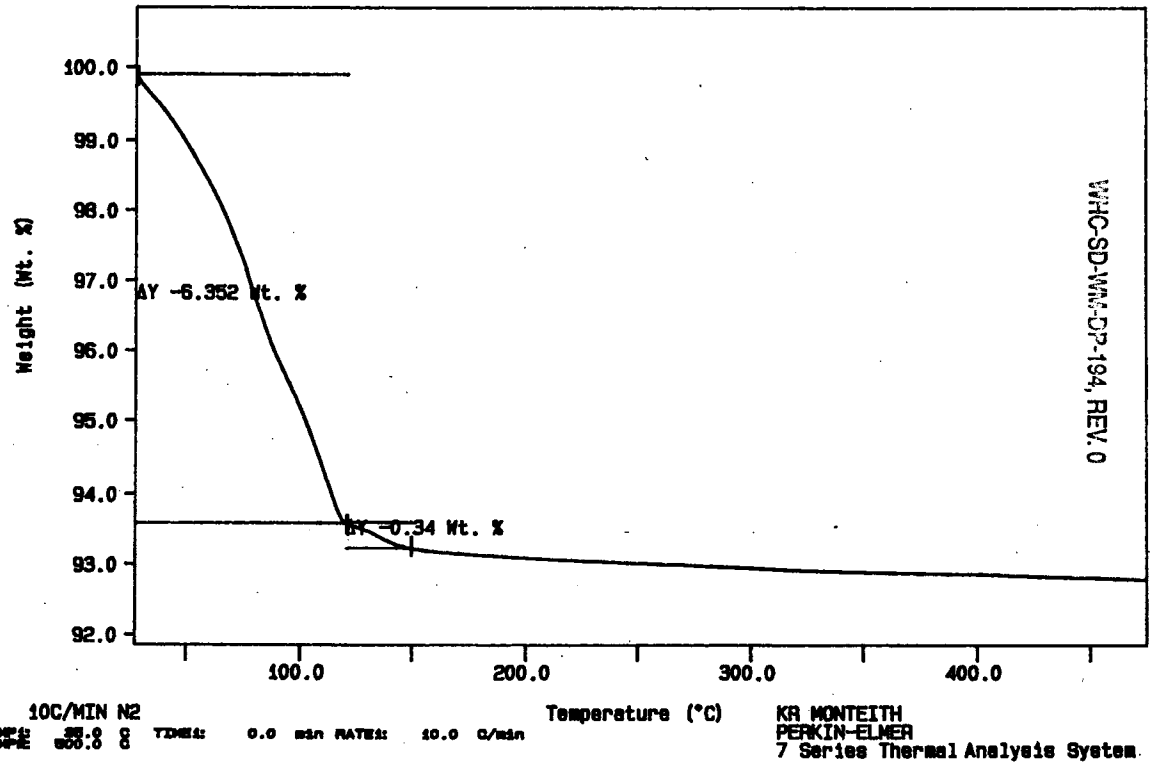
KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Jul 29 05:39:05 1996

Curve 1: TGA
File info: SAM072810 Sun Jul 28 22:19:21 1996
Sample Weight: 23.449 mg
S96T003924 SAM



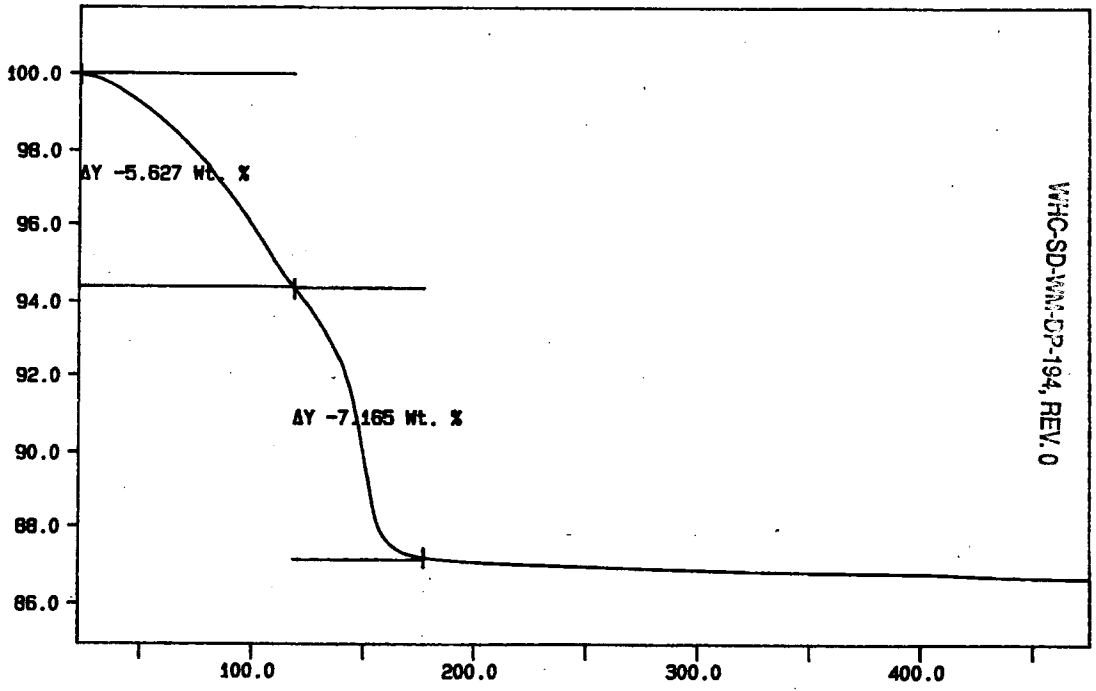
10C/MIN N2
TIME: 0.0 min RATE: 10.0 C/min
KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System

Curve 1: TGA
File info: SAM072811 Sun Jul 28 23:28:15 1996
Sample Weight: 22.191 mg
S96T003924 DUP



10C/MIN N2
TEMP1: 25.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 600.0 C
KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System

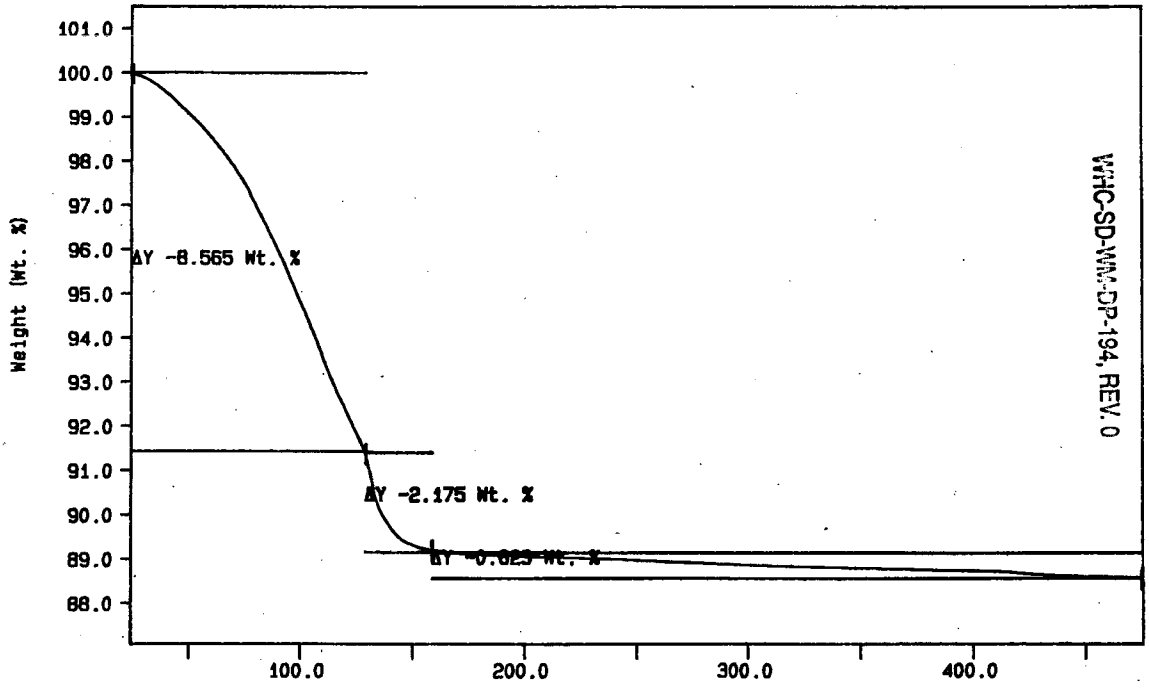
Curve 1: TGA
File info: SAM072812 Mon Jul 29 01:38:42 1996
Sample Weight: 28.484 mg
S96T003925 SAM



10C/MIN N2
TEMP1: 25.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 600.0 C

KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Jul 29 10:52:20 1996

Curve 1: TGA
File info: SAM072813 Mon Jul 29 02:55:49 1996
Sample Weight: 18.797 mg
S96T003925 DUP



10C/MIN N2
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 600.0 C

KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Jul 29 03:15:38 1996

LABCORE Data Entry Template for Worklist# 11168

Analyst: ADP **Instrument:** TGA0 1 **Book #** 82N8A

Method: LA-560-112 Rev/Mod B-1

Worklist Comment: S-109 TGA, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD				TGA-01	SOLID	59.2 ~~58.5~~ 7-29-96 BPV	58.33 *	N/A	%
96000979	S-109	2 SAMPLE	S96T003926	0		TGA-01	SOLID	N/A	9.2		%
96000979	S-109	3 DUP	S96T003926	0		TGA-01	SOLID	9.2	8.7	N/A	%
96000979	S-109	4 SAMPLE	S96T003927	0		TGA-01	SOLID	N/A	6.0		%
96000979	S-109	5 DUP	S96T003927	0		TGA-01	SOLID	6.0	6.1	N/A	%

Final page for worklist # 11168

Anthony Turenta 07-28-96
Analyst Signature Date

Stanley 7-29-96
Analyst Signature Date

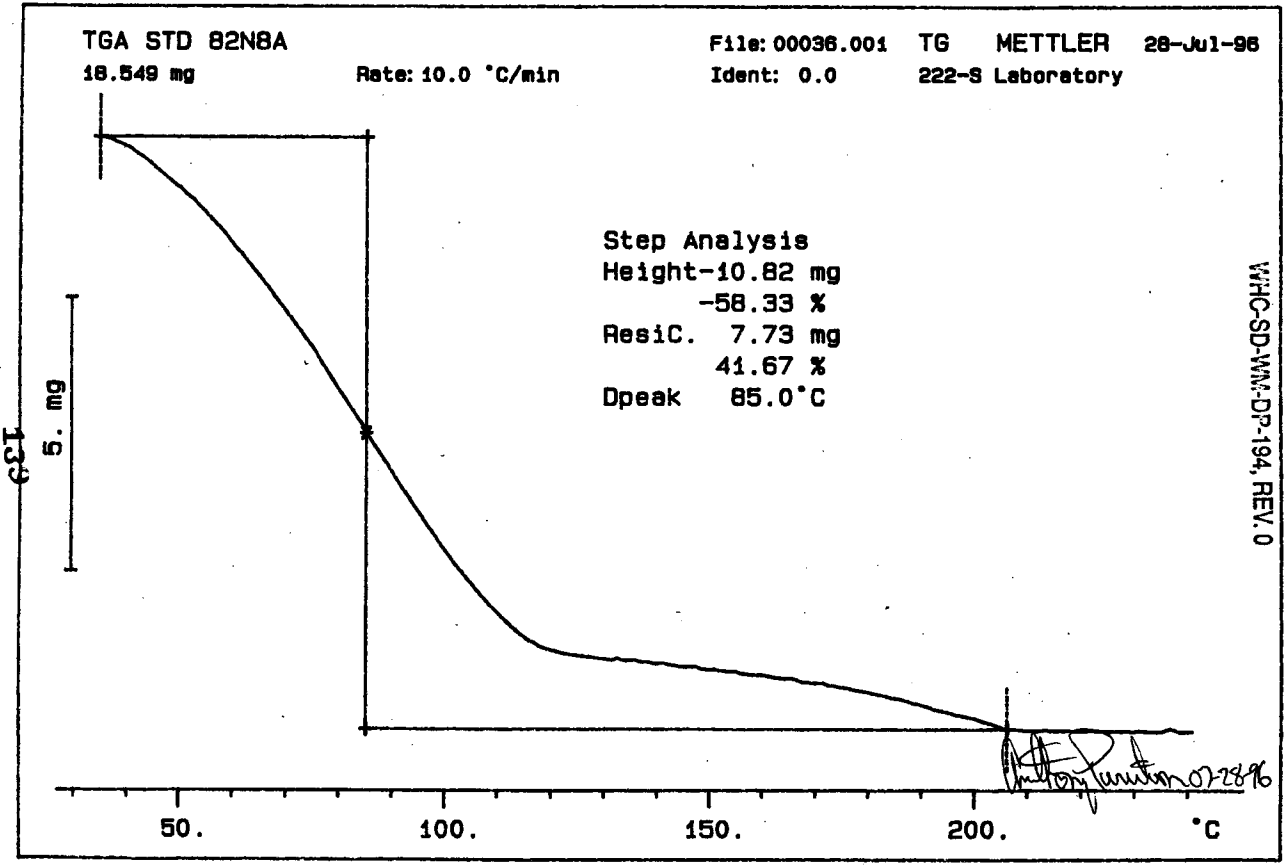
Verified/Validated by
Blandina Valenzuela
8-1-96

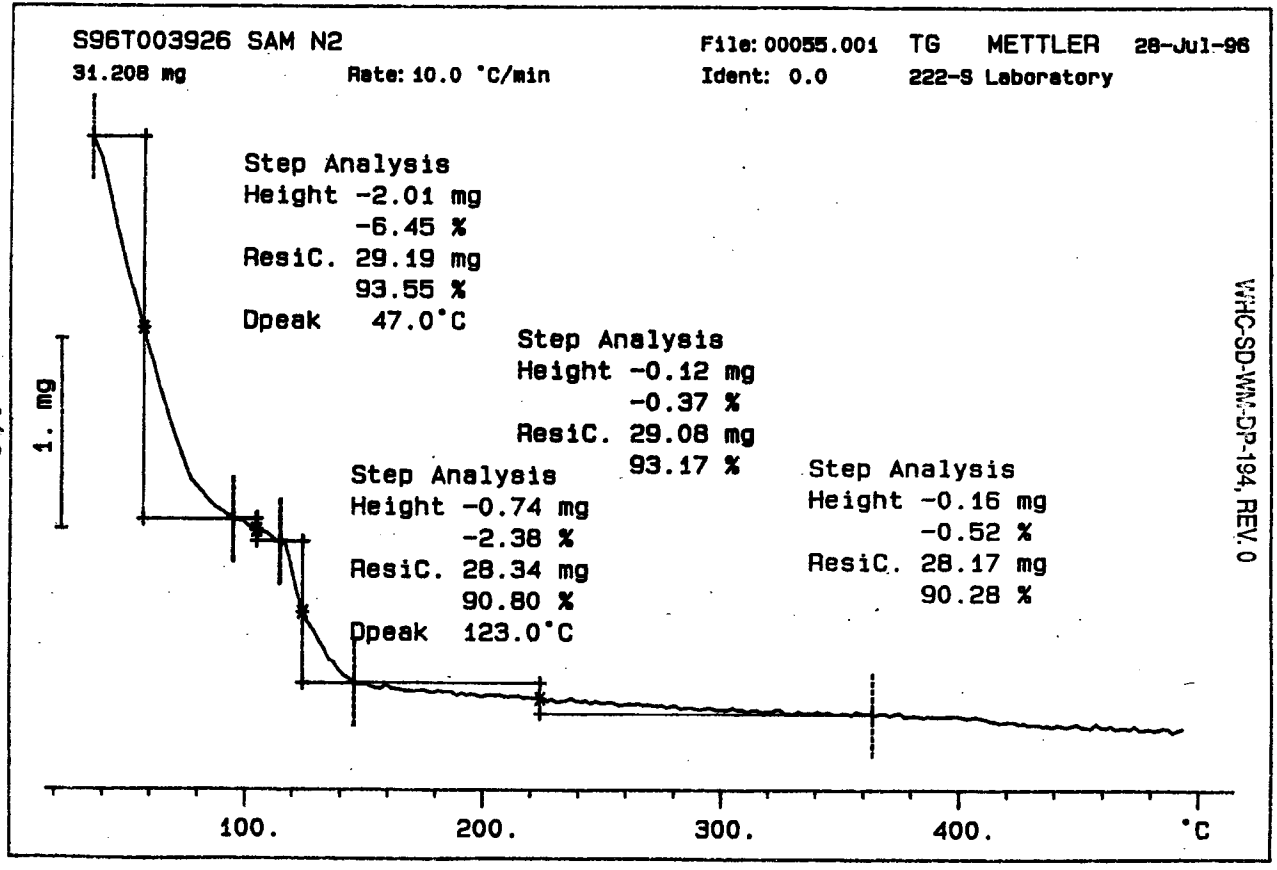
S96T003926 results are the sum of three weight loss steps.

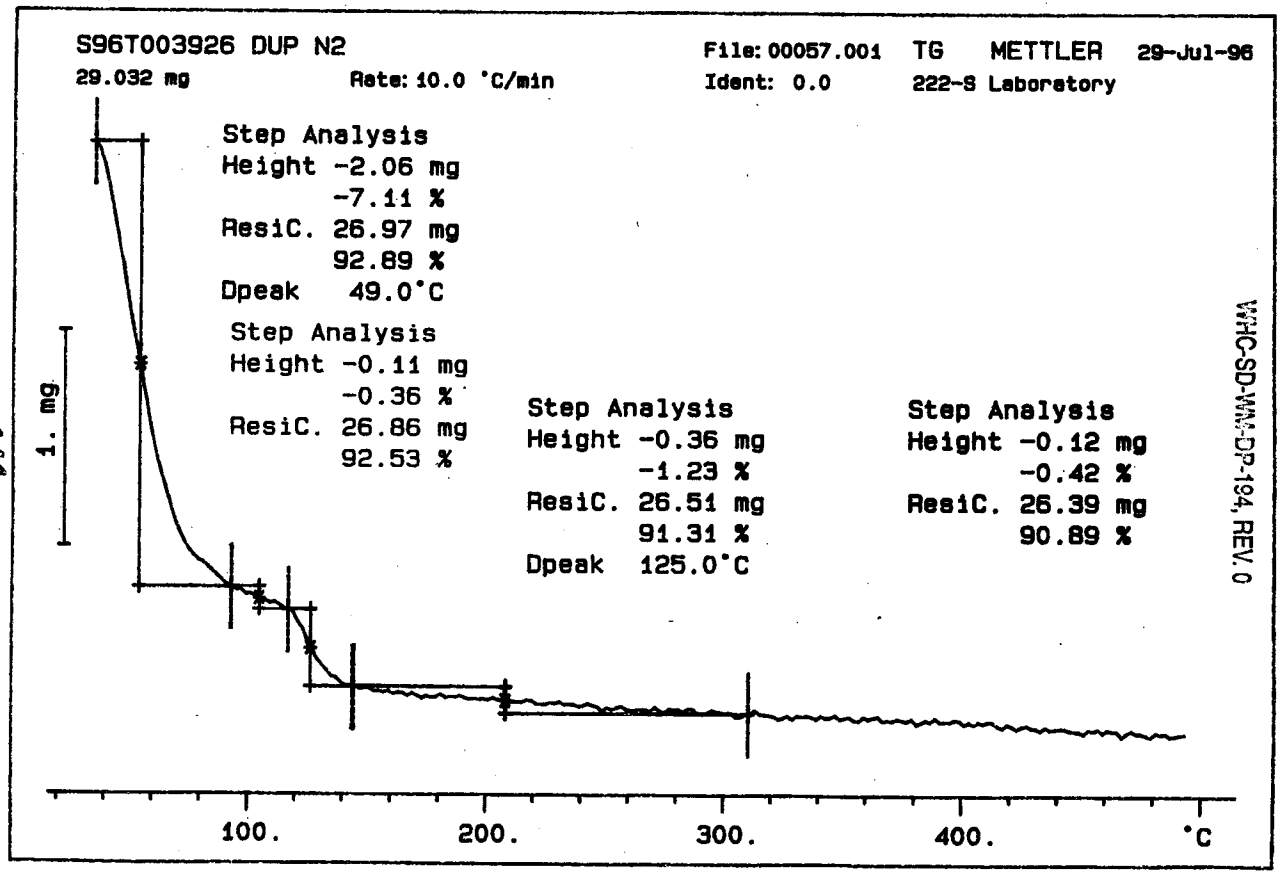
Data Entry Comments: S96T003927 results are the sum of two weight loss steps.

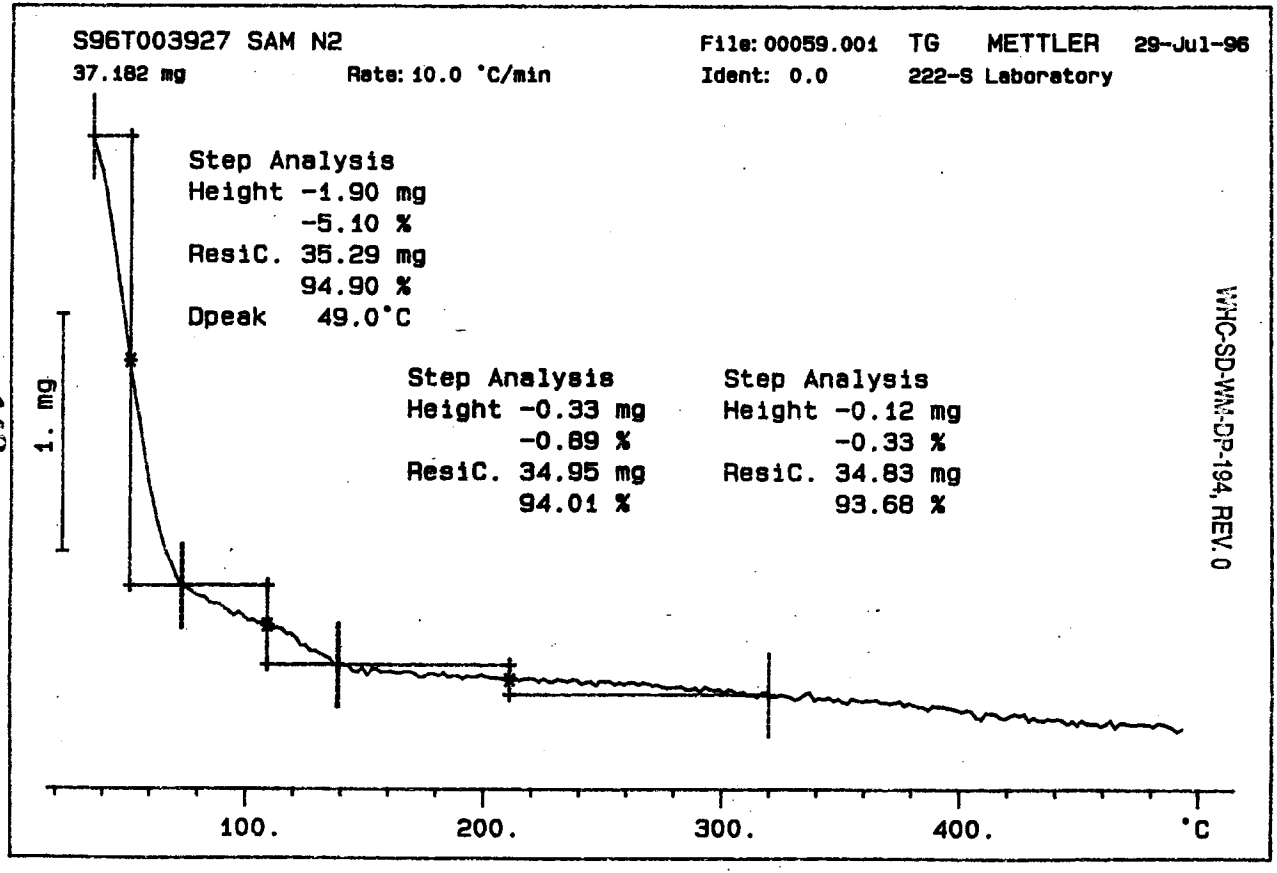
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

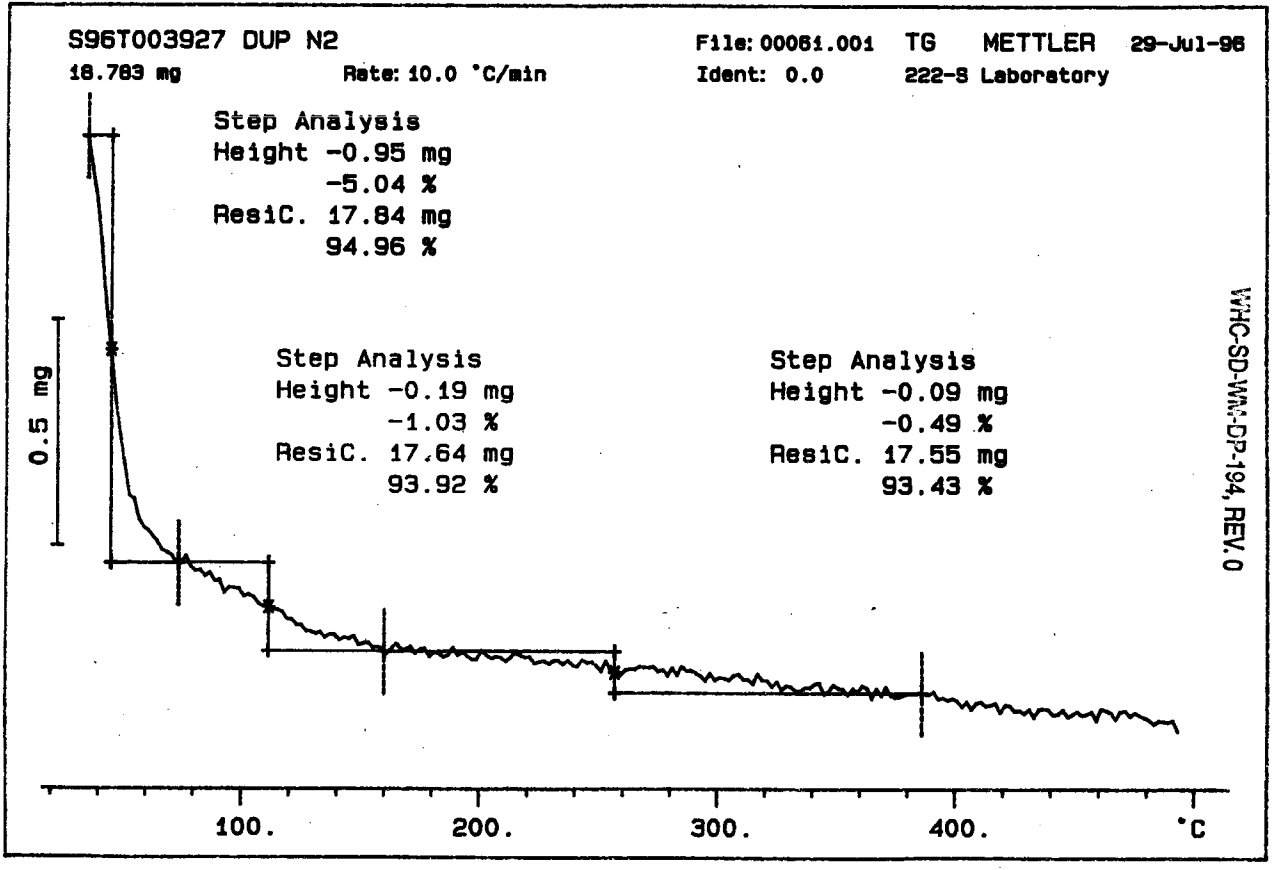
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 139 TO 143




S96T003926 SAM N2
31.208 mg
Rate: 10.0 °C/min
File: 00055.001 TG METTLER 28-Jul-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height -2.01 mg
-6.45 %
ResiC. 29.19 mg
93.55 %
Dpeak 47.0°C
Step Analysis
Height -0.12 mg
-0.37 %
ResiC. 29.08 mg
93.17 %
Step Analysis
Height -0.74 mg
-2.38 %
ResiC. 28.34 mg
90.80 %
Dpeak 123.0°C
Step Analysis
Height -0.16 mg
-0.52 %
ResiC. 28.17 mg
90.28 %
1. mg
100.
200.
300.
400.
°C
WHC-SD-WM-DP-194, REV. 0


S96T003926 DUP N2
29.032 mg
Rate: 10.0 °C/min
File: 00057.001 TG METTLER 29-Jul-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height -2.06 mg
-7.11 %
ResiC. 26.97 mg
92.89 %
Dpeak 49.0°C
Step Analysis
Height -0.11 mg
-0.36 %
ResiC. 26.86 mg
92.53 %
Step Analysis
Height -0.36 mg
-1.23 %
ResiC. 26.51 mg
91.31 %
Dpeak 125.0°C
Step Analysis
Height -0.12 mg
-0.42 %
ResiC. 26.39 mg
90.89 %
6mg
100.
200.
300.
400.
°C


S96T003927 SAM N2
37.182 mg
Rate: 10.0 °C/min
File: 00059.001 TG METTLER 29-Jul-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height -1.90 mg
-5.10 %
ResiC. 35.29 mg
94.90 %
Dpeak 49.0°C
Step Analysis
Height -0.33 mg
-0.89 %
ResiC. 34.95 mg
94.01 %
Step Analysis
Height -0.12 mg
-0.33 %
ResiC. 34.83 mg
93.68 %
1. mg
100.
200.
300.
400.
°C
WHC-SD-WM-DP-194, REV. 0



LABCORE Data Entry Template for Worklist# 11307

Analyst: KRM **Instrument:** TGA0 1 **Book #** 82N&A

Method: LA-560-112 Rev/Mod B-1

Worklist Comment: S-109 TGA, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD				TGA-01	SOLID	59.2	59.14	N/A	%
96000979	S-109	2 SAMPLE	S96T004017	0		TGA-01	SOLID	N/A	7.79		%
96000979	S-109	3 DUP	S96T004017	0		TGA-01	SOLID	7.79	7.41	N/A	%

Final page for worklist # 11307

7-31-96
Analyst Signature Date

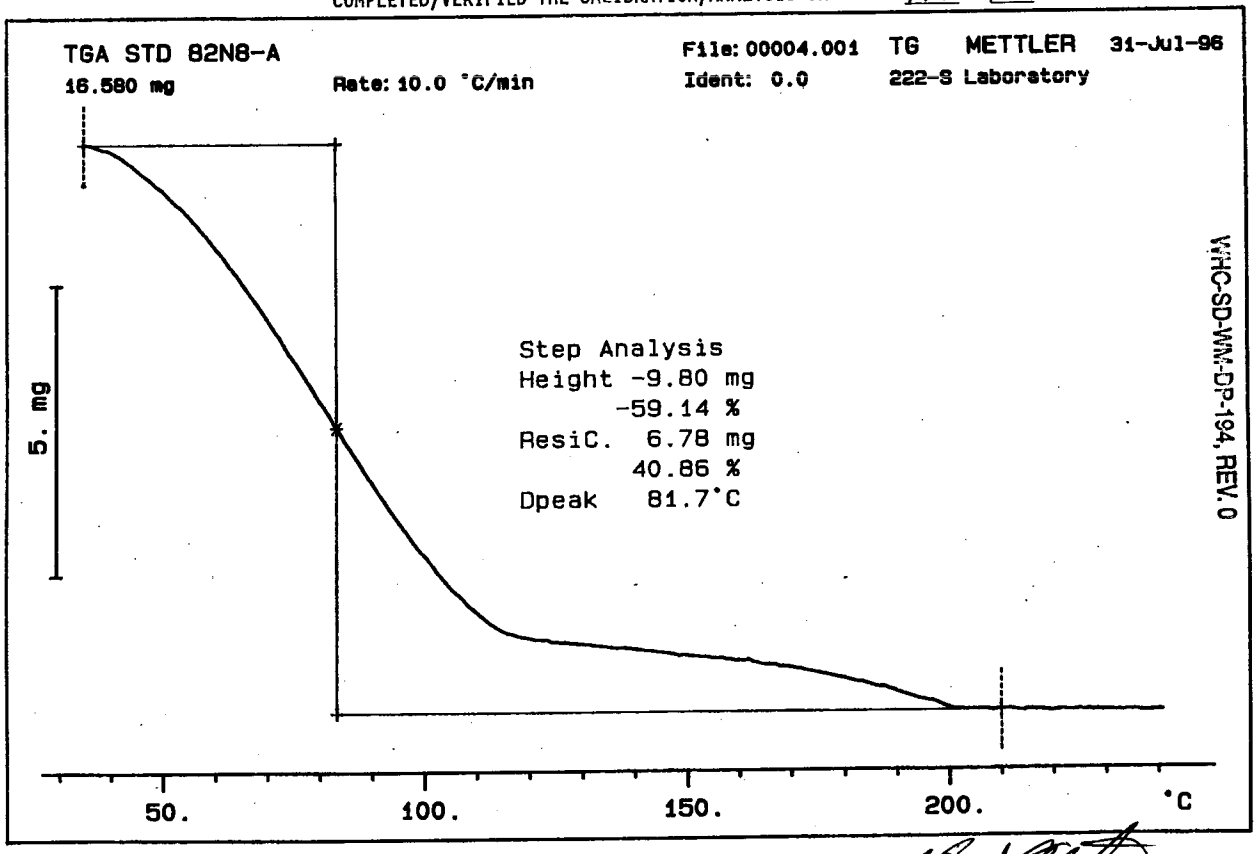
8-1-96
Analyst Signature Date

Verified by Blandina Valenzuela 8-6-96

Data Entry Comments: The sample contained very little water, therefore the scale is very small showing the vibrations seen by the balance.

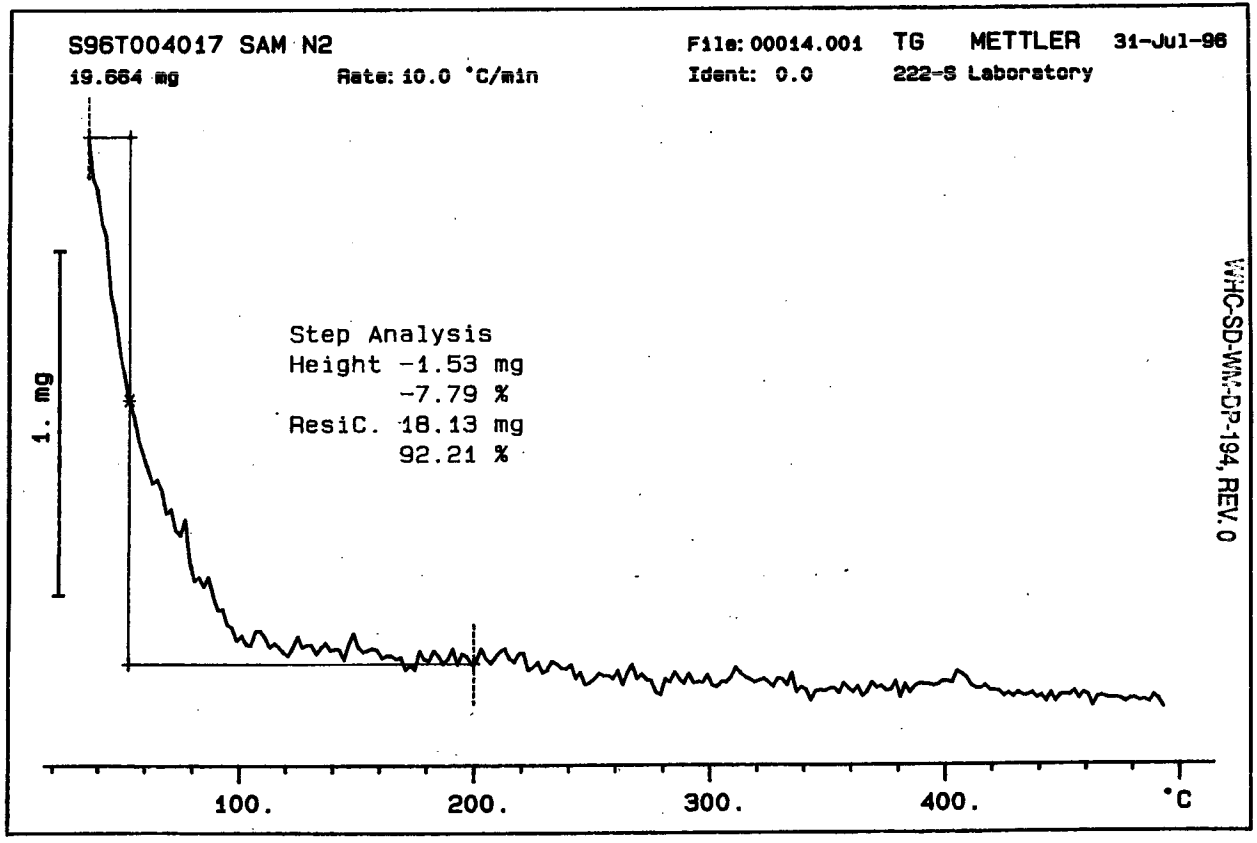
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

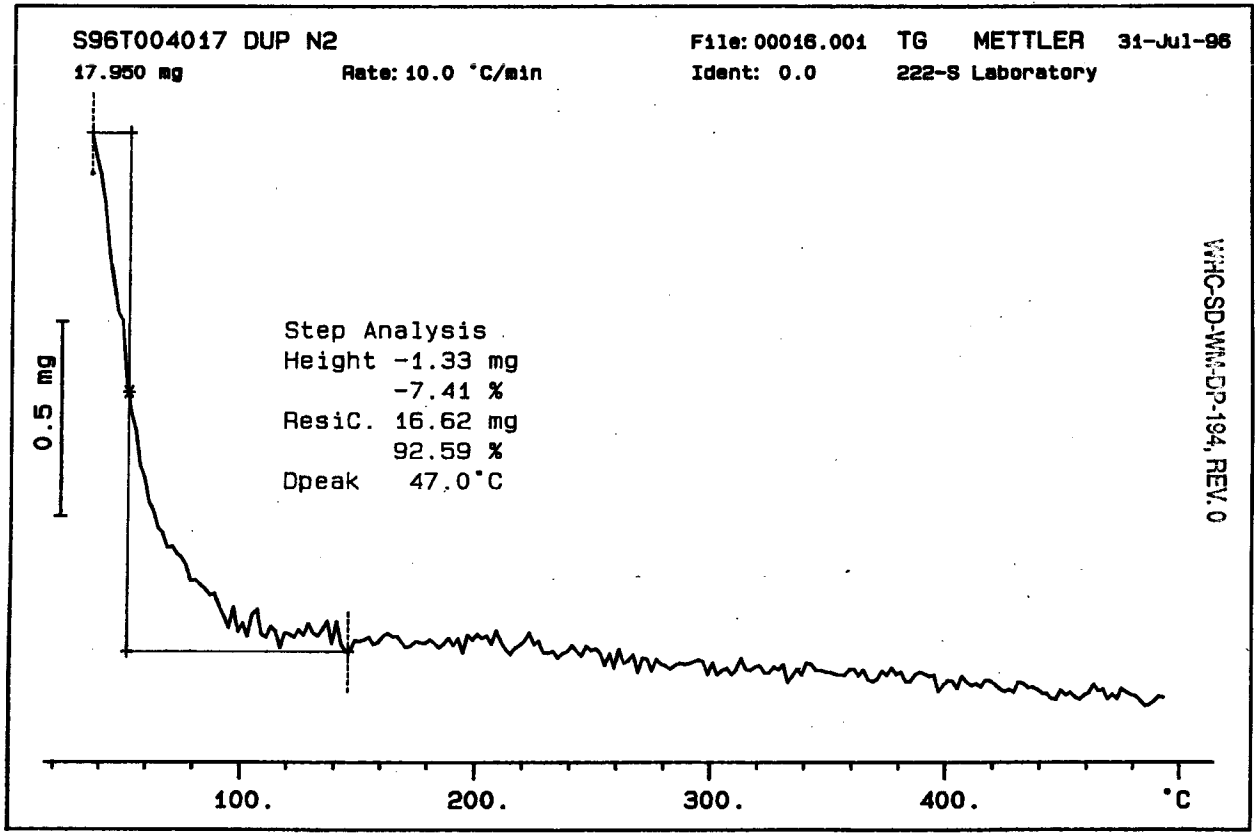
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 145 TO 147.



WHC-SD-WM-DP-194, REV.0

7-31-96


S96T004017 SAM N2
19.664 mg
Rate: 10.0 °C/min
File: 00014.001 TG METTLER 31-Jul-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height -1.53 mg
-7.79 %
ResiC. 18.13 mg
92.21 %
1. mg
100.
200.
300.
400.
°C
WHC-SD-WM-DP-194, REV.0


S96T004017 DUP N2
17.950 mg
Rate: 10.0 °C/min
File: 00016.001
TG METTLER 31-Jul-96
Ident: 0.0
222-S Laboratory
Step Analysis
Height -1.33 mg
-7.41 %
ResiC. 16.62 mg
92.59 %
Dpeak 47.0°C
5.0 mg
100.
200.
300.
400.
°C
WHC-SD-WM-DP-194, REV.0

LABCORE Data Entry Template for Worklist# 11654

Analyst: EAL **Instrument:** TGA0 1 **Book #** 82N8A

Method: LA-560-112 Rev/Mod B-1

Worklist Comment: S-109 FOR TGA PLEASE RUN UNDER N2

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD				TGA-01	LIQUID	59.2	59.13	N/A	%
96000961	S-109	2 SAMPLE	S96T004023	0		TGA-01	LIQUID	N/A	99.98		%
96000961	S-109	3 DUP	S96T004023	0		TGA-01	LIQUID	99.98	99.86	N/A	%
96000961	S-109	4 SAMPLE	S96T004033	0		TGA-01	LIQUID	N/A	52.07		%
96000961	S-109	5 DUP	S96T004033	0		TGA-01	LIQUID	52.07	52.78	N/A	%

Final page for worklist # 11654

A. Lambert 08.06.96
Analyst Signature Date

[signature] 8-7-96
Analyst Signature Date

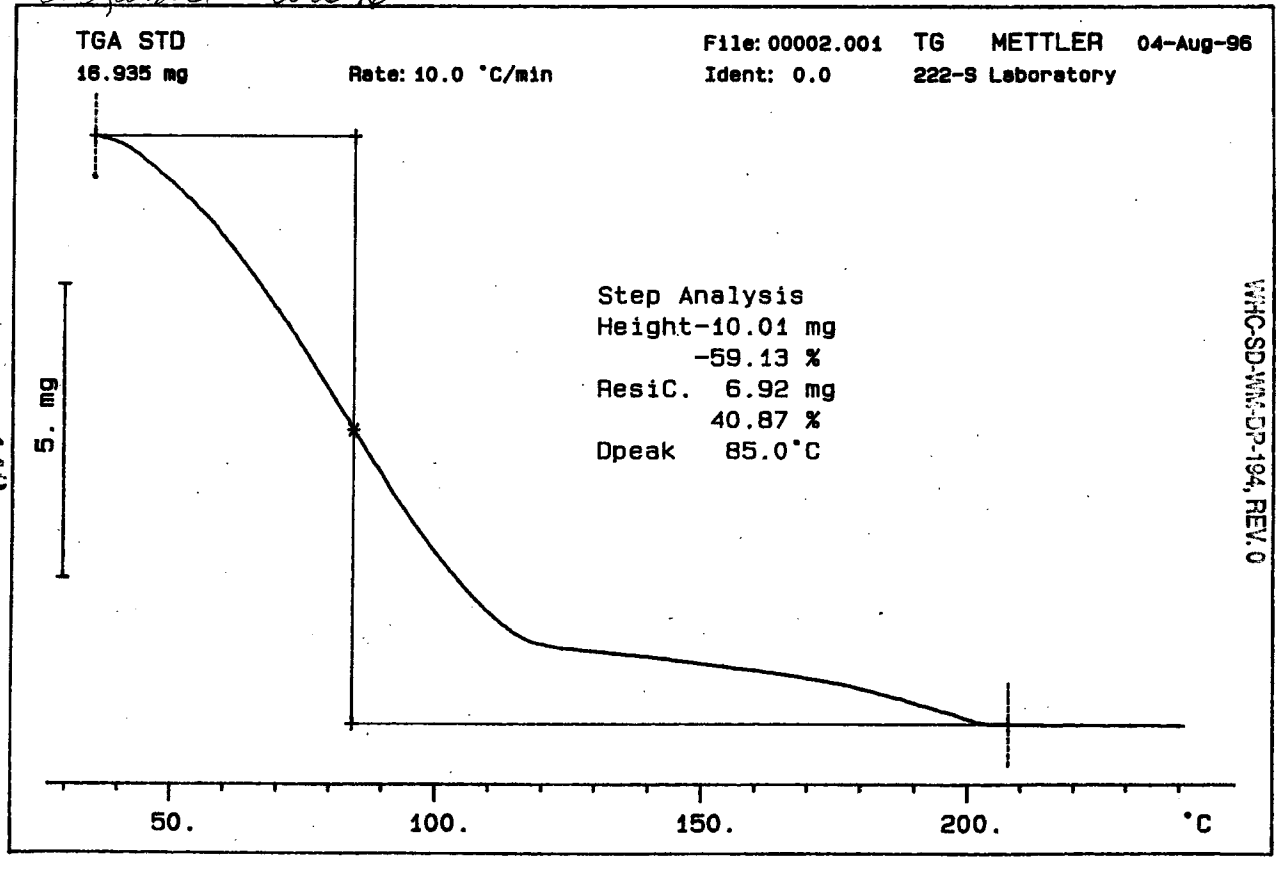
Verified/Validated by
Blandina Valenzuela 8.8.96

Data Entry Comments: S96T004033 produced a thermogram that indicates several reactions occurring

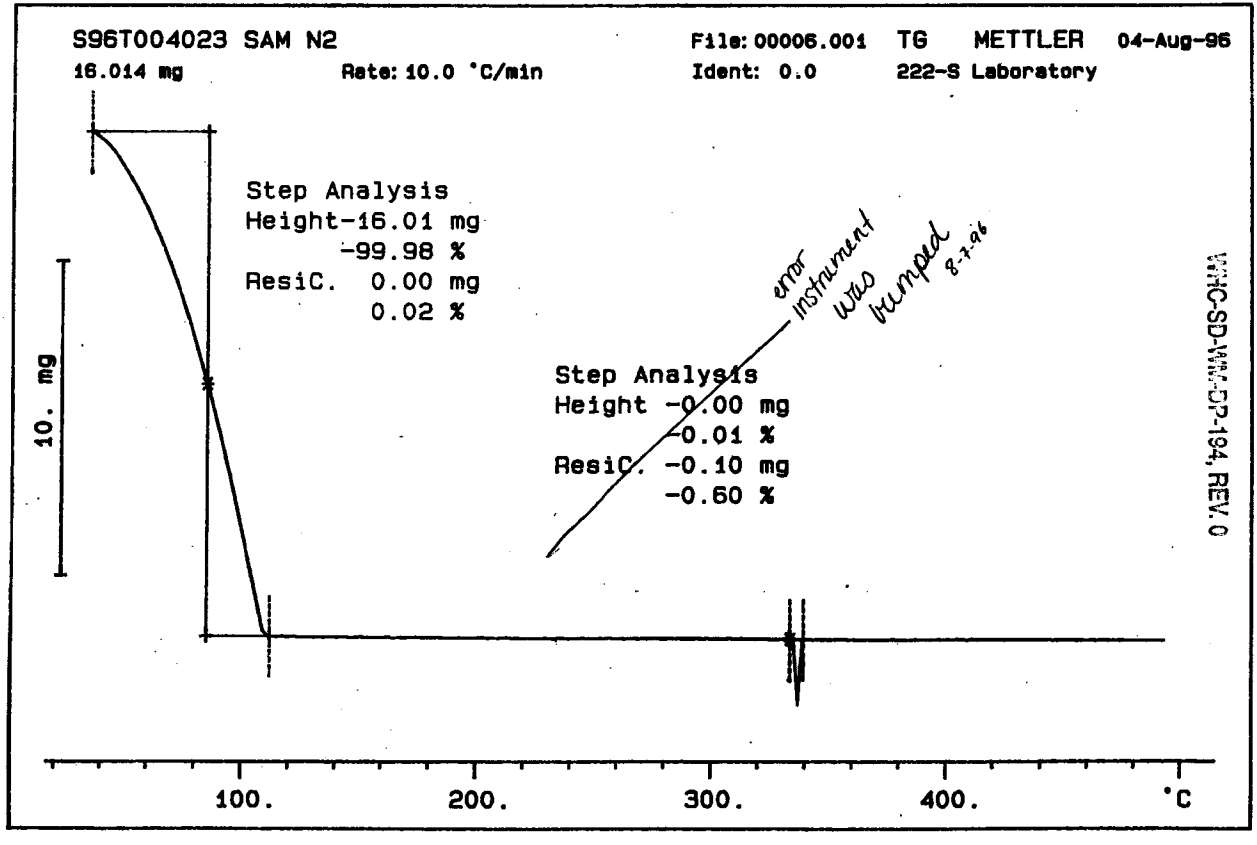
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

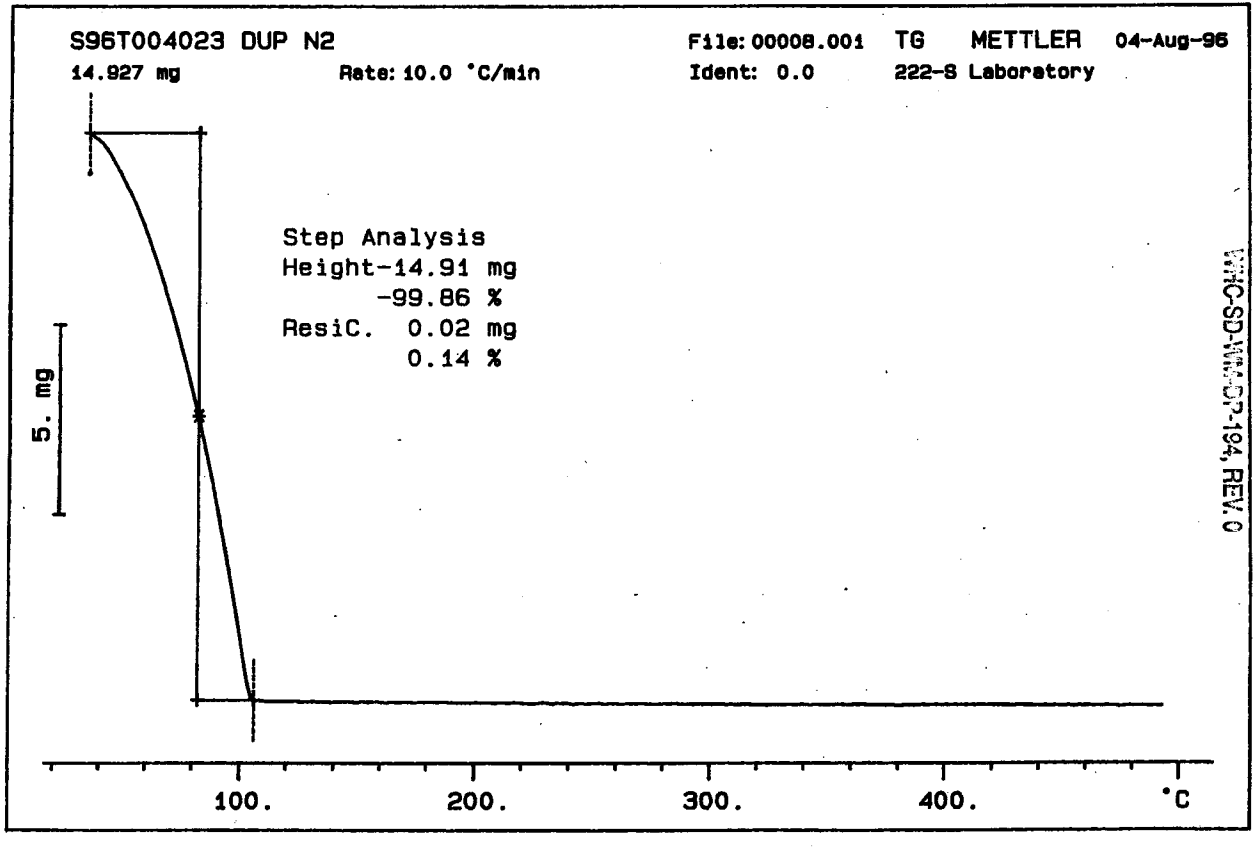
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 149 TO 153.

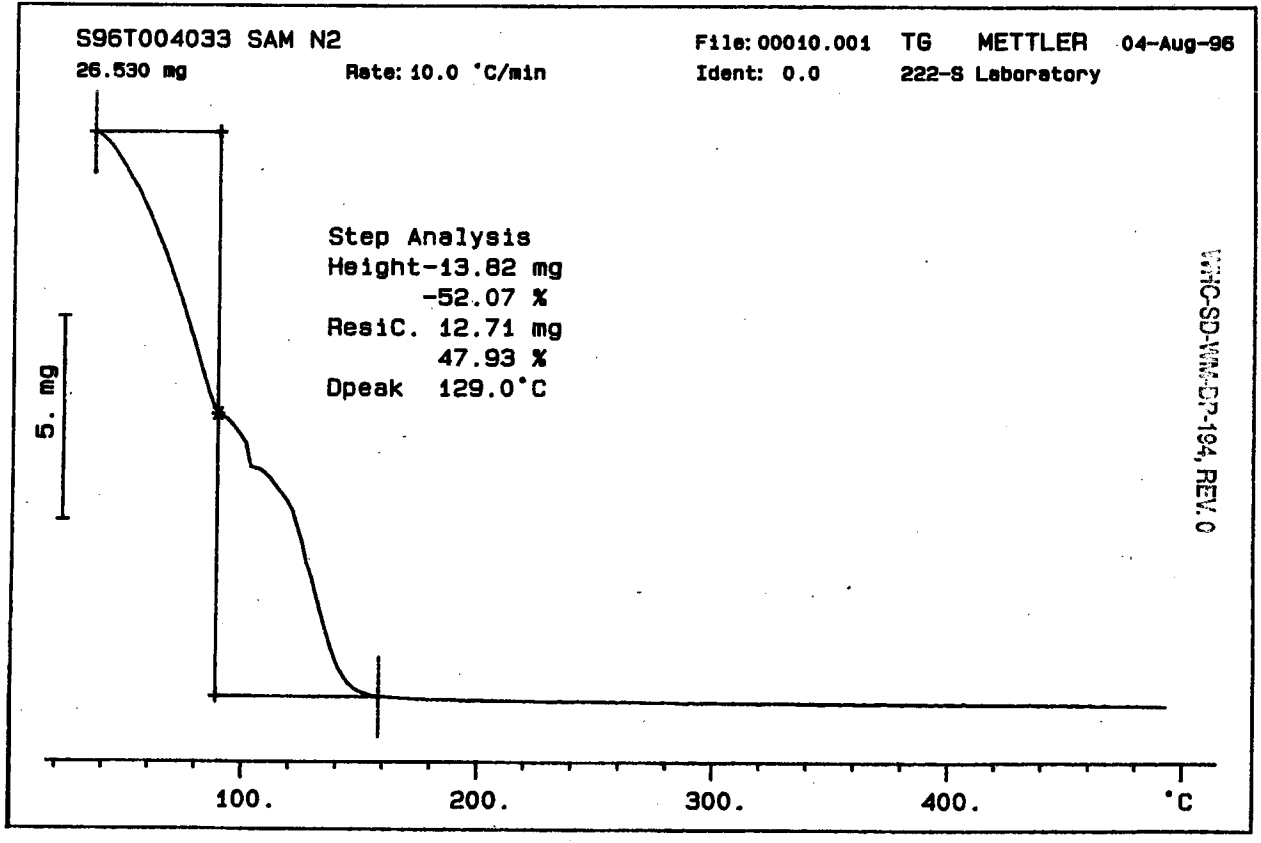
A. Lambel 08-06-96

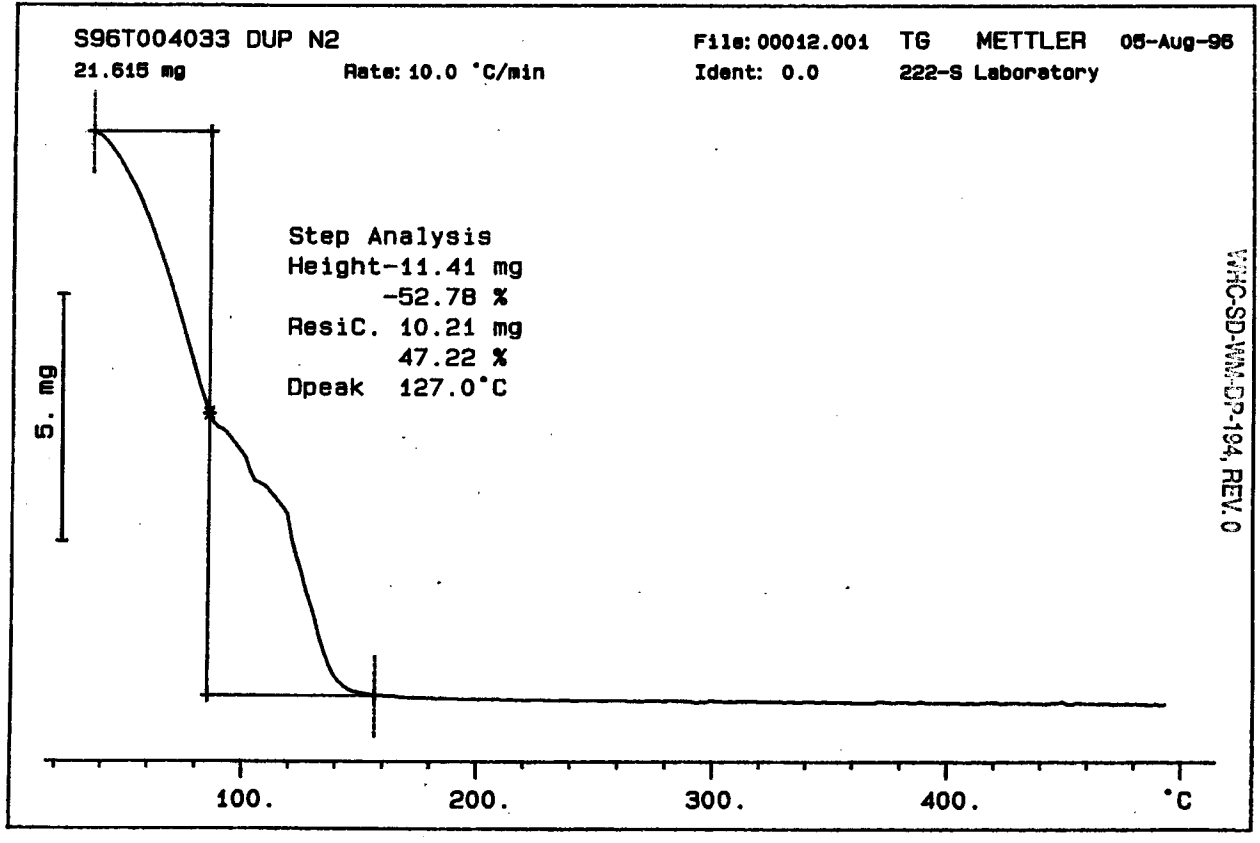


WHC-SD-WM-DP-194, REV.0


S96T004023 SAM N2
16.014 mg
Rate: 10.0 °C/min
File: 00006.001
Ident: 0.0
TG METTLER 04-Aug-96
222-S Laboratory
Step Analysis
Height -16.01 mg
-99.98 %
ResiC. 0.00 mg
0.02 %
10. mg
error instrument was bumped 8-7-96
Step Analysis
Height -0.00 mg
-0.01 %
ResiC. -0.10 mg
-0.60 %
100.
200.
300.
400.
°C
WHC-SD-WM-EP-194, REV.0




S96T004033 SAM N2
26.530 mg
Rate: 10.0 °C/min
File: 00010.001 TG METTLER 04-Aug-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height-13.82 mg
-52.07 %
ResiC. 12.71 mg
47.93 %
Dpeak 129.0°C
5 mg
100.
200.
300.
400.
°C



worklistrpt Version 2.1 05/15/95
08/07/96 14:15

LABCORE Data Entry Template for Worklist# 11657

Analyst: EAL **Instrument:** TGA0 1 **Book #** 82N8A

Method: LA-560-112 Rev/Mod B-1

Worklist Comment: S-109 FOR TGA PLEASE RUN UNDER N2

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-01	SOLID	59.2	59.16 *	N/A	%
96000961	S-109	2	SAMPLE	S96T004035	0		TGA-01	SOLID	N/A	5.95		%
96000961	S-109	3	DUP	S96T004035	0		TGA-01	SOLID	5.95	6.1	N/A	%
		4	STD				TGA-01	SOLID	59.2	59.33	N/A	%
96000961	S-109	5	SAMPLE	S96T004036	0		TGA-01	SOLID	N/A	20.04		%
96000961	S-109	6	DUP	S96T004036	0		TGA-01	SOLID	20.04	18.57	N/A	%

Final page for worklist # 11657

See attached for signatures
Analyst Signature **Date** 8-7-96

Verified/Validated by Blandina Valenzuela 8-8-96

Sandra Mark 8-8-96
Analyst Signature **Date**

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

worklistrpt Version 2.1 05/15/95
08/06/96 10:27

LABCORE Data Entry Template for Worklist# 11657

Analyst: EAL/SMF **Instrument:** TGA0 _____ **Book #** _____

Method: LA-560-112 Rev/Mod _____

Worklist Comment: S-109 FOR TGA PLEASE RUN UNDER N2

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-01	SOLID	_____	_____	N/A	%
96000961	S-109	2	SAMPLE	S96T004035	0		TGA-01	SOLID	N/A	_____	_____	%
96000961	S-109	3	DUP	S96T004035	0		TGA-01	SOLID	_____	_____	N/A	%
96000961	S-109	4	SAMPLE	S96T004036	0		TGA-01	SOLID	N/A	_____	_____	%
96000961	S-109	5	DUP	S96T004036	0		TGA-01	SOLID	_____	_____	N/A	%

Final page for worklist # 11657

A Lambert 080796
Analyst Signature **Date**

_____
Analyst Signature **Date**

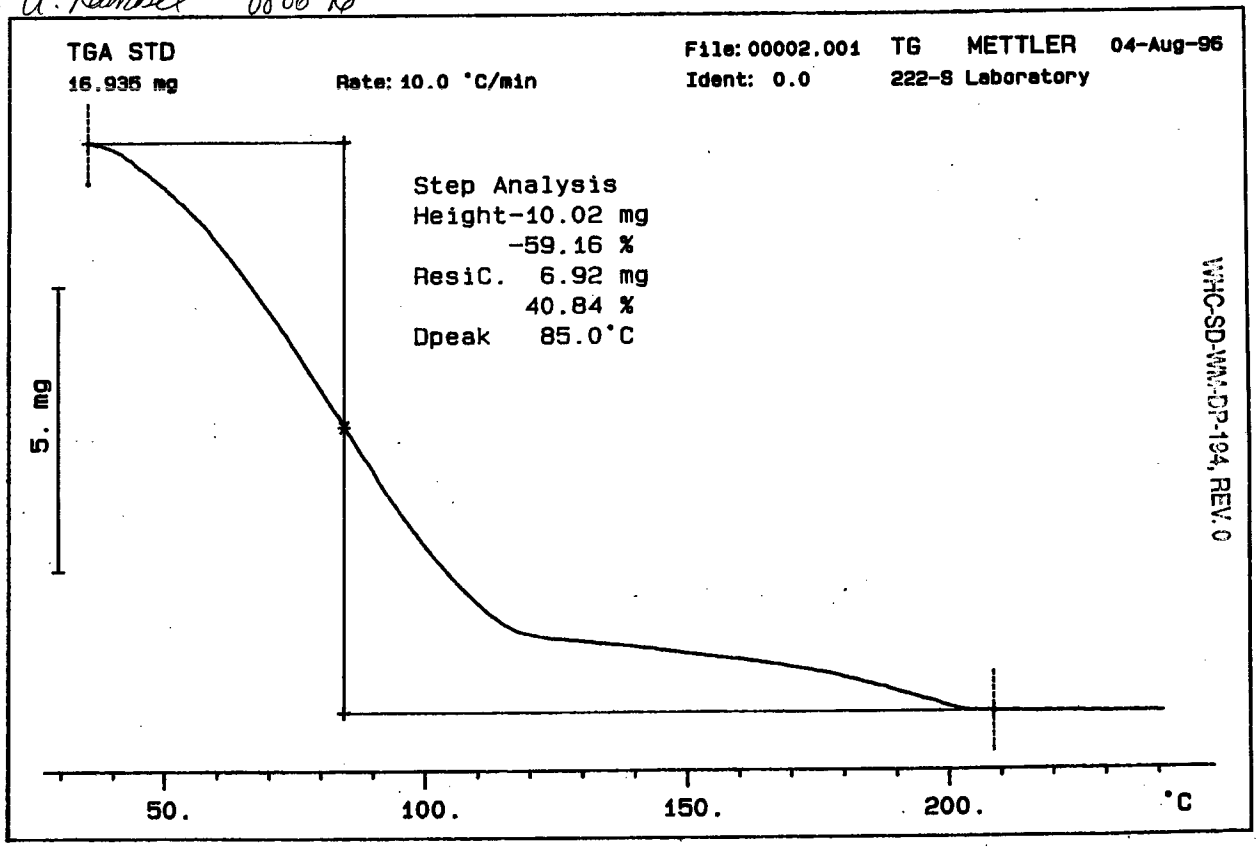
Susie M. Sutton

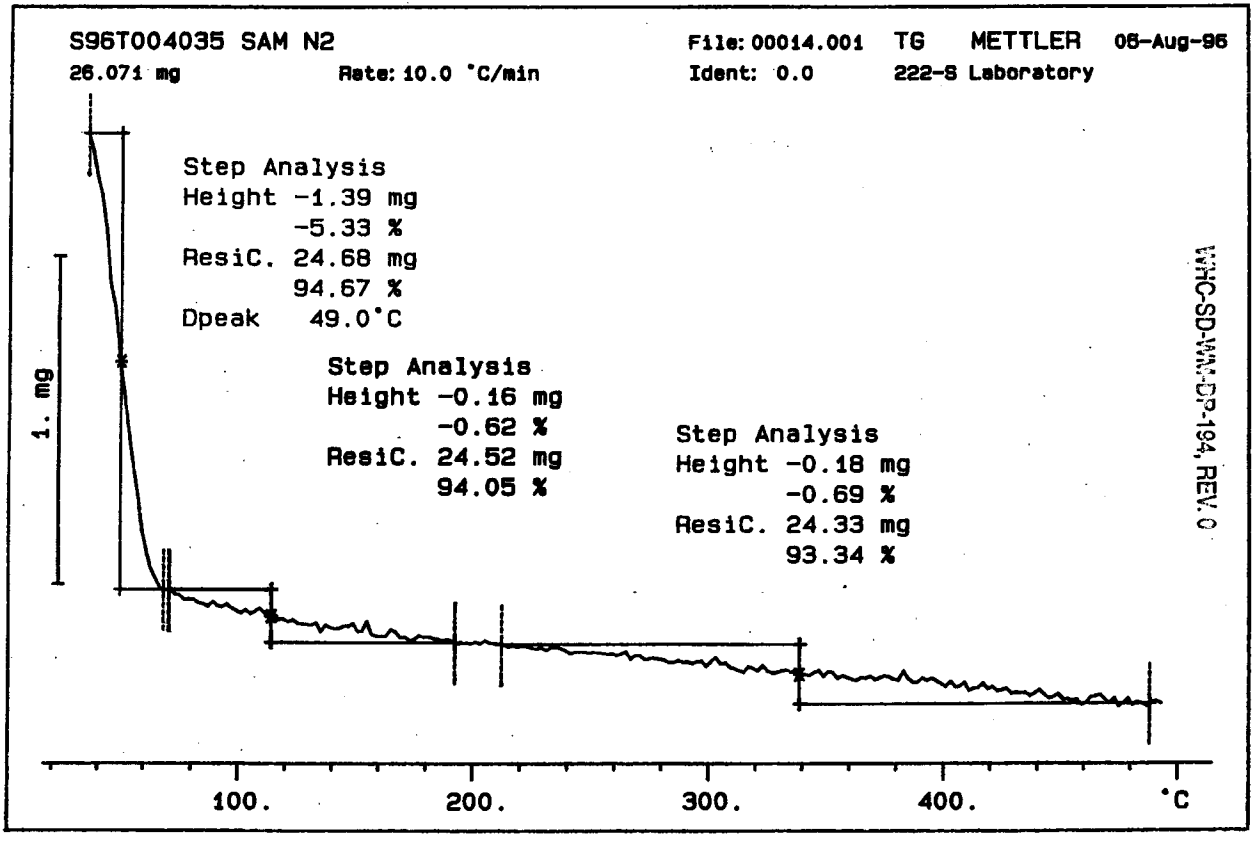
Data Entry Comments:

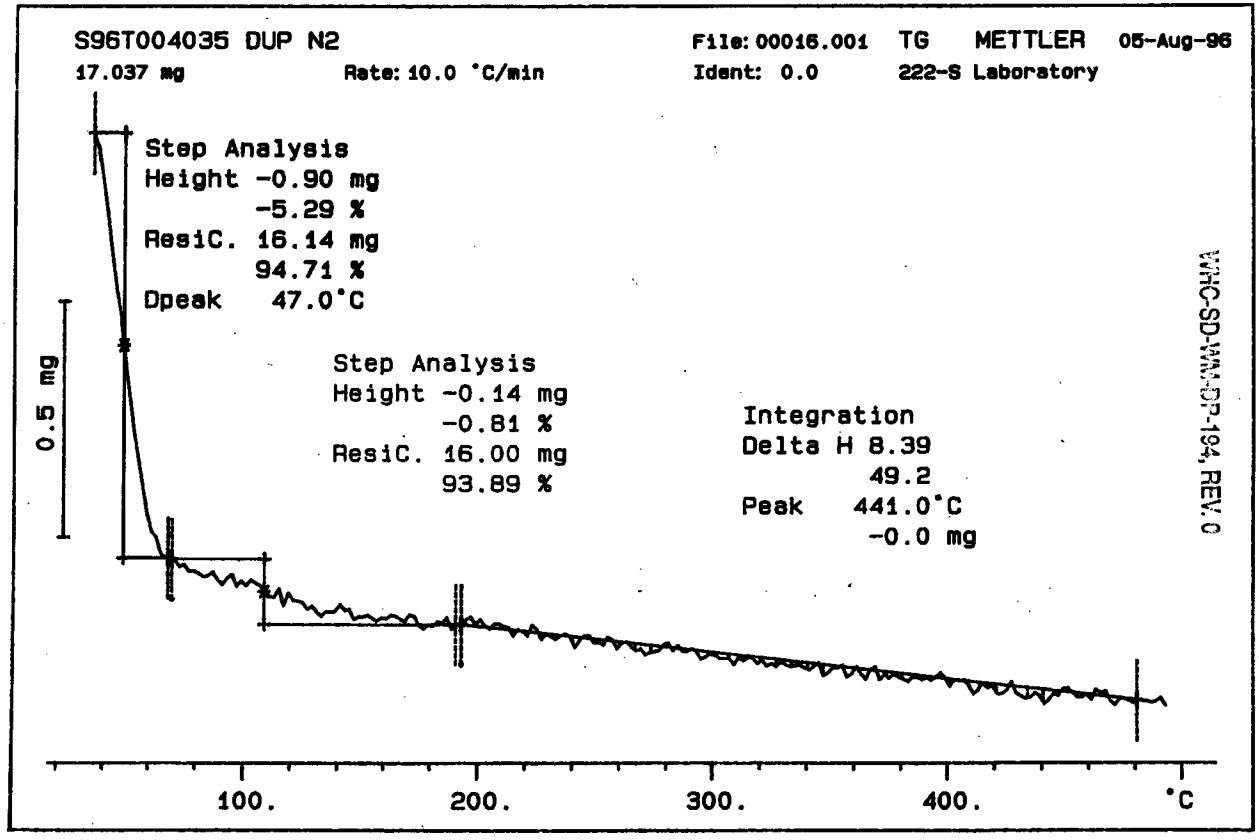
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

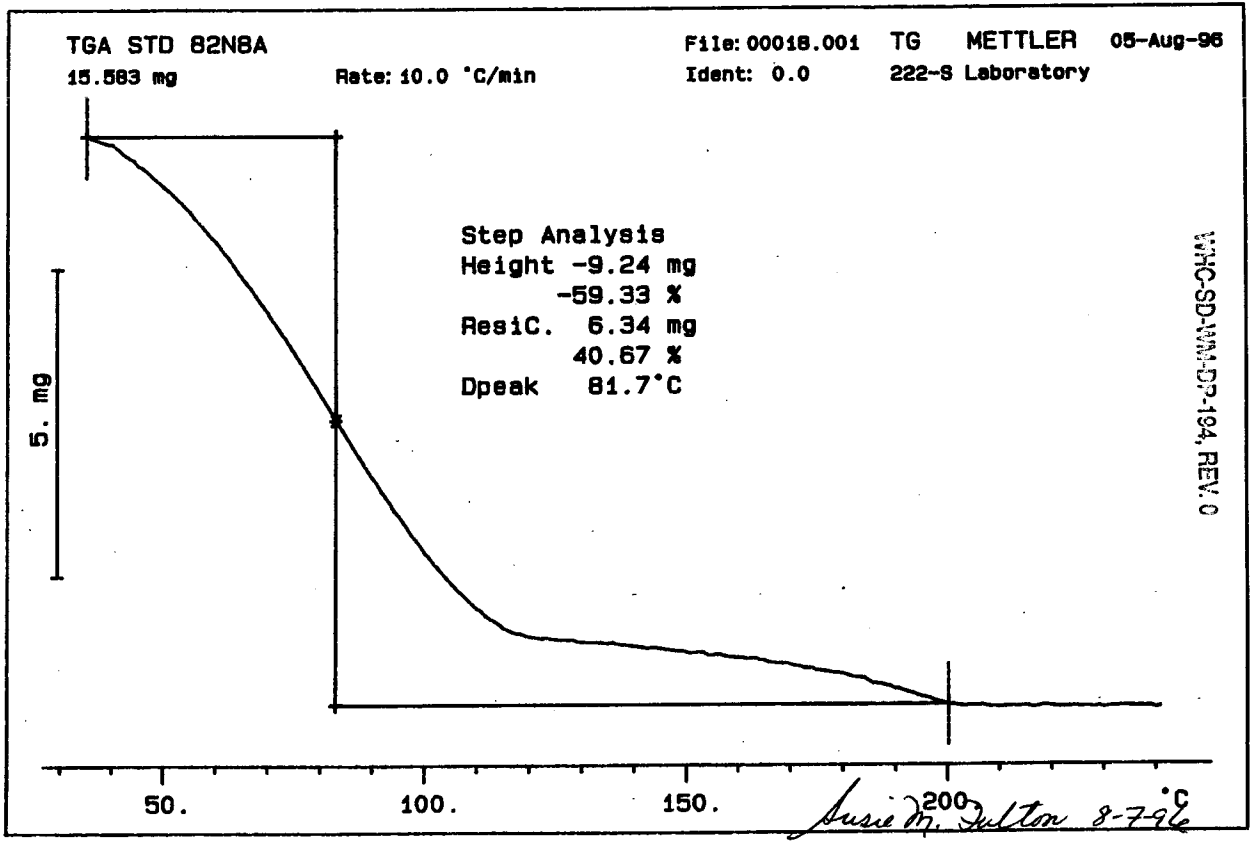
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 156 TO 161.

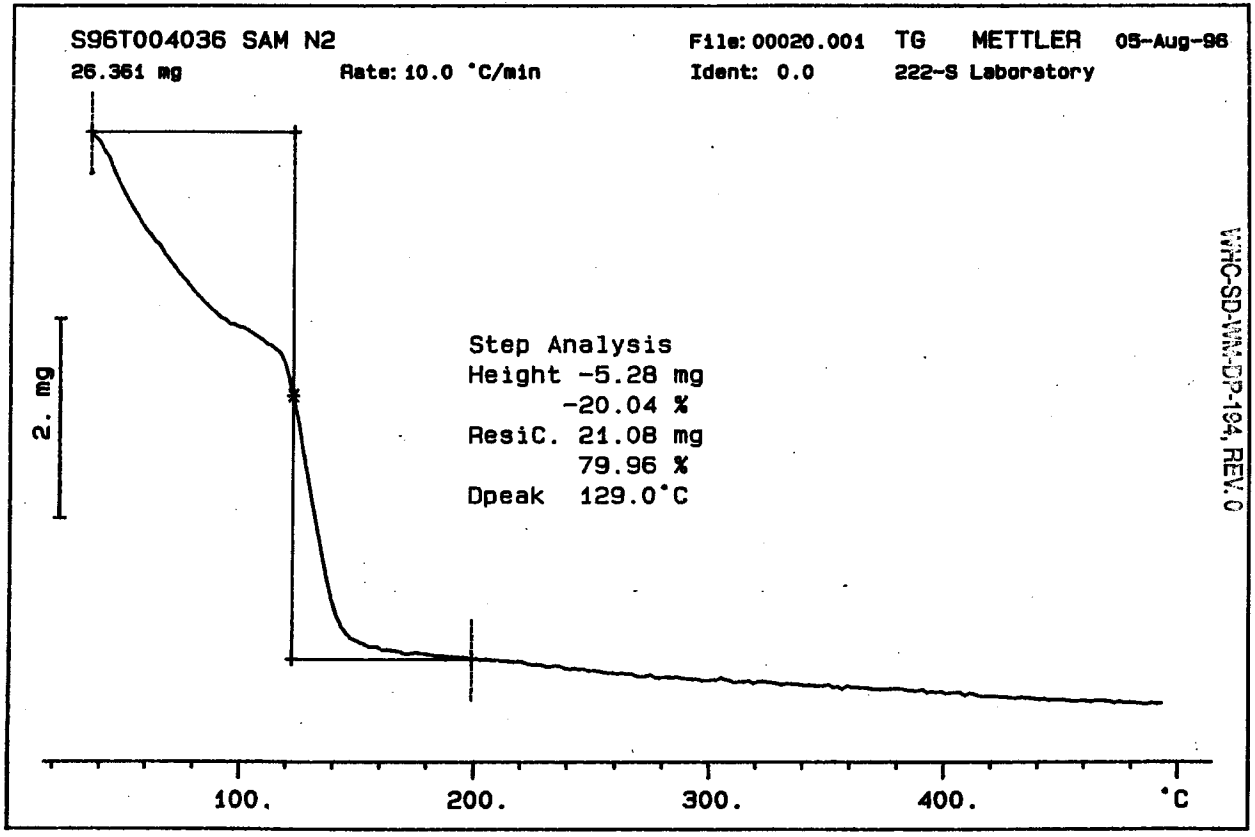
A. Lambel 08.06.96

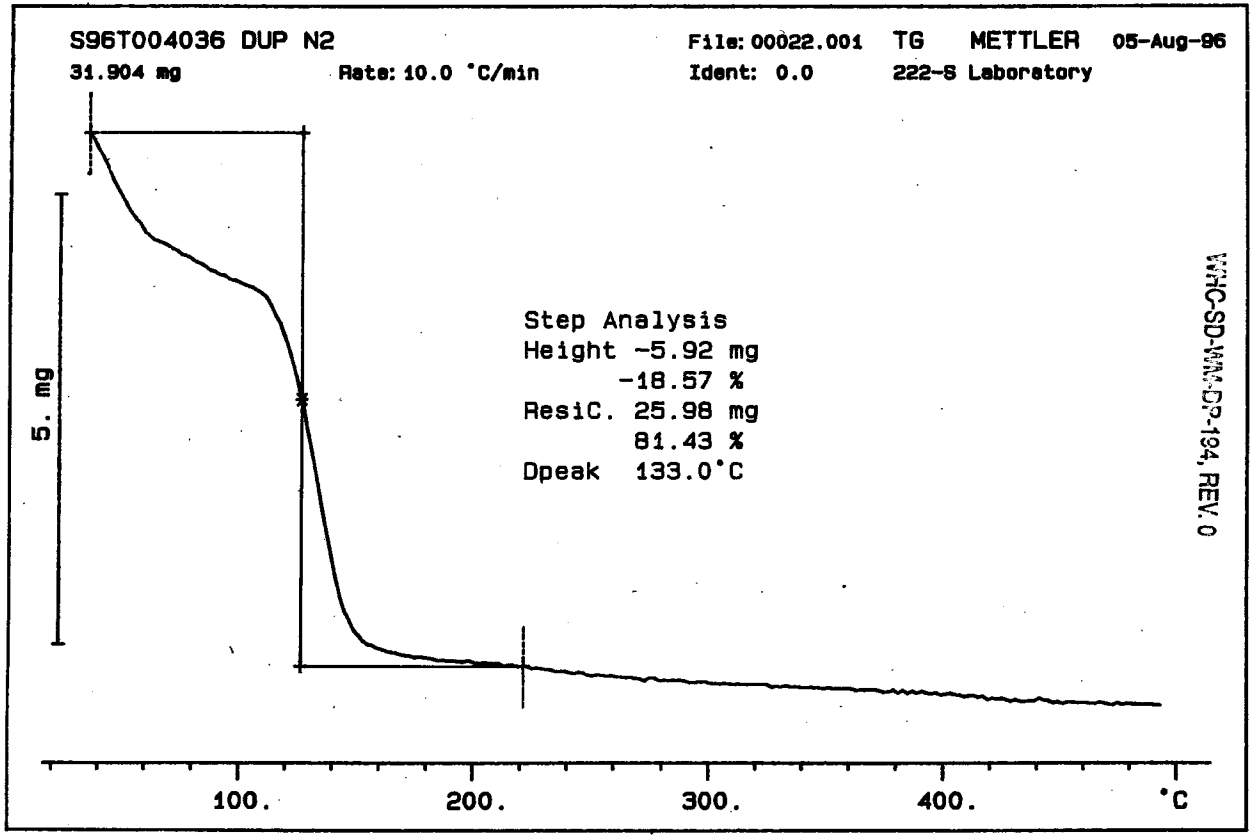



S96T004035 SAM N2
26.071 mg
Rate: 10.0 °C/min
File: 00014.001 TG METTLER 08-Aug-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height -1.39 mg
-5.33 %
ResiC. 24.68 mg
94.67 %
Dpeak 49.0°C
Step Analysis
Height -0.16 mg
-0.62 %
ResiC. 24.52 mg
94.05 %
Step Analysis
Height -0.18 mg
-0.69 %
ResiC. 24.33 mg
93.34 %
1. mg
100.
200.
300.
400.
°C
WHC-SD-WM-DP-194, REV. 0




TGA STD 82N8A
15.583 mg
Rate: 10.0 °C/min
File: 00018.001
Ident: 0.0
TG METTLER 05-Aug-96
222-S Laboratory
Step Analysis
Height -9.24 mg
-59.33 %
ResiC. 6.34 mg
40.67 %
Dpeak 81.7°C
5. mg
50.
100.
150.
200.
°C
WHC-SD-WM-DP-194, REV. 0
Susie M. Fulton 8-7-96


S96T004036 SAM N2
26.361 mg
Rate: 10.0 °C/min
File: 00020.001 TG METTLER 05-Aug-96
Ident: 0.0 222-S Laboratory
2. mg
Step Analysis
Height -5.28 mg
-20.04 %
ResiC. 21.08 mg
79.96 %
Dpeak 129.0°C
100.
200.
300.
400.
°C
WHC-SD-WM-EP-194, REV. 0


S96T004036 DUP N2
31.904 mg
Rate: 10.0 °C/min
File: 00022.001
Ident: 0.0
TG
METTLER
222-S Laboratory
05-Aug-96
Step Analysis
Height -5.92 mg
-18.57 %
ResiC. 25.98 mg
81.43 %
Dpeak 133.0°C
5 mg
100.
200.
300.
400.
°C

DISTRIBUTION SHEET

To	From	Page 1 of 1
Distribution	Production Planning & Control	Date: 08/12/96
Project Title/Work Order **WHC-SD-WM-DP-194, REV. 0, "Tank 241-S-109 Analytical Results for the 45 Day Report"**	Cores 158 and 160, LAD 8-15-96	EDT NO.: EDT-617492 ECN NO.: N/A

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