

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

## **Toxic Substance Reduction Plan Summary**

### **Phase I – Chemicals**

**In compliance with the Toxics Reduction Act (2009) and Ontario Regulation 455/09**

#### **INTRODUCTION:**

TI Automotive Canada Inc. (TI Automotive) commits its integrated global resources exclusively to enable customers to differentiate their products, be competitive and more effectively meet regulatory requirements for performance, safety and emissions. Our innovative technology, a deep and broad product line, and commitment to the needs of our customers enables us to meet the highest standards for fuel economy, performance, safety and emissions for automotive fluid storage, carrying and delivery systems.

Founded in 1919 as Tube Investments Ltd., in Birmingham, England, TI Automotive has expanded its business steadily through a series of acquisitions and mergers.

Today, the innovative technology, processes and products of leading companies, including Bundy, Walbro and Marwal, are deeply integrated into TI Automotive.

TI Automotive prepared Toxic Substance Reduction Plans (TSRPs) for six Phase I chemicals used at our plant located at 316 Orenda Road, Bramalea, Ontario, based on the criteria set out in the Toxics Reduction Act, 2009 and Ontario Regulation 455/09. These substances are (in alphabetical order): Copper, Hexavalent Chromium, Hydrochloric Acid, Nickel, Sulphuric Acid, and Zinc.

Note: In 2012, Hexavalent Chromium was substituted at TI Automotive with Trivalent Chromium for use in the chrome-plating process. De minimis amounts of other Phase I chemicals were used in 2011, such as Arsenic and Lead in the plating process and Acetone and Acetylene Methyl Alcohol for laboratory testing. However, the amounts of these substances used were less than the threshold amounts required for National Pollutant Release Inventory (NPRI) reporting; therefore, it was not necessary to account and plan for these substances.

The main objective of these TSRPs is to evaluate options for reducing the use and creation of these prescribed toxic substances at the “front end” of the manufacturing process.



Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**BASIC Facility Information**

| <b>Facility Identification and Site Address</b>                             |  |                                 |
|---|--|---------------------------------|
| <b>Company Name</b>   | TI Group Automotive Systems Canada   |                                 |
| <b>Facility Name</b>  | TI Automotive Canada Incorporated  |                                 |
| <b>Facility Address</b>   | Physical Address:  | Mailing Address: (if different) |
|   | 316 Orenda Rd.<br>Bramalea, ON, L6T 1G3  | Same as physical address        |
| <b>Spatial Coordinates of Facility</b>                                      | Northing: 4839681 Easting: 604431 UTM Zone: 17T  |                                 |
| <b>Number of Employees</b>  | 72   |                                 |
| <b>NPRI ID</b>  | 70   |                                 |
| <b>Ontario MOE ID Number</b>  | 7382-4NPMZD  |                                 |
| <b>Parent Company (PC) Information</b>                                      |  |                                 |
| <b>PC Name &amp; Address</b>  | TI Automotive<br>4650 Kingsgate<br>Cascade Way<br>Oxford Business Park South<br>Oxford, Oxfordshire<br>OX4 2SU<br>United Kingdom |                                 |
| <b>Percent Ownership for each PC</b>  | 100%   |                                 |
| <b>Business Number for PC</b>   | 4097913  |                                 |
| <b>Primary North American Industrial Classification System Code (NAICS)</b> |  |                                 |
| <b>2 Digit NAICS Code</b>   | 33 - Manufacturing   |                                 |
| <b>4 Digit NAICS Code</b>   | 3363 - Motor Vehicle Parts Manufacturing   |                                 |
| <b>6 Digit NAICS Code</b>   | 336340 - Vehicle Brake System Manufacturing  |                                 |
| <b>Company Contact Information</b>  |  |                                 |
| <b>Facility Public Contact</b>  | Name, Title:   | Derek McDonald, Plant Manager   |
|   | Email:   | dmcdonald@ca.tiauto.com         |
|   | Phone:   | 905 793 7100                    |
|   | Fax:   | 905 793 3626                    |

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**BASIC Facility Information ( continued)**

|   |  |  |
|---|--|--|
| <b>Facility Technical Contact</b>                     | Name, Title:   | Ajit Potnis, Engineering Manager   |
|   | Email:   | apotnis@ca.tiauto.com  |
|   | Phone:   | 905 494 6916   |
|   | Fax:   | 905 793 3626   |
| <b>Company Coordinator Contact</b>                    | Name, Title:   | Ajit Potnis, Engineering Manager   |
|   | Email:   | apotnis@ca.tiauto.com  |
|   | Phone:   | 905 494 6916   |
|   | Fax:   | 905 793 3626   |
| <b>Person who Prepared the Plan</b>                   | Andrew A. Tymec  | Dragun Corporation   |
|   | <a href="mailto:atymec@dragun.com">atymec@dragun.com</a> | 436 Elmstead Rd., RR1  |
|   | Phone: (519) 979 7300                                    | Windsor, ON  |
|   | Fax: (519) 979 4455                                      | N8N 2L9  |
| <b>Highest Ranking Employee</b>                       | Name, Title:   | Derek McDonald, Plant Manager  |
|   | Email:   | dmcDonald@ca.tiauto.com  |
|   | Phone:   | 905 793 7100   |
|   | Fax:   | 905 793 3626   |
| <b>Planner Information</b>                            |  |  |
| <b>Planner Responsible for Making Recommendations</b> | Andrew A. Tymec  |  |
|   | Planner License No.                                      | 0220   |
|   | <a href="mailto:atymec@dragun.com">atymec@dragun.com</a> | 436 Elmstead Rd., RR1  |
|   | Phone: (519) 979 - 7300                                  | Windsor, ON  |
|   | Fax: (519) 979-4455                                      | N8N 2L9  |
| <b>Planner Responsible for Certification</b>          | Andrew A. Tymec,<br>LTSRP #0220                          | Contact information if different from<br>Planner Responsible for Making<br>Recommendations |
|   |  |  |
|   |  | N/A  |
|   |  |  |

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

## **PLAN SUMMARY - COPPER**

### **PLAN SUMMARY STATEMENT**

This plan summary accurately reflects the content of the toxic substance reduction plan for copper, prepared by Dragun Corporation, dated December 23, 2014.

### **STATEMENT OF INTENT**

Commitment to environmental performance and prevention of pollution is reflected in the business objectives and commercial priorities of TI Automotive. TI Automotive encourages the conservation of resources through cooperation with local regulatory authorities and compliance with local regulatory requirements. Whenever feasible, we will eliminate, or reduce the use, creation, and discharge of copper in full compliance with all Federal and Provincial regulations.

### **REDUCTION OBJECTIVES**

TI Automotive does not intend to reduce the amount of copper at this facility. The technical and economical feasibility analyses for potential toxics reduction options for copper usage at TI Automotive resulted in the identification of zero potentially-feasible options at this time. TI Automotive is, however, committed to ensuring copper is used in the most responsible and efficient manner.

### **DESCRIPTION OF SUBSTANCE**

Inherent concentration of copper is contained in purchased/imported steel used for the manufacture of steel tubes.

### **TOXIC-SUBSTANCE REDUCTION OPTION TO BE IMPLEMENTED**

To reduce the use of copper in our tube manufacturing processes, TI Automotive has considered many options. However, no additional options could be identified that were both technically and economically-feasible at this time. Therefore, TI Automotive does not intend to reduce the use of copper.

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

## **PLAN SUMMARY – HEXAVALENT CHROMIUM**

### **PLAN SUMMARY STATEMENT**

This plan summary accurately reflects the content of the toxic substance reduction plan for hexavalent chromium, prepared by Dragun Corporation, dated December 23, 2014.

### **STATEMENT OF INTENT**

Commitment to environmental performance and prevention of pollution is reflected in the business objectives and commercial priorities of TI Automotive. TI Automotive encourages the conservation of resources through cooperation with local regulatory authorities and compliance with local regulatory requirements. Whenever feasible, we will eliminate, or reduce the use, creation, and discharge of hexavalent chromium in full compliance with all Federal and Provincial regulations.

### **REDUCTION OBJECTIVES**

Our goal is to eliminate:

- 100% of hexavalent chromium-containing solution introduced to the plating process,
- 0.7% of hexavalent chromium disposed to hazardous waste,
- 0.6% of hexavalent chromium recycled at an off-site facility, and
- 0.5% of hexavalent chromium from the finished product at our facility.

The implementation plan for achieving this reduction goal is in progress.

### **DESCRIPTION OF SUBSTANCE**

Hexavalent chromium is found in purchased steel and is used in a chromate bath on a plating line in the manufacture of steel tubes.

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**TOXIC-SUBSTANCE REDUCTION OPTION TO BE IMPLEMENTED**

The following option to reduce the use or release of hexavalent chromium has been identified:

- Substitute hexavalent chromium in the plating bath with trivalent chromium.

Hexavalent chromium reductions due to implementing this option are as follows:

| Reduction Option: Substitute Hexavalent Chromium with Trivalent Chromium in Plating Bath |   |         |                  |       |      |          |                                     |                                 |                      |
|--|---|---------|------------------|-------|------|----------|-------------------------------------|---------------------------------|----------------------|
| Option(s)  | Used  | Created | On-Site Releases |       |      | Disposal |                                     | Transfer Off-Site for Recycling | Contained in Product |
|  |   |         | Air              | Water | Land | On-Site  | Off-Site                            |                                 |                      |
| Baseline   | U <sub>tp</sub> = 1014.4 kg<br>U <sub>p</sub> = 6.5 kg<br>Total = 1020.9 kg | 0 kg    | 0 kg             | 0 kg  | 0 kg | 0 kg     | MHC: 101.1 kg<br>Wastewater: 0.3 kg | 69.7 kg                         | 1058.2 kg            |
| Estimated Reduced Total  | U <sub>p</sub> = 1014.4 kg<br>U <sub>p</sub> = 0 kg<br>Total = 1014.4 kg    | 0 kg    | 0 kg             | 0 kg  | 0 kg | 0 kg     | MHC: 100.4 kg<br>Wastewater: 0.3 kg | 69.3 kg                         | 1052.8 kg            |
| Reduction  | U <sub>p</sub> = 0 kg<br>U <sub>p</sub> = 6.5kg                             | 0 kg    | 0 kg             | 0 kg  | 0 kg | 0 kg     | MHC: 0.7 kg<br>Wastewater: 0 kg     | 0.4 kg                          | 6.6 kg               |
| % Reduction  | U <sub>p</sub> = 0.0%<br>U <sub>p</sub> = 100%                              | 0.0%    | 0.0%             | 0.0%  | 0.0% | 0.0%     | MHC: 0.7%<br>Wastewater: 0%         | 0.6%                            | 0.5%                 |

Table Notes: U<sub>tp</sub> = Used steel strip and steel tube with hexavalent chromium within the six Tube-Production Processes.

U<sub>p</sub> = Used hexavalent chrome in a chromium plating bath within the Plating Process

MHC = Metal Hydroxide Cake (waste generated from on-site wastewater treatment process)  
kg = kilograms

It is expected that these reductions are already in progress.

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

## **PLAN SUMMARY – HYDROCHLORIC ACID**

### **PLAN SUMMARY STATEMENT**

This plan summary accurately reflects the content of the toxic substance reduction plan for hydrochloric acid, prepared by Dragon Corporation, dated December 23, 2014.

### **STATEMENT OF INTENT**

Commitment to environmental performance and prevention of pollution is reflected in the business objectives and commercial priorities of TI Automotive. TI Automotive encourages the conservation of resources through cooperation with local regulatory authorities and compliance with local regulatory requirements. Whenever feasible, we will eliminate, or reduce the use, creation, and discharge of hydrochloric acid in full compliance with all Federal and Provincial regulations.

### **REDUCTION OBJECTIVES**

TI Automotive does not intend to reduce the amount of hydrochloric acid used at this facility. The technical and economical feasibility analyses for potential toxics reduction options for hydrochloric acid usage at TI Automotive resulted in the identification of zero potentially-feasible options at this time. TI Automotive is, however, committed to ensuring hydrochloric acid is used in the most responsible and efficient manner.

### **DESCRIPTION OF SUBSTANCE**

Hydrochloric acid is used for cleaning steel, as a pre-plating step, for the manufacture of steel tubes.

### **TOXIC SUBSTANCE REDUCTION OPTION TO BE IMPLEMENTED**

To reduce the use of hydrochloric acid in our plating process, TI Automotive has considered many options. However, no additional options could be identified that were both technically and economically-feasible at this time. Therefore, TI Automotive does not intend to reduce the use of hydrochloric acid.

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

## **PLAN SUMMARY - NICKEL**

### **PLAN SUMMARY STATEMENT**

This plan summary accurately reflects the content of the toxic substance reduction plan for nickel, prepared by Dragun Corporation, dated December 23, 2014.

### **STATEMENT OF INTENT**

Commitment to environmental performance and prevention of pollution is reflected in the business objectives and commercial priorities of TI Automotive. TI Automotive encourages the conservation of resources through cooperation with local regulatory authorities and compliance with local regulatory requirements. Whenever feasible, we will eliminate, or reduce the use, creation, and discharge of nickel in full compliance with all Federal and Provincial regulations.

### **REDUCTION OBJECTIVES**

TI Automotive does not intend to reduce the amount of nickel at this facility. The technical and economical feasibility analyses for potential toxics reduction options for nickel usage at TI Automotive resulted in the identification of zero potentially-feasible options at this time. TI Automotive is, however, committed to ensuring nickel is used in the most responsible and efficient manner.

### **DESCRIPTION OF SUBSTANCE**

Inherent concentration of nickel is contained in purchased/imported steel used for the manufacture of steel tubes.

### **TOXIC-SUBSTANCE REDUCTION OPTION TO BE IMPLEMENTED**

To reduce the use of nickel in our tube manufacturing processes, TI Automotive has considered many options. However, no additional options could be identified that were both technically and economically-feasible at this time. Therefore, TI Automotive does not intend to reduce the use of nickel.



Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

## **PLAN SUMMARY – SULPHURIC ACID**

### **PLAN SUMMARY STATEMENT**

This plan summary accurately reflects the content of the toxic substance reduction plan for sulphuric acid, prepared by Dragun Corporation, dated December 23, 2014.

### **STATEMENT OF INTENT**

Commitment to environmental performance and prevention of pollution is reflected in the business objectives and commercial priorities of TI Automotive. TI Automotive encourages the conservation of resources through cooperation with local regulatory authorities and compliance with local regulatory requirements. Whenever feasible, we will eliminate, or reduce the use, creation, and discharge of sulphuric acid in full compliance with all Federal and Provincial regulations.

### **REDUCTION OBJECTIVES**

TI Automotive does not intend to reduce the amount of sulphuric acid used at this facility. The technical and economical feasibility analyses for potential toxics reduction options for sulphuric acid usage at TI Automotive resulted in the identification of zero potentially-feasible options at this time. TI Automotive is, however, committed to ensuring sulphuric acid is used in the most responsible and efficient manner.

### **DESCRIPTION OF SUBSTANCE**

Sulphuric acid is used for cleaning steel, as a pre-plating step, for the manufacture of steel tubes.

### **TOXIC SUBSTANCE REDUCTION OPTION TO BE IMPLEMENTED**

To reduce the use of sulphuric acid in our plating process, TI Automotive has considered many options. However, no additional options could be identified that were both technically and economically feasible at this time. Therefore, TI Automotive does not intend to reduce the use of sulphuric acid.

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

## **PLAN SUMMARY – ZINC**

### **PLAN SUMMARY STATEMENT**

This plan summary accurately reflects the content of the toxic substance reduction plan for zinc, prepared by Dragun Corporation, dated December 23, 2014.

### **STATEMENT OF INTENT**

Commitment to environmental performance and prevention of pollution is reflected in the business objectives and commercial priorities of TI Automotive. TI Automotive encourages the conservation of resources through cooperation with local regulatory authorities and compliance with local regulatory requirements. Whenever feasible, we will eliminate, or reduce the use, creation, and discharge of zinc in full compliance with all Federal and Provincial regulations.

### **REDUCTION OBJECTIVES**

TI Automotive does not intend to reduce the amount of zinc at this facility. The technical and economical feasibility analyses for potential toxics reduction options for zinc usage at TI Automotive resulted in the identification of zero potentially-feasible options at this time. TI Automotive is, however, committed to ensuring zinc is used in the most responsible and efficient manner.

### **DESCRIPTION OF SUBSTANCE**

Zinc is used in an electroplating bath for the manufacture of steel tubes.

### **TOXIC-SUBSTANCE REDUCTION OPTION TO BE IMPLEMENTED**

To reduce the use zinc in our plating process, TI Automotive has considered many options. However, no additional options could be identified that were both technically and economically feasible at this time. Therefore, TI Automotive does not intend to reduce the use of zinc.

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**COPY OF CONFIRMATIONS**

**CONFIRMATION BY HIGHEST RANKING EMPLOYEE**

In August 2012, we at TI Automotive experienced a significant turnover in personnel, including the engineering manager responsible for our compliance efforts to meet the deadlines set out in the Toxics Reduction Act and Ontario Regulation 455/09. TI Automotive has since replaced the engineering manager; however, he required time to become familiar with our facility's operations and, as a result, our environmental compliance efforts in this matter were stalled. As of December 23, 2014, I, Derek McDonald, confirm that I have read 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, with the exception of the regulatory deadline, complies with the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.

Copper



Derek McDonald  
*Plant Manager*  
TI Automotive Canada Inc.

**CONFIRMATION BY LICENSED PLANNER**

As of December 23, 2014, I, Andrew A. Tymec, confirm that I am familiar with the processes at TI Automotive Canada Inc. 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 December 23, 2014, and that, with the exception of the regulatory deadline, the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

Copper



Andrew A. Tymec, Planner License #0220  
Environmental Engineer/Toxic Substance Reduction Planner  
Dragun Corporation

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**CONFIRMATION BY HIGHEST-RANKING EMPLOYEE**

In August 2012, we at TI Automotive experienced a significant turnover in personnel, including the engineering manager responsible for our compliance efforts to meet the deadlines set out in the Toxics Reduction Act and Ontario Regulation 455/09. TI Automotive has since replaced the engineering manager; however, he required time to become familiar with our facility's operations and, as a result, our environmental compliance efforts in this matter were stalled. As of December 23, 2014, I, Derek McDonald, confirm that I have read 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, with the exception of the regulatory deadline, complies with the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.

Hexavalent Chromium



Derek McDonald  
*Plant Manager*  
TI Automotive Canada Inc.

**CONFIRMATION BY LICENSED PLANNER**

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Hexavalent Chromium



Andrew A. Tymec, Planner License #0220  
Environmental Engineer/Toxic Substance Reduction Planner  
Dragun Corporation

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

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Hydrochloric Acid

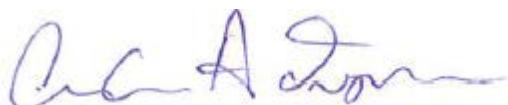


Derek McDonald  
*Plant Manager*  
TI Automotive Canada Inc.

**CONFIRMATION BY LICENSED PLANNER**

As of December 23, 2014, I, Andrew A. Tymec, confirm that I am familiar with the processes at TI Automotive Canada Inc. 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 December 23, 2014, and that, with the exception of the regulatory deadline, the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

Hydrochloric Acid



Andrew A. Tymec, Planner License #0220  
Environmental Engineer/Toxic Substance Reduction Planner  
Dragun Corporation

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**CONFIRMATION BY HIGHEST-RANKING EMPLOYEE**

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Nickel

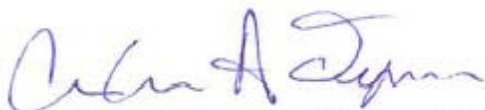


Derek McDonald  
*Plant Manager*  
TI Automotive Canada Inc.

**CONFIRMATION BY LICENSED PLANNER**

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Nickel



Andrew A. Tymec, Planner License #0220  
Environmental Engineer/Toxic Substance Reduction Planner  
Dragun Corporation

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**CONFIRMATION BY HIGHEST-RANKING EMPLOYEE**

In August 2012, we at TI Automotive experienced a significant turnover in personnel, including the engineering manager responsible for our compliance efforts to meet the deadlines set out in the Toxics Reduction Act and Ontario Regulation 455/09. TI Automotive has since replaced the engineering manager; however, he required time to become familiar with our facility's operations and, as a result, our environmental compliance efforts in this matter were stalled. As of December 23, 2014, I, Derek McDonald, confirm that I have read 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, with the exception of the regulatory deadline, complies with the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.

Sulphuric Acid



Derek McDonald  
*Plant Manager*  
TI Automotive Canada Inc.

**CONFIRMATION BY LICENSED PLANNER**

As of December 23, 2014, I, Andrew A. Tymec, confirm that I am familiar with the processes at TI Automotive Canada Inc. 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 December 23, 2014, and that, with the exception of the regulatory deadline, the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

Sulphuric Acid



Andrew A. Tymec, Planner License #0220  
Environmental Engineer/Toxic Substance Reduction Planner  
Dragun Corporation



Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**CONFIRMATION BY HIGHEST-RANKING EMPLOYEE**

In August 2012, we at TI Automotive experienced a significant turnover in personnel, including our engineering manager responsible for our compliance efforts to meet the deadlines set out in the Toxics Reduction Act and Ontario Regulation 455/09. TI Automotive has since replaced the engineering manager; however, the time required for him to become familiar with our facility's operations was extensive and, in effect, our environmental compliance efforts in this matter were stalled. As of December 23, 2014, I, Derek McDonald, confirm that I have read 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, with the exception of the regulatory deadline, complies with the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.

Zinc



Derek McDonald  
*Plant Manager*  
TI Automotive Canada Inc.

**CONFIRMATION BY LICENSED PLANNER**

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Zinc



Andrew A. Tymec, Planner License #0220  
Environmental Engineer/Toxic Substance Reduction Planner  
The Dragun Corporation



Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**Toxic Substance Reduction – Progress Reports: 2012**

**Copper**

Facility-level quantification data for copper, determined as a result of the toxics substance accounting performed at TI Automotive for the years 2011 and 2012, is outlined in Table 1.

| <b>Table 1: Summary - Facility Level Quantifications for Copper</b> |                                      |                                      |
|---|--------------------------------------|--------------------------------------|
| <b>Form of Involvement</b>  | <b>2011 Amount of Substance (kg)</b> | <b>2012 Amount of Substance (kg)</b> |
| Enters the facility (use):  | 235,640.1 kg                         | 120,693 kg                           |
| Created at the facility:  | 0 kg                                 | 0 kg                                 |
| Released (air) from the facility:                                   | 0 kg                                 | 0 kg                                 |
| Released (land) from the facility:                                  | 0 kg                                 | 0 kg                                 |
| Released (water) from the facility:                                 | 0 kg                                 | 0 kg                                 |
| Disposed (on site) by the facility:                                 | 0 kg                                 | 0 kg                                 |
| Disposed (off site) by the facility:                                | Wastewater: 3.73 kg                  | Wastewater: 21.14 kg                 |
| Transferred (for recycling) from the facility:                      | 10,943.1 kg                          | 10,451.0 kg                          |
| Contained in product that leaves the facility:                      | 263,519.7 kg                         | 110,221 kg                           |

**COMPARISON OF THE RESULTS PRESENTED IN TABLE 1**

The main reason for differences in reported quantities of copper used and contained in product in 2011 in comparison to 2012 is that Dragun was not provided 2012 data regarding steel tube production per process; since the amount of copper-containing materials carried over from 2011, and what remained in storage for use in 2013, was unknown to Dragun at the time of writing this progress report, Dragun assumes that the total steel tube processed is equal to the total steel purchased in 2012. The general change in annual production levels from 2011 to 2012 would also account for the variance in these quantities. The copper masses disposed with wastewater and transferred for recycling were within the expected range of variance for 2011 and 2012.

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**REDUCTION OBJECTIVES**

TI Automotive does not intend to reduce the amount of copper at this facility. The technical and economical feasibility analyses for potential toxics reduction options for copper usage at TI Automotive resulted in the identification of zero potentially-feasible options at the time of preparing the TSRP. TI Automotive is, however, committed to ensuring copper is used in the most responsible and efficient manner. No amendments were made to the current toxic substance reduction plan for copper in 2012.

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**Hexavalent Chromium (Hex-Cr)**

**FACILITY-WIDE ACCOUNTING INFORMATION**

Facility-level quantification data for hex-Cr, determined as a result of the toxics substance accounting performed at TI Automotive for the years 2011 and 2012, is outlined in Table 2.

| <b>Table 2: Summary - Facility Level Quantifications for Hex-Cr</b> |   |   |
|---|---|---|
| <b>Form of Involvement</b>  | <b>2011 Amount of Substance (kg)</b>                                    | <b>2012 Amount of Substance (kg)</b>                                  |
| Enters the facility (use):  | U <sub>tp</sub> = 1014.4 kg, U <sub>p</sub> = 6.5 kg, total = 1020.9 kg | U <sub>tp</sub> = 815.0 kg, U <sub>p</sub> = 3.5 kg, total = 818.9 kg |
| Created at the facility:  | 0 kg  | 0 kg  |
| Released (air) from the facility:                                   | 256.0 kg  | 154.3 kg  |
| Released (land) from the facility:                                  | 0 kg  | 0 kg  |
| Released (water) from the facility:                                 | 0 kg  | 0 kg  |
| Disposed (on site) by the facility:                                 | 0 kg  | 0 kg  |
| Disposed (off site) by the facility:                                | MHC: 101.1 kg ,<br>Wastewater: 0.3 kg                                   | MHC: 201.8 kg ,<br>Wastewater: 1.3 kg                                 |
| Transferred (for recycling) from the facility:                      | 69.7 kg   | 71.4 kg   |
| Contained in product that leaves the facility:                      | 1058.2 kg   | 544.4 kg  |

Table Notes: U<sub>tp</sub> = Used steel strip and steel tube with hexavalent chromium within the six Tube-Production Processes

U<sub>p</sub> = Used hexavalent chrome in a chromium plating bath within the Plating Process

MHC = Metal Hydroxide Cake (waste generated from on-site wastewater treatment process)

kg = kilograms

**COMPARISON OF THE RESULTS PRESENTED IN TABLE 2**

The reduced mass of hex-Cr used in steel strip is attributed to the expected general change in annual production level from 2011 to 2012. The reduced mass of hex-Cr used in the chromium plating bath can be attributed to the scheduled phase out of hex-Cr from plating processes at TI Automotive. The change in masses of hex-Cr released to air, disposed at

## Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

an off-site landfill and with wastewater, and transferred for recycling were within the expected range of variance for 2011 and 2012. The main reason for differences in reported quantities of hex-Cr contained in product in 2011 in comparison to 2012 is that Dragun was not provided 2012 data regarding steel tube production per process; since the amount of hex-Cr-containing materials carried over from 2011, and what remained in storage for use in 2013, was unknown to Dragun at the time of writing this progress report, Dragun assumes that the total steel tube processed is equal to the total steel purchased in 2012. The general change in annual production levels from 2011 to 2012 would also account for the variance in this quantity.

### **REDUCTION OBJECTIVES**

TI Automotive's goal for Hex-Cr, as outlined in the current TSRP, is to eliminate:

- 100% of hexavalent chromium-containing solution introduced to the plating process,
- 0.7% of hexavalent chromium disposed to hazardous waste,
- 0.6% of hexavalent chromium recycled at an off-site facility, and
- 0.5% of hexavalent chromium from the finished product at TI Automotive.

As of 2011, the implementation plan for achieving this reduction goal is in progress.

### **TOXIC-SUBSTANCE REDUCTION OPTION (IMPLEMENTED)**

The following option to reduce the use or release of hexavalent chromium was identified in the current TSRP:

- Substitute hexavalent chromium in the plating bath with trivalent chromium.

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

Hexavalent chromium reductions due to implementing this option are outlined in Table 3:

| Table 3: Reduction Option - Substitute Hexavalent Chromium with Trivalent Chromium in Plating Bath |   |         |                  |       |      |          |   |                                 |                      |
|--|---|---------|------------------|-------|------|----------|---|---------------------------------|----------------------|
| Option(s)  | Used  | Created | On-Site Releases |       |      | Disposal |   | Transfer Off-site for Recycling | Contained in Product |
|  |   |         | Air              | Water | Land | On-site  | Off-site*   |                                 |                      |
| 2011 (Baseline)  | U <sub>tp</sub> =1014.4 kg<br>U <sub>p</sub> =6.5 kg<br>Total = 1020.9 kg | 0 kg    | 256.0 kg         | 0 kg  | 0 kg | 0 kg     | MHC:<br>101.1 kg<br>Wastewater:<br>0.3 kg           | 69.7 kg                         | 1058.2 kg            |
| 2012   | U <sub>tp</sub> = 815.0 kg U <sub>p</sub><br>= 3.5 kg<br>Total = 818.9 kg | 0 kg    | 154.3 kg         | 0 kg  | 0 kg | 0 kg     | MHC:<br>201.8 kg<br>Wastewater:<br>1.3 kg           | 71.4 kg                         | 544.4 kg             |
| Reduction  | U <sub>tp</sub> = -199.4 kg<br>U <sub>p</sub> = -3 kg                     | 0 kg    | -101.7 kg        | 0 kg  | 0 kg | 0 kg     | MHC:<br>+100.7 kg<br>Wastewater:<br>+1.0 kg         | +0.7 kg                         | -513.8 kg            |
| % Reduction from baseline  | U <sub>tp</sub> = 19.7%<br>U <sub>p</sub> = 46%                           | 0.0%    | 39.7%            | 0.0%  | 0.0% | 0.0%     | MHC:<br>No reduction<br>Wastewater:<br>No reduction | No reduction                    | 48.6%                |

Table Notes: U<sub>tp</sub> = Used steel strip and steel tube with hexavalent chromium within the six Tube-Production Processes  
 U<sub>p</sub> = Used hexavalent chrome in a chromium plating bath within the Plating Process  
 MHC = Metal Hydroxide Cake (waste generated from on-site wastewater treatment process)  
 kg = kilograms

The current TSRP indicates that the solution containing hex-Cr used in the chromium plating bath would be phased out starting in 2012; this is evidenced by the 46% reduction in the hex-Cr U<sub>p</sub> quantity. This reduction, along with the change in masses of hex-Cr released to air, disposed at an off-site landfill and with wastewater, and transferred for recycling were within the expected range of variance for 2011 and 2012. No additional actions were taken in 2012 to reduce the use, creation, discharge to air, land, or water of hex-Cr at TI Automotive. The steps taken in 2012 to reduce hex-Cr at TI Automotive are consistent with those outlined in the current TSRP. No amendments were made to the current toxic substance reduction plan for hex-Cr in 2012.

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**Hydrochloric Acid**

**FACILITY-WIDE ACCOUNTING INFORMATION**

Facility-level quantification data for hydrochloric acid, determined as a result of the toxics substance accounting performed at TI Automotive for the years 2011 and 2012, is outlined in Table 4.

| <b>Table 4: Summary - Facility Level Quantifications for Hydrochloric acid</b> |                                      |                                      |
|--|--------------------------------------|--------------------------------------|
| <b>Form of Involvement</b>   | <b>2011 Amount of Substance (kg)</b> | <b>2012 Amount of Substance (kg)</b> |
| Enters the facility (use):   | 11,703.3 kg                          | 17,974.8 kg                          |
| Created at the facility:   | 0 kg                                 | 0 kg                                 |
| Released (air) from the facility:  | 215.6 kg                             | 277 kg                               |
| Released (land) from the facility:   | 0 kg                                 | 0 kg                                 |
| Released (water) from the facility:  | 0 kg                                 | 0 kg                                 |
| Disposed (on site) by the facility:  | 0 kg                                 | 0 kg                                 |
| Disposed (off site) by the facility:   | 0 kg                                 | 0 kg                                 |
| Transferred (for recycling) from the facility:                                 | 0 kg                                 | 0 kg                                 |
| Contained in product that leaves the facility:                                 | 0 kg                                 | 0 kg                                 |
| Destroyed by process(es) at the facility                                       | 11,487.7 kg                          | 17,697.8 kg                          |

**COMPARISON OF THE RESULTS PRESENTED IN TABLE 4**

The general change in annual production levels from 2011 to 2012 accounts for the variance in the quantities used, released to air, and destroyed by processes at the facility.

## Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

### **REDUCTION OBJECTIVES**

TI Automotive does not intend to reduce the amount of hydrochloric acid used at this facility. The technical and economical feasibility analyses for potential toxics reduction options for hydrochloric acid usage at TI Automotive resulted in the identification of zero potentially-feasible options at the time of preparing the TSRP. TI Automotive is, however, committed to ensuring hydrochloric acid is used in the most responsible and efficient manner. No amendments were made to the current toxic substance reduction plan for hydrochloric acid in 2012.

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**Nickel**

**FACILITY-WIDE ACCOUNTING INFORMATION**

Facility-level quantification data for Nickel, determined as a result of the toxics substance accounting performed at TI Automotive for the years 2011 and 2012, is outlined in Table 5.

| <b>Table 5: Summary - Facility Level Quantifications for Nickel</b> |                                      |                                      |
|---|--------------------------------------|--------------------------------------|
| <b>Form of Involvement</b>  | <b>2011 Amount of Substance (kg)</b> | <b>2012 Amount of Substance (kg)</b> |
| Enters the facility (use):  | 42,708.8 kg                          | 14,399 kg                            |
| Created at the facility:  | 0 kg                                 | 0 kg                                 |
| Released (air) from the facility:                                   | 228.3 kg                             | 154.0 kg                             |
| Released (land) from the facility:                                  | 0 kg                                 | 0 kg                                 |
| Released (water) from the facility:                                 | 0 kg                                 | 0 kg                                 |
| Disposed (on site) by the facility:                                 | 0 kg                                 | 0 kg                                 |
| Disposed (off site) by the facility:                                | Wastewater: 0.8 kg                   | Wastewater: 4.0 kg                   |
| Transferred (for recycling) from the facility:                      | 752.4 kg                             | 2,150.0 kg                           |
| Contained in product that leaves the facility:                      | 42,471.0 kg                          | 12,092.0 kg                          |

**COMPARISON OF THE RESULTS PRESENTED IN TABLE 5**

The main reason for differences in reported quantities of nickel used and contained in product in 2011 in comparison to 2012 is that Dragun was not provided 2012 data regarding steel tube production per process; since the amount of materials containing nickel carried over from 2011, what remained in storage for use in 2013, and the quantities of imported tube for the plating process, were all unknown to Dragun at the time of writing this progress report, Dragun assumes that the total steel tube processed is equal to the total steel purchased in 2012. The general change in annual production levels from 2011 to 2012 would also account for the variance in these quantities. The nickel masses released to air and disposed with wastewater were within the expected range of variance for 2011 and 2012. The increased mass of nickel transferred for recycling is attributed to changes in specifications of equipment component longevity.



Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**REDUCTION OBJECTIVES**

TI Automotive does not intend to reduce the amount of nickel at this facility. The technical and economical feasibility analyses for potential toxics reduction options for nickel usage at TI Automotive resulted in the identification of zero potentially-feasible options at the time of preparing the TSRP. TI Automotive is, however, committed to ensuring nickel is used in the most responsible and efficient manner. No amendments were made to the current toxic substance reduction plan for nickel in 2012.

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**Sulphuric Acid**

**FACILITY-WIDE ACCOUNTING INFORMATION**

Facility-level quantification data for sulphuric acid, determined as a result of the toxics substance accounting performed at TI Automotive for the years 2011 and 2012, is outlined in Table 6.

| <b>Table 6: Summary - Facility Level Quantifications for Sulphuric acid</b> |                                      |                                      |
|---|--------------------------------------|--------------------------------------|
| <b>Form of Involvement</b>  | <b>2011 Amount of Substance (kg)</b> | <b>2012 Amount of Substance (kg)</b> |
| Enters the facility (use):  | 32,510.0 kg                          | 56,977.4 kg                          |
| Created at the facility:  | 0 kg                                 | 0 kg                                 |
| Released (air) from the facility:   | 797.1 kg                             | 1,024 kg                             |
| Released (land) from the facility:  | 0 kg                                 | 0 kg                                 |
| Released (water) from the facility:   | 0 kg                                 | 0 kg                                 |
| Disposed of (on-site) by the facility:                                      | 0 kg                                 | 0 kg                                 |
| Disposed of (off-site) by the facility:                                     | 0 kg                                 | 0 kg                                 |
| Transferred (for recycling) from the facility:                              | 0 kg                                 | 0 kg                                 |
| Contained in product that leaves the facility:                              | 0 kg                                 | 0 kg                                 |
| Destroyed by process(es) at the facility                                    | 31,712.9 kg                          | 55,953.4 kg                          |

**COMPARISON OF THE RESULTS PRESENTED IN TABLE 6**

The general change in annual production levels from 2011 to 2012 accounts for the variance in the quantities used, released to air, and destroyed by processes at the facility.

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**REDUCTION OBJECTIVES**

TI Automotive does not intend to reduce the amount of sulphuric acid used at this facility. The technical and economical feasibility analyses for potential toxics reduction options for sulphuric acid usage at TI Automotive resulted in the identification of zero potentially-feasible options at the time of preparing the TSRP. TI Automotive is, however, committed to ensuring sulphuric acid is used in the most responsible and efficient manner. No amendments were made to the current toxic substance reduction plan for sulphuric acid in 2012.

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**Zinc**

**FACILITY-WIDE ACCOUNTING INFORMATION**

Facility-level quantification data, determined as a result of the toxics substance accounting performed at TI Automotive for the years 2011 and 2012, is outlined in Table 7.

| <b>Table 7: Summary - Facility Level Quantifications for Zinc</b> |  |  |
|---|--|--|
| <b>Form of Involvement</b>  | <b>2011 Amount of Substance (kg)</b>     | <b>2012 Amount of Substance (kg)</b>       |
| Enters the facility (use):  | 104,407.2 kg                             | 103,015 kg                                 |
| Created at the facility:  | 0 kg                                     | 0 kg                                       |
| Released (air) from the facility:                                 | 0 kg                                     | 0 kg                                       |
| Released (land) from the facility:                                | 0 kg                                     | 0 kg                                       |
| Released (water) from the facility:                               | 0 kg                                     | 0 kg                                       |
| Disposed of (on-site) by the facility:                            | 0 kg                                     | 0 kg                                       |
| Disposed of (off-site) by the facility:                           | MHC: 10,514.4 kg ,<br>Wastewater: 8.5 kg | MHC: 20,983.0 kg ,<br>Wastewater: 189.0 kg |
| Transferred (for recycling) from the facility:                    | Zn Stubs: 5,670 kg<br>Scrap: 2,764.1 kg  | Zn Stubs: 5,922 kg<br>Scrap: 5,901.0 kg    |
| Contained in product that leaves the facility:                    | 208,205.4 kg                             | 70,020.0 kg                                |

**COMPARISON OF THE RESULTS PRESENTED IN TABLE 7**

The zinc masses entering the facility and transferred for recycling were within the expected range of variance for 2011 and 2012. The zinc masses disposed as metal hydroxide cake (MHC) and with wastewater increased due to the general change in annual production levels and minor changes to pollution prevention activities.

The main reason for differences in reported quantities of zinc contained in product in 2011 in comparison to 2012 is that Dragun was not provided 2012 data regarding steel tube production per process; since the amount of zinc-containing materials carried over from 2011, what remained in storage for use in 2013, and the quantities of imported tube for the

## Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

plating process, were all unknown to Dragun at the time of writing this progress report, Dragun assumes that the total steel tube processed is equal to the total steel purchased in 2012. The general change in annual production levels from 2011 to 2012 would also account for the variance in these quantities.

### **REDUCTION OBJECTIVES**

TI Automotive does not intend to reduce the amount of zinc at this facility. The technical and economical feasibility analyses for potential toxics reduction options for zinc usage at TI Automotive resulted in the identification of zero potentially-feasible options at the time of preparing the TSRP. TI Automotive is, however, committed to ensuring zinc is used in the most responsible and efficient manner. No amendments were made to the current toxic substance reduction plan for sulphuric acid in 2012.

### **CONFIRMATION BY HIGHEST RANKING EMPLOYEE**

In August 2012, we at TI Automotive experienced a significant turnover in personnel, including the engineering manager responsible for our compliance efforts to meet the deadlines set out in the Toxics Reduction Act and Ontario Regulation 455/09. TI Automotive has since replaced the engineering manager; however, he required time to become familiar with our facility's operations and, as a result, our environmental compliance efforts in this matter were stalled. As of June 1, 2015, I, Derek McDonald, confirm that I have read the reports on the toxic substance reduction plans for the toxic substances referred to below and am familiar with their contents, and, to my knowledge the information contained in the reports comply with the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.

Copper, Hexavalent Chromium, Hydrochloric Acid, Nickel, Sulphuric Acid, and Zinc.



Derek McDonald  
*Plant Manager*  
TI Automotive Canada Inc.

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**Toxic Substance Reduction – Progress Reports: 2013**

**Copper**

Facility-level quantification data for copper, determined as a result of the toxics substance accounting performed at TI Automotive for the years 2012 and 2013, is outlined in Table 1.

| <b>Table 1: Summary - Facility Level Quantifications for Copper</b> |                                      |                                      |
|---|--------------------------------------|--------------------------------------|
| <b>Form of Involvement</b>  | <b>2012 Amount of Substance (kg)</b> | <b>2013 Amount of Substance (kg)</b> |
| Enters the facility (use):  | 120,693 kg                           | 56,926 kg                            |
| Created at the facility:  | 0 kg                                 | 0 kg                                 |
| Released (air) from the facility:                                   | 0 kg                                 | 0 kg                                 |
| Released (land) from the facility:                                  | 0 kg                                 | 0 kg                                 |
| Released (water) from the facility:                                 | 0 kg                                 | 0 kg                                 |
| Disposed (on site) by the facility:                                 | 0 kg                                 | 0 kg                                 |
| Disposed (off site) by the facility:                                | Wastewater: 21.14 kg                 | Wastewater: 32.47 kg                 |
| Transferred (for recycling) from the facility:                      | 10,451.0 kg                          | 3,467.0 kg                           |
| Contained in product that leaves the facility:                      | 110,221 kg                           | 53,452 kg                            |

**COMPARISON OF THE RESULTS PRESENTED IN TABLE 1**

The main reason for differences in reported quantities of copper used and contained in product in 2012 in comparison to 2013 is that Dragun was not provided 2012 or 2013 data regarding steel tube production per process; since the amount of materials containing copper carried over from 2012, and what remained in storage for use in 2014, was unknown to Dragun at the time of writing this progress report, Dragun assumes that the total steel tube processed is equal to the total steel purchased in 2013. The general change in annual production levels from 2012 to 2013 would also account for the variance in these quantities. The copper masses disposed with waste-water and transferred for recycling were within the expected range of variance for 2012 and 2013.



Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**REDUCTION OBJECTIVES**

TI Automotive does not intend to reduce the amount of copper at this facility. The technical and economical feasibility analyses for potential toxics reduction options for copper usage at TI Automotive resulted in the identification of zero potentially-feasible options at the time of preparing the TSRP. TI Automotive is, however, committed to ensuring copper is used in the most responsible and efficient manner. No amendments were made to the current toxic substance reduction plan for copper in 2013.

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**Hexavalent Chromium (Hex-Cr)**

**FACILITY-WIDE ACCOUNTING INFORMATION**

Facility-level quantification data for hex-Cr, determined as a result of the toxics substance accounting performed at TI Automotive for the years 2012 and 2013, is outlined in Table 2.

| <b>Table 2: Summary - Facility Level Quantifications for Hex-Cr</b> |  |  |
|---|--|--|
| <b>Form of Involvement</b>  | <b>2012 Amount of Substance (kg)</b>                                     | <b>2013 Amount of Substance (kg)</b>                                   |
| Enters the facility (use):  | U <sub>tp</sub> = 815.0 kg, U <sub>p</sub> = 3.5 kg,<br>total = 818.9 kg | U <sub>tp</sub> = 774.0 kg, U <sub>p</sub> = 0 kg,<br>total = 774.0 kg |
| Created at the facility:  | 0 kg   | 0 kg   |
| Released (air) from the facility:                                   | 154.3 kg   | 350.0 kg   |
| Released (land) from the facility:                                  | 0 kg   | 0 kg   |
| Released (water) from the facility:                                 | 0 kg   | 0 kg   |
| Disposed (on site) by the facility:                                 | 0 kg   | 0 kg   |
| Disposed (off site) by the facility:                                | MHC: 201.8 kg ,<br>Wastewater: 1.3 kg                                    | MHC: 178.0 kg ,<br>Wastewater: 4.9 kg                                  |
| Transferred (for recycling) from the facility:                      | 71.4 kg  | 38.6 kg  |
| Contained in product that leaves the facility:                      | 544.4 kg   | 552.9 kg   |

Table Notes: U<sub>tp</sub> = Used steel strip and steel tube with hexavalent chromium within the six Tube-Production Processes  
 U<sub>p</sub> = Used hexavalent chrome in a chromium plating bath within the Plating Process  
 MHC = Metal Hydroxide Cake (waste generated from on-site wastewater treatment process)  
 kg = kilograms

**COMPARISON OF THE RESULTS PRESENTED IN TABLE 2**

The reduced mass of hex-Cr used in steel strip is attributed to the expected general change in annual production level from 2012 to 2013. The reduced mass of hex-Cr used in the chromium plating bath can be attributed to the scheduled phase out of hex-Cr from plating



## Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

processes at TI Automotive. The change in masses of hex-Cr released to air, disposed at an off-site landfill and with wastewater, transferred for recycling, and contained in product were within the expected range of variance for 2012 and 2013. It should be noted that Dragun was not provided 2013 data regarding steel tube production per process; since the amount of hex-Cr-containing materials carried over from 2012, and what remained in storage for use in 2014, was unknown to Dragun at the time of writing this progress report, Dragun assumes that the total steel tube processed is equal to the total steel purchased in 2013.

### **REDUCTION OBJECTIVES**

TI Automotive's goal for Hex-Cr, as outlined in the current TSRP, is to eliminate:

- 100% of hexavalent chromium-containing solution introduced to the plating process,
- 0.7% of hexavalent chromium disposed to hazardous waste,
- 0.6% of hexavalent chromium recycled at an off-site facility, and
- 0.5% of hexavalent chromium from the finished product at TI Automotive.

As of 2011, the implementation plan for achieving this reduction goal is in progress.

### **TOXIC-SUBSTANCE REDUCTION OPTION (IMPLEMENTED)**

The following option to reduce the use or release of hexavalent chromium was identified in the current TSRP:

- Substitute hexavalent chromium in the plating bath with trivalent chromium.

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

Hexavalent chromium reductions due to implementing this option are outlined in Table 3:

| Table 3: Reduction Option - Substitute Hexavalent Chromium with Trivalent Chromium in Plating Bath |   |         |                  |       |      |          |   |                                 |                      |
|--|---|---------|------------------|-------|------|----------|---|---------------------------------|----------------------|
| Option(s)  | Used  | Created | On-Site Releases |       |      | Disposal |   | Transfer Off-site for Recycling | Contained in Product |
|  |   |         | Air              | Water | Land | On-site  | Off-site*   |                                 |                      |
| 2011<br>(Baseline)   | U <sub>tp</sub> =1014.4 kg<br>U <sub>p</sub> =6.5 kg<br>Total = 1020.9 kg | 0 kg    | 256.0 kg         | 0 kg  | 0 kg | 0 kg     | MHC:<br>101.1 kg<br>Wastewater:<br>0.3 kg           | 69.7 kg                         | 1058.2 kg            |
| 2012   | U <sub>tp</sub> = 815.0 kg<br>U <sub>p</sub> = 3.5 kg<br>Total = 818.9 kg | 0 kg    | 154.3 kg         | 0 kg  | 0 kg | 0 kg     | MHC:<br>201.8 kg<br>Wastewater:<br>1.3 kg           | 71.4 kg                         | 544.4 kg             |
| 2013   | U <sub>tp</sub> = 774.0 kg<br>U <sub>p</sub> = 0 kg<br>total = 774.0 kg   | 0 kg    | 350.0 kg         | 0 kg  | 0 kg | 0 kg     | MHC:<br>178.0 kg<br>Wastewater:<br>4.9 kg           | 38.6 kg                         | 552.9 kg             |
| Reduction<br>(baseline<br>to 2013)   | U <sub>tp</sub> = -240.4 kg<br>U <sub>p</sub> = -6.5 kg                   | 0 kg    | +94 kg           | 0 kg  | 0 kg | 0 kg     | MHC:<br>+76.9 kg<br>Wastewater:<br>+4.6 kg          | -31.1 kg                        | -505.3 kg            |
| %<br>Reduction<br>from<br>baseline   | U <sub>tp</sub> = 23.7%<br>U <sub>p</sub> = 100%                          | 0%      | No reduction     | 0%    | 0%   | 0%       | MHC:<br>No reduction<br>Wastewater:<br>No reduction | 44.6%                           | 47.8%                |

Table Notes: U<sub>tp</sub> = Used steel strip and steel tube with hexavalent chromium within the six Tube-Production Processes  
 U<sub>p</sub> = Used hexavalent chrome in a chromium plating bath within the Plating Process  
 MHC = Metal Hydroxide Cake (waste generated from on-site wastewater treatment process)  
 kg = kilograms

The current TSRP indicates that the solution containing hex-Cr used in the chromium plating bath would be phased out starting in 2012; in 2013, 100% reduction in the hex-Cr U<sub>p</sub> quantity was achieved. This reduction, along with the change in masses of hex-Cr released to air, disposed at an off-site landfill and with wastewater, and transferred for recycling were within the expected range of variance for 2012 and 2013. No additional actions were taken in 2013 to reduce the use, creation, discharge to air, land, or water of hex-Cr at TI Automotive. The steps taken in 2013 to reduce hex-Cr at TI Automotive are consistent with those outlined in the current TSRP. No amendments were made to the current toxic substance reduction plan for hex-Cr in 2013.

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**Hydrochloric Acid**

**FACILITY-WIDE ACCOUNTING INFORMATION**

Facility-level quantification data for hydrochloric acid, determined as a result of the toxics substance accounting performed at TI Automotive for the years 2012 and 2013, is outlined in Table 4.

| <b>Table 4: Summary - Facility Level Quantifications for Hydrochloric acid</b> |                                      |                                      |
|--|--------------------------------------|--------------------------------------|
| <b>Form of Involvement</b>   | <b>2012 Amount of Substance (kg)</b> | <b>2013 Amount of Substance (kg)</b> |
| Enters the facility (use):   | 17,974.8 kg                          | 15,434.4 kg                          |
| Created at the facility:   | 0 kg                                 | 0 kg                                 |
| Released (air) from the facility:  | 277 kg                               | 243 kg                               |
| Released (land) from the facility:   | 0 kg                                 | 0 kg                                 |
| Released (water) from the facility:  | 0 kg                                 | 0 kg                                 |
| Disposed (on site) by the facility:  | 0 kg                                 | 0 kg                                 |
| Disposed (off site) by the facility:   | 0 kg                                 | 0 kg                                 |
| Transferred (for recycling) from the facility:                                 | 0 kg                                 | 0 kg                                 |
| Contained in product that leaves the facility:                                 | 0 kg                                 | 0 kg                                 |
| Destroyed by process(es) at the facility                                       | 17,697.8 kg                          | 15,191.4 kg                          |

**COMPARISON OF THE RESULTS PRESENTED IN TABLE 4**

The general change in annual production levels from 2012 to 2013 accounts for the variance in the quantities used, released to air, and destroyed by processes at the facility.

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**REDUCTION OBJECTIVES**

TI Automotive does not intend to reduce the amount of hydrochloric acid used at this facility. The technical and economical feasibility analyses for potential toxics reduction options for hydrochloric acid usage at TI Automotive resulted in the identification of zero potentially-feasible options at the time of preparing the TSRP. TI Automotive is, however, committed to ensuring hydrochloric acid is used in the most responsible and efficient manner. No amendments were made to the current toxic substance reduction plan for hydrochloric acid in 2013.

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**Nickel**

**FACILITY-WIDE ACCOUNTING INFORMATION**

Facility-level quantification data for Nickel, determined as a result of the toxics substance accounting performed at TI Automotive for the years 2012 and 2013, is outlined in Table 5.

| <b>Table 5: Summary - Facility Level Quantifications for Nickel</b> |                                      |                                      |
|---|--------------------------------------|--------------------------------------|
| <b>Form of Involvement</b>  | <b>2012 Amount of Substance (kg)</b> | <b>2013 Amount of Substance (kg)</b> |
| Enters the facility (use):  | 14,399 kg                            | 30,853 kg                            |
| Created at the facility:  | 0 kg                                 | 0 kg                                 |
| Released (air) from the facility:                                   | 154.0 kg                             | 350.0 kg                             |
| Released (land) from the facility:                                  | 0 kg                                 | 0 kg                                 |
| Released (water) from the facility:                                 | 0 kg                                 | 0 kg                                 |
| Disposed of (on-site) by the facility:                              | 0 kg                                 | 0 kg                                 |
| Disposed of (off-site) by the facility:                             | Wastewater: 4.0 kg                   | Wastewater: 7.0 kg                   |
| Transferred (for recycling) from the facility:                      | 2,150.0 kg                           | 2,000.0 kg                           |
| Contained in product that leaves the facility:                      | 12,092.0 kg                          | 28,497.0 kg                          |

**COMPARISON OF THE RESULTS PRESENTED IN TABLE 5**

Dragun was not provided 2013 data regarding steel tube production per process; since the amount of materials containing nickel carried over from 2012, what remained in storage for use in 2014, and the quantities of imported tube for the plating process were all unknown to Dragun at the time of writing this progress report, Dragun assumes that the total steel tube processed is equal to the total steel purchased in 2013. The general change in annual production levels from 2012 to 2013 accounts for the variance in quantities of nickel used and contained in final product. The nickel masses released to air, disposed with wastewater, and transferred for recycling were within the expected range of variance for 2012 and 2013.



Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**REDUCTION OBJECTIVES**

TI Automotive does not intend to reduce the amount of nickel at this facility. The technical and economical feasibility analyses for potential toxics reduction options for nickel usage at TI Automotive resulted in the identification of zero potentially-feasible options at the time of preparing the TSRP. TI Automotive is, however, committed to ensuring nickel is used in the most responsible and efficient manner. No amendments were made to the current toxic substance reduction plan for nickel in 2013.

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**Sulphuric Acid**

**FACILITY-WIDE ACCOUNTING INFORMATION**

Facility-level quantification data for sulphuric acid, determined as a result of the toxics substance accounting performed at TI Automotive for the years 2012 and 2013, is outlined in Table 6.

| <b>Table 6: Summary - Facility Level Quantifications for Sulphuric acid</b> |                                      |                                      |
|---|--------------------------------------|--------------------------------------|
| <b>Form of Involvement</b>  | <b>2012 Amount of Substance (kg)</b> | <b>2013 Amount of Substance (kg)</b> |
| Enters the facility (use):  | U: 56,977.4 kg                       | U: 52,560.8 kg                       |
| Created at the facility:  | 0 kg                                 | 0 kg                                 |
| Released (air) from the facility:   | 1,024 kg                             | 899 kg                               |
| Released (land) from the facility:  | 0 kg                                 | 0 kg                                 |
| Released (water) from the facility:   | 0 kg                                 | 0 kg                                 |
| Disposed of (on-site) by the facility:                                      | 0 kg                                 | 0 kg                                 |
| Disposed of (off-site) by the facility:                                     | 0 kg                                 | 0 kg                                 |
| Transferred (for recycling) from the facility:                              | 0 kg                                 | 0 kg                                 |
| Contained in product that leaves the facility:                              | 0 kg                                 | 0 kg                                 |
| Destroyed by process(es) at the facility                                    | 55,953.4 kg                          | 51,661.8 kg                          |

**COMPARISON OF THE RESULTS PRESENTED IN TABLE 6**

The general change in annual production levels from 2012 to 2013 accounts for the variance in the quantities used, released to air, and destroyed by processes at the facility.

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**REDUCTION OBJECTIVES**

TI Automotive does not intend to reduce the amount of sulphuric acid used at this facility. The technical and economical feasibility analyses for potential toxics reduction options for sulphuric acid usage at TI Automotive resulted in the identification of zero potentially-feasible options at the time of preparing the TSRP. TI Automotive is, however, committed to ensuring sulphuric acid is used in the most responsible and efficient manner. No amendments were made to the current toxic substance reduction plan for sulphuric acid in 2013.



Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**Zinc**

**FACILITY-WIDE ACCOUNTING INFORMATION**

Facility-level quantification data, determined as a result of the toxics substance accounting performed at TI Automotive for the years 2012 and 2013, is outlined in Table 7.

| <b>Table 7: Summary - Facility Level Quantifications for Zinc</b> |  |  |
|---|--|--|
| <b>Form of Involvement</b>  | <b>2012 Amount of Substance (kg)</b>       | <b>2013 Amount of Substance (kg)</b>       |
| Enters the facility (use):  | U: 103,015 kg                              | U: 103,015 kg                              |
| Created at the facility:  | 0 kg                                       | 0 kg                                       |
| Released (air) from the facility:                                 | 0 kg                                       | 0 kg                                       |
| Released (land) from the facility:                                | 0 kg                                       | 0 kg                                       |
| Released (water) from the facility:                               | 0 kg                                       | 0 kg                                       |
| Disposed of (on-site) by the facility:                            | 0 kg                                       | 0 kg                                       |
| Disposed of (off-site) by the facility:                           | MHC: 20,983.0 kg ,<br>Wastewater: 189.0 kg | MHC: 18,511.0 kg ,<br>Wastewater: 191.0 kg |
| Transferred (for recycling) from the facility:                    | Zn Stubs: 5,922 kg<br>Scrap: 5,901.0 kg    | Zn Stubs: 4,561 kg<br>Scrap: 3,117.0 kg    |
| Contained in product that leaves the facility:                    | P: 70,020.0 kg                             | P: 76,635.0 kg                             |

**COMPARISON OF THE RESULTS PRESENTED IN TABLE 7**

The zinc masses entering the facility, disposed as metal hydroxide cake (MHC) and with wastewater, transferred for recycling, and contained in product were within the expected range of variance for 2012 and 2013.

Toxics Substance Reduction Plan Summary – Chemicals (Inclusive 2012 & 2013 Progress Reports)

**REDUCTION OBJECTIVES**

TI Automotive does not intend to reduce the amount of zinc at this facility. The technical and economical feasibility analyses for potential toxics reduction options for zinc usage at TI Automotive resulted in the identification of zero potentially-feasible options at the time of preparing the TSRP. TI Automotive is, however, committed to ensuring zinc is used in the most responsible and efficient manner. No amendments were made to the current toxic substance reduction plan for sulphuric acid in 2013.

**CONFIRMATION BY HIGHEST RANKING EMPLOYEE**

In August 2012, we at TI Automotive experienced a significant turnover in personnel, including the engineering manager responsible for our compliance efforts to meet the deadlines set out in the Toxics Reduction Act and Ontario Regulation 455/09. TI Automotive has since replaced the engineering manager; however, he required time to become familiar with our facility's operations and, as a result, our environmental compliance efforts in this matter were stalled. As of June 1, 2015, I, Derek McDonald, confirm that I have read the reports on the toxic substance reduction plans for the toxic substances referred to below and am familiar with their contents, and, to my knowledge the information contained in the reports comply with the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.

Copper, Hexavalent Chromium, Hydrochloric Acid, Nickel, Sulphuric Acid, and Zinc.



Derek McDonald  
*Plant Manager*  
TI Automotive Canada Inc.