

**PLASTIC FILM EXTRACTION FROM A
PROCESSED MUNICIPAL ORGANIC
RESIDUAL STREAM**

Project #: WDO – ORG – R2 – 21

The Regional Municipality of York

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TABLE OF CONTENTS

Executive Summary	i
1.0 Introduction	1
2.0 Equipment, Feedstock and Protocols	3
2.1 Equipment Involved in Testing	3
2.2 Feedstock Tested	7
2.2.1 Unscreened Compost.....	7
2.2.2 “Overs” From Screening Process	8
2.2.3 “Unders” From Screening Process	9
2.3 Protocols/Testing Procedure	10
3.0 Testing Program, Data and Results	11
3.1 Test 1A- “Overs” from Stockpile.....	11
3.1.1 Test 1Aa- Separating Plastic and Fines.....	15
3.2 Test 1B- “Overs” from Screening of Windrow Material	18
3.2.1 Test 1Ba- Separating Film Plastic and Fines.....	23
3.3 Test 2- Unscreened Windrow Material	26
3.3.1 Test 2a- Separating Plastic and Fines.....	29
3.4 Test 3- “Unders” from Trommel (Screened Compost)	32
3.4.1 Test 3a- Separating Plastic and Fines.....	35
3.5 Test- Guelph.....	38

3.6 Test- Toronto.....	41
4.0 Conclusion.....	45
4.1 Test 1A – Stockpiled “Overs” Through Zincot Unit.....	45
4.2 Test 1B – “Overs” from Windrow Screening Through Zincot Unit	45
4.3 Test 2 – Windrow Material Through Zincot Unit.....	46
4.4 Test 3 – “Unders” from Windrow Screening Through Zincot Unit.....	46
4.5 Guelph Test	47
4.6 Toronto Test	47
5.0 Transferability to Other Regions/Municipalities in Ontario.....	48
6.0 Glossary of Terms	49

List of Tables

Table 1: Equipment List.....	3
Table 2: Numeric representation of data compiled during Test 1A: Separation of “Unders”, “Heavies” and “Lights” from Residual material	12
Table 3: Results of the test designed to separate the plastic from the fines of the Residual “Lights” (Test 1Aa).....	15
Table 4: Testing Data for “Overs” screened from windrow material and directed to Zincot unit	20
Table 5: Numeric representation of Test 1Ba: Separation of the film plastic from fines coming from the “Lights” stream out of the Windrow material.....	23
Table 6: Data compiled from Test 2: Separation of “Lights” and “Heavies” from Windrow material when looped into the Zincot separator	27
Table 7: Numeric representation of data compiled during Test 2a: Separation of plastic and fines collected in the “Lights” stream from Test 2	29
Table 8: Numeric representation of data from Test 3: Separating “Lights” and “Heavies” from “Unders”	33
Table 9: Numeric representation of results from Test 3a: Separation of the “Lights” from Test 3 into plastic and fines	35
Table 10: Numeric depiction of results from the Guelph residual testing: Separating “Lights” from “Heavies” using the Zincot separator on the residual “Overs” stream.....	38
Table 11: Numeric data for the Toronto Test: Separating “Unders” from “Overs” with the trommel, and “Lights” from “Heavies” from the resultant “Overs” stream with the Zincot unit.....	41

List of Figures

Figure 1: The structure for housing the trommel screen and the plastic separator	5
Figure 2: Picture of the Zincot plastic separation unit	5
Figure 3: Picture of the trommel screen	6
Figure 4: Unscreened Compost before entering separation process	7
Figure 5: “Overs” prior to entering the Zincot separator	8
Figure 6: “Unders” after screening but prior to entering the Zincot separator.....	9
Figure 7: Schematic for Test 1A and Test 1Aa.....	11
Figure 8: Graphic representation of data compiled during Test 1A: Separation of “Unders”, “Heavies” and “Lights” from Residual Pile material.....	13
Figure 9: Sample taken from the “Heavies” (wood) stream from Test 1A after being processed through the Zincot unit.....	13
Figure 10: Sample taken from the “Unders” stream from Test 1A (did not pass through the Zincot unit)	14
Figure 11: Sample taken from the plastic and fines removed by Zincot unit from Test 1A	14
Figure 12: Graphic representation of the “Lights” separated as plastic and fines from residual “Overs” stockpile	15
Figure 13: Film plastic processed through the Zincot unit and screened over a ¼" screen (Test 1Aa)	16
Figure 14: Fines screened manually from plastic removed by the Zincot unit through a ¼" screen (Test 1Aa).....	16
Figure 15: Schematic for Test 1B and Test 1Ba	18
Figure 16: A Scarab machine turning Windrow material at the Bloomington site.	19
Figure 17: Graphic representation of “Unders”, “Heavies” and “Lights” separated from the windrow material in Test 1B	21

Figure 18: Sample taken from the “Heavies” (wood) stream after processing by Zincot unit (Test 1B)..... 22

Figure 19: Sample taken from the “Unders” stream from trommel - not processed through the Zincot unit (Test 1B)..... 22

Figure 20: Sample taken from the “Lights” (plastic and fines) stream from Test 1B after being processed through the Zincot unit..... 23

Figure 21: Graphic representation of Test 1Ba: Plastic separated from fines coming from the “Lights” fraction of the windrow material in Test 1B 24

Figure 22: Picture of the film plastic manually screened from the “Lights” fraction of the windrow material (¼" screen used in Test 1Ba) 24

Figure 23: Fines manually screened from the “Lights” fraction removed by the Zincot unit while the system was processing windrow material (¼" screen – Test 1Ba) 25

Figure 24: Schematic for Test 2 and Test 2a..... 26

Figure 25: Graphic representation of data collected in Test 2 27

Figure 26: “Heavies” separated from windrow material when looped to the separator (Test 2) 28

Figure 27: “Lights” separated from windrow material in Test 2 when looped into the Zincot separator..... 28

Figure 28: Graphic representation of data from Test 2a: Separation of plastic and fines from the “Lights” stream in Test 2..... 29

Figure 29: Plastic separated manually over a ¼" screen (Test 2a)..... 30

Figure 30: Fines manually separated through a ¼" screen (Test 2a)..... 30

Figure 31: Schematic for Test 3 and Test 3a..... 32

Figure 32: Graphic representation of the results from Test 3: Separating “Lights” and “Heavies” from the “Unders” 34

Figure 33: Sample taken from the “Heavies” once separated from the “Unders” using the Zincot unit during Test 3 34

Figure 34: Sample taken from the “Lights” once separated from the “Unders” using the Zincot unit during Test 3 35

Figure 35: Graphic representation of results from Test 3a: Separation of the “Lights” from Test 3 into plastic and fines 36

Figure 36: Sample taken from plastic separated over a ¼" screen from “Lights” fraction of Test 3..... 36

Figure 37: Sample taken from fines through a ¼" screen from the “Lights” fraction of Test 3..... 37

Figure 38: Graphic representation of data collected from the Guelph Test: Separating the “Lights” and “Heavies” from the “Overs” stream..... 39

Figure 39: Sample of the “Heavies” fraction separated from the Guelph residual “Overs” 39

Figure 40: Sample of the “Lights” fraction separated from the Guelph residual “Overs” 40

Figure 41: Graphic representation of the results from the Toronto Test: Separating “Unders” from “Overs”, and “Lights” from “Heavies” from the resultant “Overs” stream..... 42

Figure 42: Sample from the Toronto “Overs” separated as “Heavies” through Zincot unit 42

Figure 43: Sample from the Toronto “Unders” separated by the trommel (did not go through the Zincot unit) 43

Figure 44: Sample from the “Lights” out of the “Overs” stream using the Zincot unit..... 43

EXECUTIVE SUMMARY

The Ontario Waste Diversion Organization (WDO) provided funding to York Region to test the operational effectiveness of a new technology for separating film plastic from aerobically composted organic materials.

Testing of the equipment was performed at the Yard Waste Composting Facility, which is owned and operated by Miller Waste Systems under contract to York Region. The majority of the materials utilized in the testing originated from Miller's Bloomington Composting Facility. The City of Guelph and the City of Toronto provided some of their own materials to be tested in the prototype setup.

The Zincot Air separation technology was tested on the following feedstocks which typically result from aerobic composting facilities; "Overs" from the screening process, unscreened windrow material and the "Unders" from the screening process. The technology was run in a prototype setup to assist in determining the equipment's throughput capabilities.

The Zincot technology was very effective in removing the film plastic from the "Overs" resulting from the trommel screening operation. The unit was capable of cleaning the film plastic out of the "Overs" at throughputs that exceed the existing trommel screen's capacity. The clean wood product resulting from the separation unit can now be reintroduced into the composting feedstocks or be marketed as a product for sale as opposed to being landfilled. Initial testing of the film plastic removed in the process indicated the material could be utilized by film plastic recycling facilities, although, the economics of this possibility are not yet known. Screened "Overs" represent approximately 15% to 20% by weight of composted yard waste at the Bloomington Composting Facility. Diverting these products from landfill significantly improves the diversion rates at the facility and creates potential revenues from the mulch and film plastic products created.

The Zincot technology, as configured in the prototype setup, encountered difficulties with processing the unscreened windrow material or the "Unders" from the trommel screening operation. The air separator removed both film plastic and fine compost particles as a result of their similar specific gravities. The fine compost particles burdened the effectiveness of the air separator and caused buildups on the ductwork and the fan assembly in the system. These buildups (even at high duct scour velocities) prevented the continuous operation of the system and quickly deteriorated the plastic removal efficiency of the system. Work is already underway to study the other configurations and options for the removal of the small plastic particles present in the finished compost product.

The Zincot technology proved effective at removing the film plastic from the "Overs" of the City of Guelph's "wet" composting system. Unfortunately, it is not likely that the resulting product could be marketed as a result of the amount of other contamination that could not be removed through an air separation system (rigid plastic and broken glass).

The Zincot technology removed the majority of film plastic from the City of Toronto “Overs” at high throughput rates due to the low moisture content. The unscreened windrow material from the City of Toronto caused operational difficulties when processed through the Zincot unit.

Further testing will be done by Zincot Manufacturing to determine if changes can be made to the air separation system that will enable it to effectively remove the small plastic fraction from the “Unders” finished compost. If the small plastic particles can be removed successfully from the finished compost, the value of the compost will increase and the variety of potential markets will grow rapidly.