TOXIC REDUCTION PLAN

Zinc

Prepared For:
Linamar Performance Centre a Division of Linamar Holdings

May 13, 2015

Linamar Performance Centre a Division of Linamar Holdings
30 Minto Rd., Guelph, ON N1K 1H5
Tel: 519 821-1429 Fax: 519 822-2409
linamar.com

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1.0 INTRODUCTION

1.1 BASIC FACILITY INFORMATION

Example table of basic facility information:

Name & CAS # of Substance	Zinc	7440-47-3
Facility Identification and Site Address		
Company Name	Linamar Holdings Inc.	
Facility Name	Linamar Performance Centre a Division of Linamar Holdings Inc.	
Facility Address	Physical Address:	Mailing Address: (if different)
	30 Minto Road Guelph, Ontario N1K 1H5	
Spatial Coordination of Facility	Easting: 555062.55 Northing: 4820106.32	
Number of Employees	421	
NPRI ID	11378	
Ontario MOE ID Number	8229	
Parent Company (PC) Information		
PC Name & Address Percent Ownership for each PC	Linamar Corporation, 287 Speedvale Avenue West, Guelph, Ontario N1H 1C5 100%	
Business Number for PC	103333662	
Primary North American Industrial Classification System Code (NAICS)		
2 Digit NAICS Code	33 Manufacturing	
4 Digit NAICS Code	3363 – Motor Vehicle Parts Manufacturing	
6 Digit NAICS Code	336310 – Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	
Company Contact Information		
Facility Public Contact	Mr. Suranga Fernando General Manager	
	Suranga.fernando@linamar.com	
	Phone: (519) 821-1429 ext# 23600	Same address as facility
	Fax: 519-822-2409	
Facility Technical Contact	Mr. Jeff Leask Environmental Coordinator	
	Jeff.leask@linamar.com	
	Phone: (519) 821-1429 ext# 23040	Same address as facility
	Fax: (519) 821-1429 ext# 23040	
Company Coordinator Contact	Mr. Jeff Leask Environmental Coordinator	
	Jeff.leask@linamar.com	
	Phone: (519) 821-1429 ext# 23040	Same address as facility
	Fax: (519) 821-1429 ext# 23040	
Person who prepared the plan: (if different from the coordinator)	N/A	
Highest Ranking Employee	Mr. Suranga Fernando General Manager	
	Suranga.fernando@linamar.com	
	Phone: (519) 821-1429 ext# 23600	Same address as facility
	Fax: 519-822-2409	

Planner Information		
Planner Responsible for Making Recommendations	Ms. Melissa Gould	Linamar Gear
	Melissa.gould@linamar.com	32 Independence Place
	Phone: (519) 827-9423	Guelph, Ontario
	Fax: (519) 827-9456	N1K 1H8
Planner Responsible for Certification	Ms. Melissa Gould	Linamar Gear
	Melissa.gould@linamar.com	32 Independence Place
	Phone: (519) 827-9423	Guelph, Ontario
	Fax: (519) 827-9456	N1K 1H8

1.2 STATEMENT OF INTENT

Linamar Performance Centre a Division of Linamar Holdings Inc. (Linamar Performance Centre) is committed to playing a leadership role in protecting the environment. Whenever feasible, we will reduce the use of Zinc in compliance with all Federal and Provincial Regulations.

1.3 OBJECTIVES

Linamar Performance Centre prides itself on technological innovation in order to produce high quality automotive parts in an environmentally responsible manner. Through this plan, Linamar Performance Centre determines the technical and economic feasibility of each option to determine which, if any, are viable for implementation at this time.

1.4 FACILITY DESCRIPTION

Linamar Performance Centre produces automotive parts from Cast Iron and Aluminum Castings. Raw materials (Aluminum) are brought to the facility where they are machines into automotive parts, then washed and packaged for shipment. These raw materials contain the compound Zinc as a constituent material.

2.0 IDENTIFICATION AND DESCRIPTION

2.1 STAGES AND PROCESSES

Zinc is present in the race steel materials used in the process as a constituent compound. The stages and processes that involve Zinc are as follows:

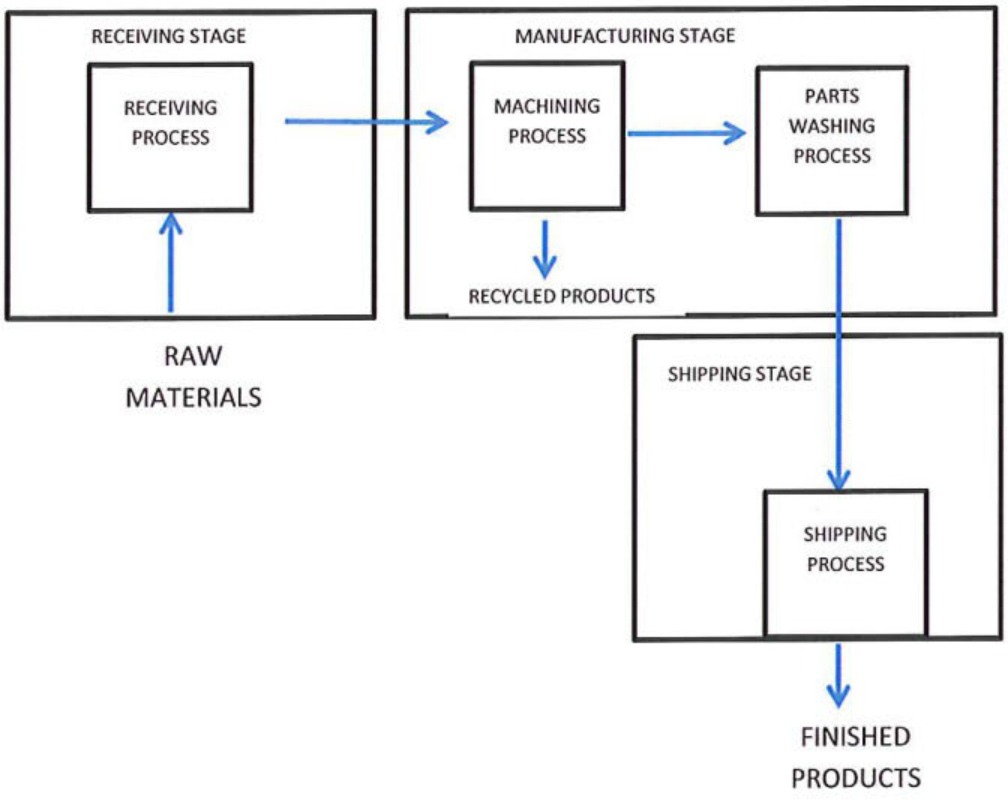
- Zinc, as a constituent of the raw Aluminum material, is received in the receiving process in the receiving stage, where it is stored for a period of 3-7 days as required by customers. It is then transferred into the manufacturing stage. This stage and the quantification methods for Zinc are further described in Section 3.1
- In the manufacturing stage, the raw materials are sent through a variety of separate processes which produce the various automotive parts. The different processes which are involved in this stage are listed in the process flow diagram in Section 2.2.
- In the shipping process of the shipping stage, the finished products are inspected and then packages for shipment to the various customers. Zinc is contained in the final product.

In 2014, the facility operated 24 hours a day, six days a week.

2.2 PROCESS FLOW DIAGRAM

A process flow diagram of the stages as described above is presented below (the processes which involve the use of Zinc are highlighted):

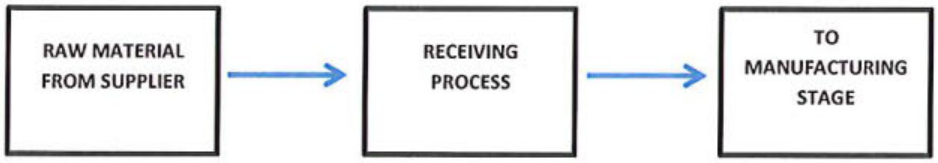
Figure 1: Main Process Flow Diagram



3.0 TRACKING AND QUANTIFICATION

3.1 RECEIVING PROCESS DESCRIPTION

The receiving stage consists of the receiving process. Zinc is delivered to the facility as a constituent of the raw materials (the composition of Zinc is dependent on the material) – these delivers (U_1) are tracked by Linamar Performance Centre's internal accounting systems. As required by the customer, the raw materials are stored on-site for about three-seven days. Once the materials are ready to be used, they are transferred (P_1) to the first process in the manufacturing stage.



U1 = 16.378 kg P1= 16,378 kg

Figure 2: Receiving Process Flow Diagram

3.1.1 RECEIVING PROCESS (USE)

3.1.1.1 TRACKING AND QUANTIFICATION METHOD

Quantification Method: Mass balance – based on inventory records and concentrations of Zinc as presented on Material Specifications sheets (see below).

3.1.1.2 BEST AVAILABLE METHOD RATIONALE

Zinc Concentration in Raw Materials

The Zinc which is present in each raw material used in the receiving process is calculated based on the total amount of Zinc present in each raw material from the materials specification sheet. Materials specifications information showing constituent compositions are sources of data that are highly reliable. In considering other methods, it was determined that this method would yield the highest quality data.

Raw Material Quantities

The total amount of each raw material used in the process was determined based on the total number of parts made per year from purchasing and inventory records which are tracked by Linamar Performance Centre's accounting system as well as the raw weight of each part produced in (in pounds), as described by the following formula:

$U = N \times RW$
Where:
U= The total amount of each raw material used in the process (kg/year)
N= Number of each part produced (# of parts/year)
RW= Raw weight of each part produced (/part)

Quantities of raw materials that are used in the process are recorded through purchasing and inventory records. This data is therefore considered to be very reliable.

3.1.1.3 QUANTIFICATION OF TOXIC SUBSTANCE

Product	Zinc Composition (%)	Number of Parts made (#/year)	Raw Weight of Part (kg/year)	Quantity used in 2014 (kg/year)	Total Zinc Used (kg/year)
Bedplate	0.002	279812	10.90	3049950.8	61
Valve Body	0.973	8928	3.51	31337	305
LS-A Block	0.4	5230	50.50	264115	1056
LS-7 Block	0.8	639	43.54	27822	935
LS-7 Head	0.17	5,022	11.30	56748.60	96
Viper Block	0.04	639	58.75	31541.25	14
Viper Head	0.08	1,123	16.58	18619.34	16
Chrysler Hub	1.5	408,341	1.106	451625.14	6774
Chrysler Retainer	1.5	432,677	1.097	474646.66	7120

Table 1: Calculation of Zinc in Receiving Process

U_1 = Zinc used in receiving process in 2014
=61 kg + 305kg + 1056 kg + 935 kg +96 kg + 14 kg + 16 kg + 6774 kg + 7120 kg
= 16370 kg

3.1.2 RECEIVING PROCESS (CONTAINED IN PRODUCT)

3.1.2.1 TRACKING AND QUANTIFICATION METHOD

Quantification Method: Mass Balance – see Section 3.1.1.1

3.1.2.2 BEST AVAILABLE METHOD RATIONALE

Zinc Concentration in Raw Materials

See Section 3.1.1.2

Raw Material Quantities

See Section 3.1.1.2

3.1.2.3 QUANTIFICATION OF TOXIC SUBSTANCE

The quantification of the amount contained in product was assumed to be equal to the amount that was delivered to the facility, as all material delivered to the site entered the manufacturing stage.

P_1 = Zinc contained in product in receiving stage: 16,370 kg

3.1.3 INPUT/OUTPUT BALANCE

Use + Creation = Transformed + Destroyed + Contained in Product + On-Site or Off-Site Release (to Air, Land, Water) + Offsite Transfers (for treatment, recycling) + Disposals

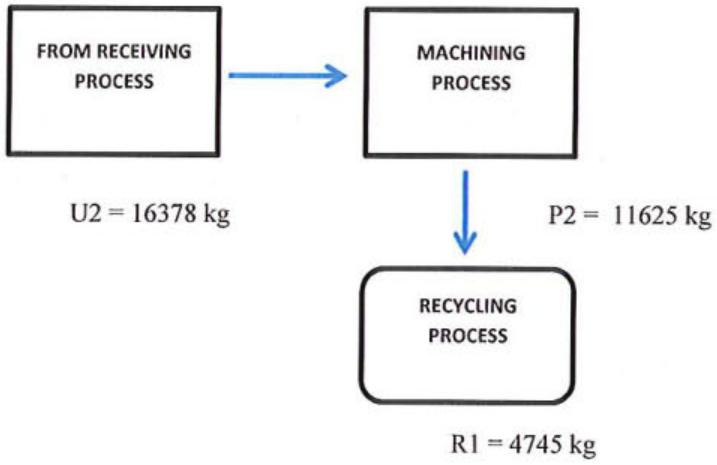
Note: This stage only contains materials used and material contained in product (to next stage)

$U_1 = P_1$
16378 kg = 16378 kg
Unaccounted Material = 0kg

3.2 MACHINING PROCESS DESCRIPTION

The raw materials, after being processed in the receiving stage, are transferred into the manufacturing stage (U_2), where the first process in the machining process. In the machining process, the raw materials are then sent through a variety of equipment which cut and shape the materials into the general configurations, as dependent on the final product(s). The waste materials from this process are collected from the process in bins and transferred off-site to Gerdau Ameristeel (Gerdau) for recycling (R_1). The finished products from this process are processed on to a conveyor system or collected in a bin(P_2). Once the materials leave this process, they go through a wash and inspection process (as shown in Figure 1) – there is no change in the quantity of Zinc through any of these processes.

Figure 3: Machining Process Flow Diagram



3.2.1 MACHINING PROCESS (USE)

3.2.1.1 TRACKING AND QUANTIFICATION METHOD

Quantification Method: Mass Balance – The amount of Zinc used in the machining process was assumed to be the same as the amount contained in the product following the receiving process (see Section 3.1.1.1)

3.2.1.2 BEST AVAILABLE METHOD RATIONALE

Zinc Concentration in Raw Materials

See Section 3.1.1.2

Raw Material Quantities

See Section 3.1.1.2

3.2.1.3 QUANTIFICATION OF TOXIC SUBSTANCE

The quantification of the amount used in process was assumed to be equal to the amount that was delivered to the facility, as all material delivered to the site enters the manufacturing stage.

U_2 = Zinc used in machining process: 16370 kg

3.2.2 MACHINING PROCESS (OFF-SITE TRANSFERS)

3.2.2.1 TRACKING AND QUANTIFICATION METHOD

Quantification Method: Mass Balance – based on records of the materials transferred off-site. It is assumed that the materials transferred off-site consist of the same materials as enters the process.

3.2.2.2 BEST AVAILABLE METHOD RATIONALE

Zinc Concentration in Recycled Quantities

See Section 3.1.1.2

Raw Material Quantities

The total quantify of material transferred off-site is tracked by Gerdau and this information is provided to Linamar Performance Centre, so this information is considered to have high reliability. Based on Gerdau's provided information, the total quantity of material recycled in 2014 was 1,134,411 kg using this information; the total amount of Zinc recycled for each raw material is calculated based on the following equation:

$$Mn_{mat} = \frac{U_{matl}}{\sum U_{total}} \times R_{total} \times C_{Mn}$$

Where:
Mn_{mat} = Total quantity of Zinc recycled for each raw material across all processes (kg)
U_{mat} = Total quantity of the raw material used (See Table 1)
ΣU_{total} = Summation of all raw materials used (based on Table 1)
R_{total} = Total amount of material recycled
C_{Mn} = Concentration of Zinc for each raw material (see Section 3.1.1.2 for description)

To determine the total quantity of Zinc recycled, the recycled Zinc from each raw material is summed.

For this calculation methodology, while the amount of each raw material is highly reliable (see Section 3.1.1.2) and the amount of recycled material is highly reliable, the actual amount of each raw material recycled is of low reliability due to the assumptions bade above in how it is calculated – one material may, for instance, have a much greater quantity recycled than is estimated above.

.2.2.3 QUANTIFICATION OF TOXIC SUBSTANCE

Product	Zinc Composition (%)	Number of Parts made (#/year)	Raw Weight of Part (kg/year)	Total Zinc Used (kg/year)	Total Zinc Recycled (kg/year)
Bedplate	0.002	5,022	10.90	61	18
Valve Body	0.973	8928	3.51	305	69
LS-A Block	0.1	5230	50.50	1056	31
LS-7 Block	0.15	639	43.54	935	28
LS-7 Head	0.17	5,022	11.30	96	11
Viper Block	0.04	639	58.75	14	1
Viper Head	0.1	1,123	16.58	16	2
Chrysler Hub	1.5	408,341	1.106	6774	2119
Chrysler Retainer	1.5	432,677	1.097	7120	2529

Table 2: Calculation of Zinc Recycled Off-Site (Overall)

3.2.3 MACHINING PROCESS (CONTAINED IN PRODUCT)

3.2.3.1 TRACKING AND QUANTIFICATION METHOD

Quantification Method: Mass Balance – based on balance of materials used in process and amount send to recycling.

.2.3.2 BEST AVAILABLE METHOD RATIONALE

Zinc Concentration in Raw Materials

See Section 3.1.1.2

Raw Materials Quantities

See Section 3.2.1.2 and 3.2.2.2

3.2.3.3 QUANTIFICATION OF TOXIC SUBSTANCE

The quantification of the amount contained in product was calculated based on a mass balance of the amount used in the process (U2) and the amount transferred off-site from this process (R1).

P2 = Zinc contained in product in machining process: 28,089.67 kg

3.2.4 INPUT/OUTPUT BALANCE

Use + Creation = Transformed + Destroyed + Contained in Product + On-Site or Off-Site Release (to Air, Land, Water) + Offsite Transfers (for treatment, recycling) + Disposals

U2 = P2 + R1

16,370 kg = 11,625 kg + 4745 kg

5,370 kg = 16, 370 kg

Unaccounted Material = 0 kg

3.3 SHIPPING PROCESS DESCRIPTION

The shipping stage consists of the shipping process. After completing the manufacturing stage, the finished products are transferred (U3) to the inspection and packaging area, where the parts are inspected by facility personnel, then packaged and stored on-site before being shipping onto customers (P3).

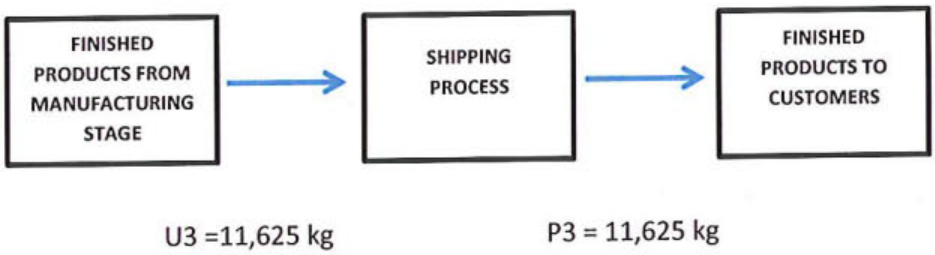


Figure 4: Shipping Process Flow Diagram

3.3.1 SHIPPING PROCESS (USE)

3.3.1.1 TRACKING AND QUANTIFICATION METHOD

Quantification Method: Mass Balance – The amount of Zinc used in the shipping process was assumed to be the same as the amount contained in product following the machining process (see Section 3.2.3.1).

3.3.1.2 BEST AVAILABLE METHOD RATIONALE

Zinc Concentration in Raw Materials

See Section 3.1.1.2

Raw Material Quantities

See Section 3.2.3.2

3.3.1.3 QUANTIFICATION OF TOXIC SUBSTANCE

U3 = Zinc used in packaging and inspection process in 2014: 11, 625 kg

3.3.2 SHIPPING PROCESS (CONTAINED IN PRODUCT)

3.3.2.1 TRACKING AND QUANTIFICATION METHOD

Quantification Method: mass Balance – see Section 3.3.1.1

3.3.2.2 BEST AVAILABLE METHOD RATIONALE

Zinc Concentration in Raw Materials

See Section 3.1.1.2

Raw Material Quantities

See Section 3.3.1.2

3.3.2.3 QUANTIFICATION OF TOXIC SUBSTANCE

The quantification of the amount contained in product was assumed to be equal to the amount used in the process, as no material is transferred out of this process.

P3 = Zinc contained in product in packaging and inspection process: 11,626 kg

3.3.3 INPUT/OUTPUT BALANCE

Use + Creation = Transformed + Destroyed + Contained in Product + On-Site or Off-Site Release (to Air, Land, Water) + Offsite Transfers (for treatment, recycling) + Disposals

Note: This stage only contains materials used and material contained in products (to next stage)

U3 = P3

11,625 kg = 11,625 kg

Unaccounted Material = 0 kg

4.0 FACILITY-WIDE ACCOUNTING INFORMATION

4.1 USE

The total facility wide use is equal to the amount of Zinc which is contained in the raw materials which is received from the suppliers in 2014.

Facility Wide Use = U1 = 16,370 kg

4.2 CREATION

There were zero creations of Zinc on-site in 2014.

4.3 TRANSFORMATION

There were zero transformations of Zinc on-site in 2014.

4.4 DESTRUCTION

There were zero destructions of Zinc on-site in 2014.

4.5 CONTAINED IN PRODUCT

The total facility wide amount of Zinc contained in product in 2014 is equal to the amount contained in each product which is shipped off-site.

Facility Wide Contained in Product = P3 = 11,625 kg

4.6 RELEASES TO AIR

There were zero releases to air of Zinc on-site in 2014.

4.7 RELEASES TO LAND

There were zero releases to land of Zinc on-site in 2014.

4.8 RELEASES TO WATER

There were zero releases to water of Zinc on-site in 2014.

4.9 DISPOSALS (ON-SITE)

There were zero on-site disposals of Zinc in 2014.

4.10 DISPOSALS (OFF-SITE)

There were zero off-site disposals of Zinc in 2014.

4.11 OFF-SITE TRANSFERS (TREATMENT OR RECYCLING)

. he total amount of transferred off-site is equal to the amount contained in the material sent for recycling, as documented in Section 3.2.

Facility wide off-site transfers (recycling) = R1

= 4745 kg

DIRECT AND INDIRECT COST ANALYSIS

Below is a summary of all direct costs associated specifically with the use, release, transfer, disposal, and amounts contained in product of Zinc.

Item	*Description*	*Total ($)*
Materials	Total cost of Zinc entering facility*	$189,224.33
Equipment Maintenance	Includes cost of maintaining equipment/repairs and parts, etc.	$182,577.86
Utilities/Energy	Cost associated with equipment only	$428,341.67
Labor	Yearly wages for shop floor employees	$2,921,064.74
Consumables and Shop Supplies		$501,833.10
Total		$ 4,223,041.70

Figure 5: Direct Costs Associated with Zinc

Notes:

- Calculated: $ 16,483,903.64 (total cost of raw materials) x individual concentration of Zinc in raw materials = $ 189,224.33

The majority of the costs associated with Zinc are directly associated with the General of the machines in the process.

Item	*Description*	*Total ($)*
Support Staff	Yearly wages for Management, Accounting, Human Resources, etc.	$ 322,954.99
Storage and Handling	Cost to keep parts stored until they are sold to customers	$ 55,814.46
General Facility General	Water, electricity, etc.	$ 122,821.39
Employee Benefits	Direct, Indirect and SGA benefits	$ 832,298.92
Total		$ 1,333,889.76

In total the direct and indirect costs associated with the use, release, transfer, disposal and amount contained in product of Zinc in 2014 were $5,556,931.40. Estimates were made base on the total number of employees involved in work on the products that contain Zinc in the Facility.

These values were obtained from the accounting department at the close of the month of May in 2015.

5.0 TOXIC SUBSTANCE USE AND CREATION REDUCTION OPTIONS

5.1 MATERIAL OR FEEDSTOCK SUBSTITUTION OPTIONS

5.1.1 IDENTIFIACTION OF OPTIONS

The materials used in the process are based on Linamar Performance Centre's customers. The customer specifies the materials that are to be used. Linamar Performance Centre does not have any control over the materials which are used in the process. Therefore, no possible reduction options were identified in this category that would results in a reduction in the use of Zinc.

5.1.2 ESTIMATED REDUCTIONS

Not applicable.

5.1.3 TECHNICAL FEASIBILITY

Not applicable.

5.1.4 ECONOMICAL FEASIBILITY

Not applicable.

5.2 PRODUCT REDESIGN OR REFORMULATION

5.2.1 IDENTIFICATION OF OPTIONS

The specifications of the final products are determined by Linamar Performance Centre's customers. The customer specifies product configurations. Linamar Performance Centre does not have any control over the design of the products. Therefore, no possible reduction options were identified in this category that would result in a reduction in the use of Zinc.

5.2.2 ESTIMATED REDUCTIONS

Not applicable.

5.2.3 TECHNICAL FEASIBILITY

Not applicable.

5.2.4 ECONOMIC FEASIBILITY

Not applicable.

5.3 EQUIPMENT OR PROCESS MODIFICATIONS

5.3.1 IDENTIFICATION OF OPTIONS

It was identified that modifications can be made to the machining process such that the amount of materials which are recycled can be reduced. By reducing the amount of scrap from this material, there would be a reduction in both the amount of material used (as less material is required to be purchased) and the amount recycled (since scrap materials are recycled).

5.3.2 ESTIMATED RECUTIONS

Linamar Performance Centre has calculated that approximately 1.15 percent of the products containing Zinc were scrapped. Linamar Performance Centre therefore has targeted reducing this value to .98% percent of their total recycled material or a 15% percent reduction.

In 2014, the total amount of Zinc from this material was 11,369.20 kg – with a current scrap rate of 1.15% percent, results in 31 kg being scrapped currently. Reducing the scrap rate by 15 percent would result in a new scrap rate of .98% and a total reduction of 4.65 kg.

5.3.3 TECHNICAL FEASIBILITY

As these materials would not be used in the process in any case and would just be recycled, this potential change is technically feasible.

5.3.4 ECONOMIC FEASIBILITY

Linamar Performance Centre has determined that there would be no cost to implementing this procedure, as it does not require any changes to the existing process or associated equipment. The savings associated with this option are due to a reduction in the value of raw material purchased. In 2014 the total value of the scrap which was defective on all product lines with Zinc was $ $382,234. By reducing this amount by 15 percent there would be an annual savings of $57335.10. This corresponds to an immediate payback period. Therefore, it has been determined that implementing this reduction option is economically feasible.

5.4 SPILL AND LEAK PREVENTION

5.4.1 IDENTIFICATION OF OPTIONS

All Zinc used in the raw materials at the facility is contained in metals. Spill and leak prevention is not a concern and no possible reduction options were identified in this category that would result in a reduction in the use of Zinc.

5.4.2 ESTIMATED REDUCTIONS

Not applicable.

5.4.3 TECHNICAL FEASIBILTY

Not applicable.

5.4.4 ECONOMIC FEASILIBILTY

Not applicable.

5.5 ON-SITE REUSE AND RECYCLING

5.5.1 IDENTIFICATION OF OPTIONS

All metal scrap generated at the facility is recycled. The metal scrap cannot be reused in the process as it is not in a form which would allow it to be used (i.e. it is too small or it is misshaped). Therefore, no possible reduction options were identified in this category that would result in a reduction in the use of Zinc.

5.5.2 ESTIMATED REDUCTIONS

Not applicable.

5.5.3 TECHNICAL FEASIBILITY

Not applicable.

5.5.4 ECONOMIC FEASIBILITY

Not applicable.

5.6 IMPROVED INVENTORY MANAGEMENT/PURCHASING TECHNIQUES

5.6.1 IDENTIFICATION OF OPTIONS

Linamar Performance Centre's inventory is controlled by customer demand. The facility only has enough inventories for a maximum of two days production at any given time. In addition, the metal products do not have an expiry date, so no materials will be disposed as a result of expired inventory. Therefore, no possible reduction options were identified in this category that would result in a reduction in the use of Zinc.

5.6.2 ESTIMATED REDUCTIONS

Not applicable.

5.6.3 TECHNICAL FEASIBILITY

Not applicable.

5.6.4 ECONOMIC FEASIBILITY

Not applicable.

5.7 TRAINING OR IMPROVED OPERATING PRACTICES

5.7.1 IDENTIFICATION OF OPTIONS

Employees are trained on each piece of machinery, and the requirements for each part that the facility produces. Employees are trained on any changes or updates to the production of parts and a quality system document is used to document the training and entered on each employee's file. Linamar Performance Centre conducts continuous improvement meetings and production meetings daily to ensure issues are dealt with and communicated as soon as possible to ensure the quality of parts are in conformance with customer demands. Therefore, no further possible reduction options were identified in this category that would result in a reduction in the use of Zinc.

5.7.2 ESTIMATED REDUCTIONS

Not applicable.

5.7.3 TECHNICAL FEASIBILITY

Not applicable.

5.7.4 ECONOMIC FEASIBILTY

Not applicable.

6.0 OPTIONS TO BE IMPLEMENTED

The following options have been identified for implementation to reduce the use and/or amount of Zinc transferred:

- Reduce the amount of scrap by 15% percent.

This option is an on-going procedure at Linamar Performance Centre, with annual reduction targets that will change from year to year. The schedule for this reduction option is given below:

Step	Description	Estimated Timeline
1	Review of existing scrap procedures to identify possible improvement processes	January 2015 – Ongoing
2	Hold annual session to update operators based on new findings	Annual
3	Timeline for reduction of Zinc	January 2015 - Ongoing

Linamar Performance Centre has carefully reviewed the toxic substance use reduction options to ensure that there is not net negative impact to the environment or public health. The selection options will serve to reduce the amount of Zinc used in the process, and will not create any toxic by-products.

7.0 PLANNER RECOMMENDATIONS AND RATIONALE

The planner's recommendations and rationale for these recommendations have been appended to the plan and are provided in APPENDIX A: PLANNER RECOMMENDATIONS

.0 PLAN CERTIFICATIONS

CERTIFICATION BY HIGHEST RANKING EMPLOYEE

As of August 12, 2015, I, Suranga Fernando certify that I have ready the toxic substance reduction plan for the toxic substance referred to below and am familiar with its contents, and to my knowledge the plan is factually accurate and complies with the *Toxics Reduction Act, 2009* and Ontario Regulation 455/09 (General) made under that Act.

Zinc

Suranga Fernando
General Manager
Linamar Performance Centre a Division of Linamar Holdings Inc.

CERTIFICATION BY A LICENSED PLANNER

As of August 12, 2015, I Melissa Gould, certify that I am familiar with the processes at Linamar Performance Centre that use or create the toxic substance referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4 (1) of the *Toxics Reduction Act, 2009* that are set out in the plan dated August 12, 2015 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

.inc

Melissa Gould, [Planner License #TSRP0259 Expiry Date: 9/30/2017]
Group EHS Specialist
Linamar Gear

APPENDIX B: LINAMAR PERFORMANCE CENTRE PLAN SUMMARY

PLAN SUMMARY
Linamar Performance Centre a Division of Linamar Holdings
GUELPH, ONTARIO

Name & CAS # of Substance	Zinc	7440-66-6
Facility Identification and Site Address		
Company Name	Linamar Holdings Inc.	
Facility Name	Linamar Performance Centre a Division of Linamar Holdings Inc.	
Facility Address	Physical Address:	Mailing Address: (if different)
	30 Minto Road Guelph, Ontario N1K 1H5	
Spatial Coordination of Facility	Easting: 555062.55 Northing: 4820106.32	
Number of Employees	421	
NPRI ID	11378	
Ontario MOE ID Number	8229	
Parent Company (PC) Information		
PC Name & Address Percent Ownership for each PC	Linamar Corporation, 287 Speedvale Avenue West, Guelph, Ontario N1H 1C5 100%	
Business Number for PC	103333662	
Primary North American Industrial Classification System Code (NAICS)		
Digit NAICS Code	33 Manufacturing	
+ Digit NAICS Code	3363 – Motor Vehicle Parts Manufacturing	
6 Digit NAICS Code	336310 – Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	
Company Contact Information		
Facility Public Contact	Mr. Suranga Fernando General Manager	
	Suranga.fernando@linamar.com	
	Phone: (519) 821-1429 ext# 23600	Same address as facility
	Fax: 519-822-2409	

PLAN SUMMARY STATEMENT

This plan summary reflects the content of the toxic substance reduction plan for Linamar Performance Centre a Division of Linamar Holdings Inc. (Linamar Performance Centre) for Zinc, prepared by Melissa Gould.

STATEMENT OF INTENT

Linamar Performance Centre a Division of Linamar Holdings Inc. (Linamar Performance Centre) is committed to playing a leadership role in protecting the environment. Whenever feasible, we will reduce the use and releases of Zinc in compliance with all Federal and Provincial Regulations.

REDUCTION OBJECTIVES

Linamar Performance Centre prides itself on technological innovation in order to produce high quality automotive parts in an environmentally responsible manner. Through this plan, Linamar Performance Centre determines the technical and economic feasibility of each option to determine which, if any, are viable for implementation at this time.

REDUCTION OPTIONS TO BE IMPLEMENTED

The following options have been identified for implementation to reduce the use and/or amount of nickel transferred:

- Reduce the amount of scrap by 25 percent.

This option is an on-going procedure at Linamar Performance Centre, with annual reduction targets that will change from year to year. The schedule for this reduction option is given below:

Step	Description	Estimated Timeline
1	Review of existing scrap procedures to identify possible improvement processes	January 2015 – Ongoing
2	Hold annual session to update operators based on new findings	Annual
3	Timeline for reduction of Zinc	January 2015 - Ongoing

Linamar Performance Centre has carefully reviewed the toxic substance use reduction options to ensure that there is not net negative impact to the environment or public health. The selection options will serve to reduce the amount of Zinc used in the process, and will not create any toxic by-products

CERTIFICATION BY HIGHEST RANKING EMPLOYEE

.s of August 12, 2015 I, Suranga Fernando certify that I have reviewed the toxic substance reduction plan for the toxic substance referred to below and am familiar with its contents, and to my knowledge the plan is factually accurate and complies with the *Toxics Reduction Act, 2009* and Ontario Regulation 455/09 (General) made under that Act.

Zinc

Suranga Fernando
General Manager
Linamar Performance Centre a Division of Linamar Holdings Inc.

CERTIFICATION BY A LICENSED PLANNER

As of August 12, 2015 I, Melissa Gould, certify that I am familiar with the processes at Linamar Performance Centre that use or create the toxic substance referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4 (1) of the *Toxics Reduction Act, 2009* that are set out in the plan dated November 1, 2014 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

Zinc

Melissa Gould, [Planner License #TSRP0259 Expiry Date: 9/30/2017]
Group EHS Specialist
Linamar Gear