



NATIONAL TECHNICAL SYSTEMS

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Test Report Prepared
for
Extrusion Technology, Inc.



Issued: August 19, 2011

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CLIENT INFORMATION	
Company Name:	Extrusion Technology, Inc.
Company Contact:	Wayne Silva
Address:	358 North Street
City, State, Zip:	Randolph, MA 02368
Purchase Order Number:	Q46024*1
Purchase Order Date:	July 8, 2011

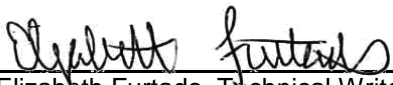
NTS CONTRACT INFORMATION	
NTS Master Job Order (MJO) Number:	305060-11C
NTS Quotation Number:	OP0108228
Quotation Revision:	0
Quotation Date:	June 15, 2011

REFERENCES


ISO/IEC 17025:2005(E), *General Requirements for the Competence of Testing and Calibration Laboratories*, May 15, 2005

CEI IEC 60529, Edition 2.1, Degrees of Protection Provided by Enclosures (IP Code), 2001-02

Rev. No.	Date	Page No.	Para. No.	Description
0	8/19/11			Original

Prepared by: 
 Elizabeth Furtado, Technical Writer

Approved by: 
 Clayton Forbes, Program Engineer

Reviewed by: 
 Ronald Kelly, Quality Representative



This report summarizes testing performed in accordance with the relevant contractual documentation listed on the Job Information Page. This document presents a clear overview of the test program and deviations. It is the responsibility of the NTS client to evaluate pass/fail criteria on test unit's functionality.

Deviations in testing range from out of tolerance conditions, unit failure, changes in test profiles or other instances that are not within the scope of the test specification are detailed in this report as Notices of Deviations.

Test Profile Pages provide a detailed description of test levels and test results. Typically each test shall have its own Test Profile Page.

The Test Equipment List summarizes the equipment used for all testing. This list also contains calibration due dates. If a more detailed list is required containing range, accuracy etc. please contact your Program Manager at NTS.

The test sequence below summarizes the order in which testing was performed. Please refer to the product description on the Test Profile Page and/or Receiver Page.

Test#	Test Description	Start Date	End Date
1	Water Intrusion	8/4/2011	8/4/2011
2	Dust	8/5/2011	8/6/2011
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COMMENTS:



TEST PROFILE

TR- 305060-11C

Customer Name:	Extrusion Technology
Test Name:	Oscillating Spray
Specification:	IEC 60529
Spec. Date:	2001-02
Para. / Method:	14.2.4
Test Condition:	IPX4

Unit(s) Under Test:	Enclosure
Quantity:	1
P/N(s):	6520
S/N(s):	N/A
Receiver Date:	8/4/2011
Test Plan #:	N/A

TEST PARAMETERS

Spray Duration in Minutes:	10	Type of Water:	Filtered Tap Water
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Oscillating Tube Radius in mm:	600mm	Number of Holes:	37
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Time for 1 revolution of 360° Oscillation Spraying:	12 Seconds
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Inlet Water Pressure in PSI:	11psi	Water Flow L/min.:	2.6 L/minute
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TEST RESULTS

Actual Test Temperatures:	UUT Temperature:	71.9F	Water Temperature:	71F
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Will Weight Determine UUT Pass/Fail Status?	NO	YES	<input checked="" type="checkbox"/>
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UUT Pre-Test Weight in Grams:	749g.s	UUT Post-Test Weight in Grams:	749g.s
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Did UUT Weight Change Post-Test?	NO	<input checked="" type="checkbox"/>	YES	Weight Change:	
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Will UUT be dried after Testing?	NO	YES	<input checked="" type="checkbox"/>	Drying Temperature:	Ambient
Drying Duration:	Dry Compressed Air				

Was UUT Opened for Inspection?	NO	<input checked="" type="checkbox"/>	YES	On Site:		At Client:	
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Did Water Intrude Into the UUT?	NO	<input checked="" type="checkbox"/>	YES	Quantity Found:	
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Date Test Started:	8/4/2011	Date Test Completed:	8/4/2011
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Time Test Started:	13:04pm	Time Test Completed:	16:00pm
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Total Test Duration of Oscillating Spray in Minutes:			10 minutes
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Time Spraying Started:	14:32pm	Time Spraying Ended:	14:42pm
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Unit Under Test Information	Y	N	N/A	Comments
Powered during testing:		<input checked="" type="checkbox"/>		
Functionally operated during test:		<input checked="" type="checkbox"/>		
Functional test witnessed by NTS:		<input checked="" type="checkbox"/>		
Did The UUT Pass This Test:	<input checked="" type="checkbox"/>			The UUT was subjected to the above conditions.

COMMENTS:
Per client e-mail: 8/4/2011 @ 11:49am: from Wayne Silva of X-TECH to Maria Drury of NTS: Hand tighten cover screws, then torque to 4/in/lbs.

Written by:	Donald J. Mac Millan
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TEST PROFILE

TR- 305060-11C

Customer Name:	Extrusion Technology
Test Name:	Oscillating Spray
Specification:	IEC 60529
Spec. Date:	2001-02
Para. / Method:	14.2.4
Test Condition:	IPX4

Unit(s) Under Test:	Enclosure
Quantity:	1
P/N(s):	3010
S/N(s):	N/A
Receiver Date:	8/4/2011
Test Plan #:	N/A

TEST PARAMETERS

Spray Duration in Minutes:	10	Type of Water:	Filtered Tap Water
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Oscillating Tube Radius in mm:	600mm	Number of Holes:	37
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Time for 1 revolution of 360° Oscillation Spraying:	12 Seconds
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Inlet Water Pressure in PSI:	11psi	Water Flow L/min.:	2.6 L/minute
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TEST RESULTS

Actual Test Temperatures:	UUT Temperature:	70.1F	Water Temperature:	70F
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Will Weight Determine UUT Pass/Fail Status?	NO	YES	<input checked="" type="checkbox"/>
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UUT Pre-Test Weight in Grams:	147g.s	UUT Post-Test Weight in Grams:	147g.s
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Did UUT Weight Change Post-Test?	NO	<input checked="" type="checkbox"/>	YES	Weight Change:	
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Will UUT be dried after Testing?	NO	YES	<input checked="" type="checkbox"/>	Drying Temperature:	Ambient
Drying Duration:	Dry Compressed Air				

Was UUT Opened for Inspection?	NO	<input checked="" type="checkbox"/>	YES	On Site:		At Client:	
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Did Water Intrude Into the UUT?	NO	<input checked="" type="checkbox"/>	YES	Quantity Found:	
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Date Test Started:	8/4/2011	Date Test Completed:	8/4/2011
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Time Test Started:	13:00pm	Time Test Completed:	16:00pm
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Total Test Duration of Oscillating Spray in Minutes:			10 minutes
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Time Spraying Started:	14:48pm	Time Spraying Ended:	14:58pm
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Unit Under Test Information	Y	N	N/A	Comments
Powered during testing:		<input checked="" type="checkbox"/>		
Functionally operated during test:		<input checked="" type="checkbox"/>		
Functional test witnessed by NTS:		<input checked="" type="checkbox"/>		
Did The UUT Pass This Test:	<input checked="" type="checkbox"/>			The UUT was subjected to the above conditions.

COMMENTS:
Per client e-mail: 8/4/2011 @ 11:49am: from Wayne Silva of X-TECH to Maria Drury of NTS: Hand tighten screws, then torque to 4/in/lbs.

Written by:	Donald J. Mac Millan
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TEST PROFILE

TR- 305060-11C

Customer Name:	Extrusion Technology
Test Name:	IP5X Dust
Specification:	IEC 60529
Spec. Date	Edition 2.1 - 2001-02
Para. / Method:	13.4 & 13.6

Unit(s) Under Test:	Enclosure
Quantity:	1
P/N(s):	3010
S/N(s):	N/A
Receiver Date:	8/4/2011

TEST DESCRIPTION

IP5X Dust testing was conducted in an enclosure capable of maintaining suspended talcum powder capable of passing through square mesh sieve with nominal diameters of 50 microns, configured to mimic the parameters and conditions defined in figure 2 of the test specification.

TEST PARAMETERS & CONDITIONS

Chamber Volume:	6.7m ³	Quantity of Talc:	13.5kg. (30 lbs.)
Enclosure Category:	#1	Previous # of Uses:	5
Temperature Limits:	15°C to 35°C	Talc Size:	50um > < 70um
Humidity RH Limits:	25% to 75%	Talc Intrusion Permitted:	None
Lab Humidity Level:	52%RH	UUT Vacuum Level:	None
Lab Temp. Level:	28C		
Lab Pressure Level:	14.71psia	UUT Volume vs. Vacuum Extraction Rates	
UUT Height:	4 inches	2hr. Extraction Rate:	None
UUT Width:	3.25 inches	8hr. Extraction Rate:	None
UUT Length:	1.2 inches	Test Duration in Hours:	8 hours
UUT Internal Volume:	N/A		

Date Test Started:	8/5/2011
Time Test Started:	16:05pm

Date Test Completed:	8/6/2011
Time Test Completed:	12:05am

Unit Under Test Information	Y	N	N/A	Comments
Tested in shipping container:		x		
Powered during testing:			x	
Functionally operated during test:			x	
Functional test witnessed by NTS:			x	
Physical damage noted:		x		
Did Dust Intrusion Occur:		x		
The Quantity of Dust Which Intruded the UUT:				None
Did UUT Pass This Test:	x			An internal inspection revealed no dust or water in the UUT.

UUT Pre-Test Weight in Grams:	147g.s	UUT Post-Test Weight in Grams:	147g.s
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COMMENTS:
 The UUT was left in the dust chamber overnight after testing concluded to allow the dust inside the chamber to settle so that the chamber could be safely opened the following morning.

Test Technician:	Donald J. Mac Millan
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TEST PROFILE

TR- 305060-11C

Customer Name:	Extrusion Technology
Test Name:	IP5X Dust
Specification:	IEC 60529
Spec. Date	Edition 2.1 - 2001-02
Para. / Method:	13.4 & 13.6

Unit(s) Under Test:	Enclosure
Quantity:	1
P/N(s):	6520
S/N(s):	N/A
Receiver Date:	8/4/2011

TEST DESCRIPTION

IP5X Dust testing was conducted in an enclosure capable of maintaining suspended talcum powder capable of passing through square mesh sieve with nominal diameters of 50 microns, configured to mimic the parameters and conditions defined in figure 2 of the test specification.

TEST PARAMETERS & CONDITIONS

Chamber Volume:	6.7m ³	Quantity of Talc:	13.5kg. (30 lbs.)
Enclosure Category:	#1	Previous # of Uses:	5
Temperature Limits:	15°C to 35°C	Talc Size:	50um > < 70um
Humidity RH Limits:	25% to 75%	Talc Intrusion Permitted:	None
Lab Humidity Level:	52%RH	UUT Vacuum Level:	None
Lab Temp. Level:	28C		
Lab Pressure Level:	14.71psia	UUT Volume vs. Vacuum Extraction Rates	
UUT Height:	6.25 inches	2hr. Extraction Rate:	None
UUT Width:	6.75 inches	8hr. Extraction Rate:	None
UUT Length:	2.25 inches	Test Duration in Hours:	8 hours
UUT Internal Volume:	N/A		

Date Test Started:	8/5/2011
Time Test Started:	16:05pm

Date Test Completed:	8/6/2011
Time Test Completed:	12:05am

Unit Under Test Information	Y	N	N/A	Comments
Tested in shipping container:		x		
Powered during testing:			x	
Functionally operated during test:			x	
Functional test witnessed by NTS:			x	
Physical damage noted:		x		
Did Dust Intrusion Occur:		x		
The Quantity of Dust Which Intruded the UUT:				None.
Did UUT Pass This Test:	x			An internal inspection revealed no dust or water in the UUT.

UUT Pre-Test Weight in Grams:	749g.s	UUT Post-Test Weight in Grams:	749g.s
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COMMENTS:
The UUT was left in the dust chamber overnight after testing concluded to allow the dust inside the chamber to settle so that the chamber could be safely opened the following morning.

Test Technician:	Donald J. Mac Millan
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6 Inch UUT - 8/4/2011



6 Inch UUT - 8/4/2011



6 Inch UUT - 8/4/2011



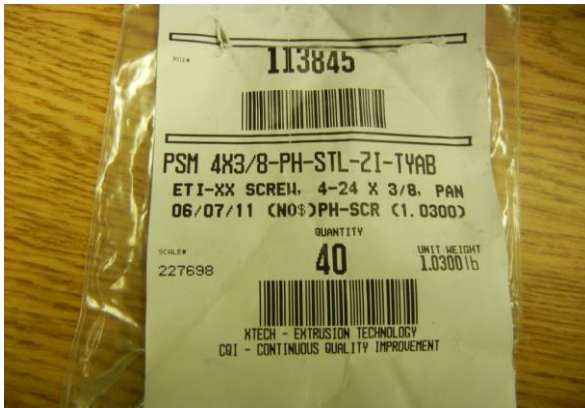
4 Inch UUT - 8/4/2011



4 Inch UUT - 8/4/2011



4 Inch UUT - 8/4/2011



UUT Cover Screws - 8/4/2011



Torque Wrench - 8/4/2011



Triple Beam Scale - 8/4/2011



Inferred Sensor - 8/4/2011



Stop Watch - 8/4/2011



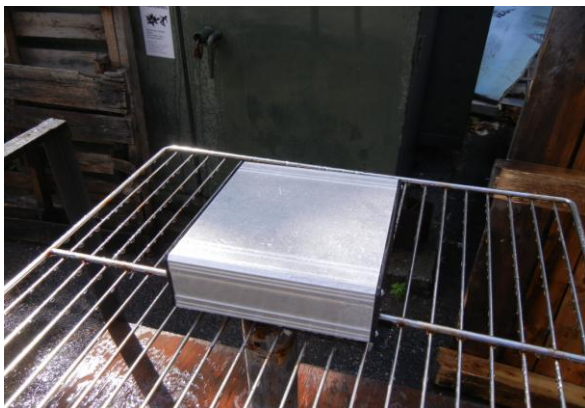
Pressure Gauge - 8/4/2011



Water Pressure (Typical) - 8/4/2011



6 Inch UUT - 8/4/2011



6 Inch UUT - 8/4/2011



Water Temperature (Typical) - 8/4/2011



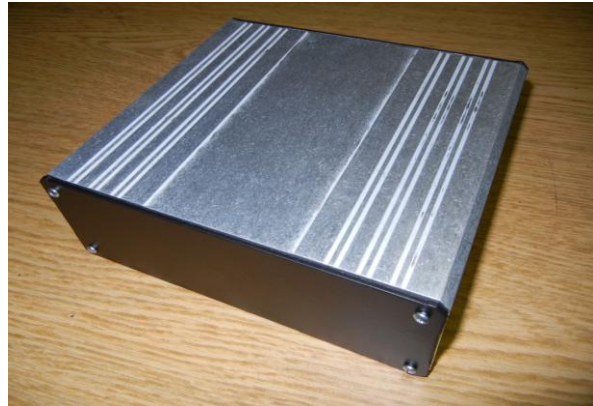
UUT Temperature (Typical) - 8/4/2011



4 Inch UUT - 8/4/2011



4 Inch UUT - 8/4/2011



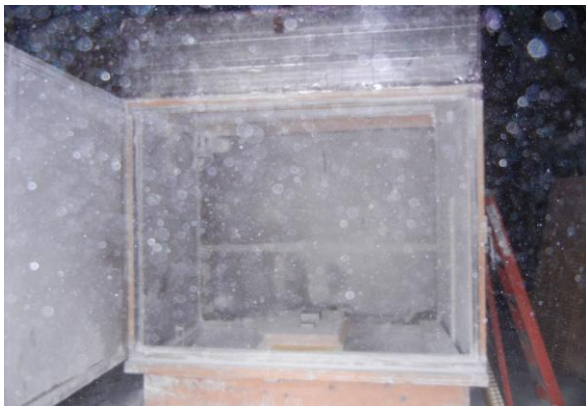
6 Inch UUT - End Rain - 8/4/2011



4 Inch UUT - End Rain - 8/4/2011



Pre-Dust - 8/5/2011



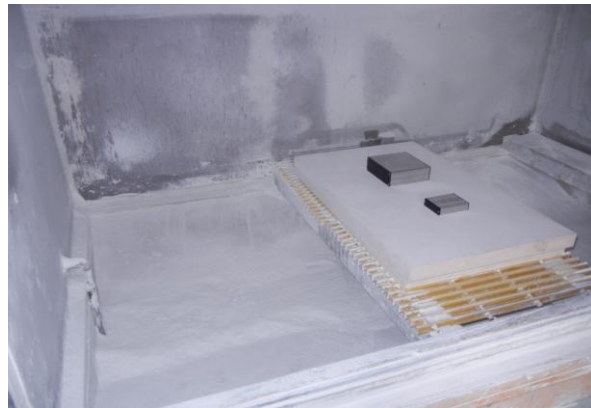
Pre-Dust - 8/5/2011



Pre-Dust - 8/5/2011



Pre-Dust - 8/5/2011



Pre-Dust - 8/5/2011



Post-Dust - 8/6/2011



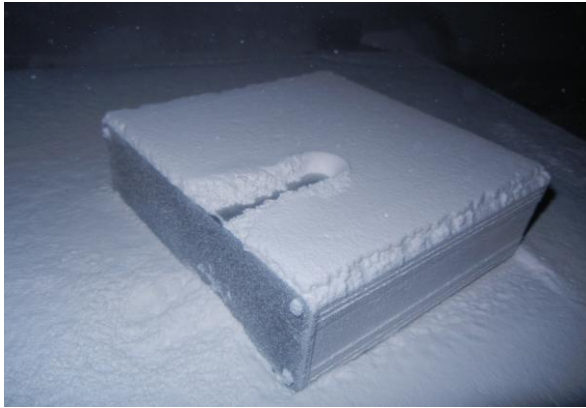
Post-Dust - 8/6/2011



Post-Dust - 8/6/2011



Post-Dust - 8/6/2011



Post-Dust - 8/6/2011



Post-Dust - 8/6/2011



Post-Dust - 8/6/2011



Post-Dust - 8/6/2011



Post-Dust/Water Intrusion Inspection - 8/6/2011



Post-Dust/Water Intrusion Inspection - 8/6/2011



RECEIVER

TR- 305060-11C

Unit(s) Received by:		Donald J. Mac Millan		Date:	8/4/2011
ITEM	QTY.	P/N	S/N	Description	OK
1	1	6520	N/A	6 Inch Tubing Extrusion	Yes
2	1	3010	N/A	4 Inch Tubing Extrusion	Yes
3	23	#4 Phillips	Self-Tapping	Screws	Yes
4	2	6520	N/A	6 Inch Gasketed Covers	Yes
5	2	3010	N/A	4 Inch Gasketed Covers	Yes
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