



October 1, 2009

DSL Surveys Coordinator
Chemical Management Plan
Gatineau QC K1A 0H3

RE: Chemical Management Plan, Batch 10 Substances

I. Introduction

IPC – Association Connecting Electronics Industries® appreciates the opportunity to comment on Canada’s proposed elimination of Resin acids and Rosin acids, hydrogenated, esters with pentaerythritol (CAS# 64365-17-9); Rosin, hydrogenated (CAS# 65997-06-0); Resin acids and Rosin acids, hydrogenated, esters with glycerol (CAS# 65997-13-9); Resin acids and Rosin acids, hydrogenated, esters with triethylene glycol (CAS # 68648-53-3); and Resin acids and Rosin acids, fumarated, barium salts (CAS# 124751-15-1) under the Chemicals Management Program. IPC is concerned with all five aforementioned substances and therefore will refer to all substances collectively as Rosin throughout the following comments. IPC is gravely concerned with the Canadian Government’s recommendation to ban these five substances from any products manufactured or sold in Canada. In addition to IPC’s one hundred and twenty-three member companies manufacturing electronics in Canada, many of our members import a variety of electronic products into Canada. This ban would impact **all electronic products as well as any product which includes electronics and would make it difficult for electronics manufacturing to continue in Canada.**

Rosin is a key ingredient in soldering materials used in the manufacture of over seventy-five percent of electronics products, including sophisticated defense systems and telecommunication and transportation technologies. In the electronics industry, Rosin is used in liquid soldering fluxes, both in the flux medium of solder paste and in the flux core of solder wire, in which it provides the chemical and electrical properties needed for the efficient and reliable assembly of most electronic products. There are no suitable alternatives for Rosin and a ban would negatively affect the reliability and functionality of all electronic products manufactured or sold in Canada.

If the Canadian Government bans the use of Rosin, Canadian companies and consumers will be severely affected. To underscore the importance of the Canadian electronics industry, a September, 7, 2009, article in the Toronto Globe: *“Research in Motion’s rapidly expanding family of smart phones, for instance, is the fruit of billions of dollars in research spending in Canada over many years. In fact, according to Canadian Manufacturers & Exporters,*

manufacturers account for three-quarters of all business expenditures on R&D in Canada. A 2006 Organization for Economic Co-operation and Development study places the figure somewhat lower - at about 60 per cent. But either way, manufacturing provides more high-paying jobs for scientists, engineers and industrial designers than any other sector of the Canadian economy.”

Many electronics manufacturers will stop producing and importing products into Canada because of the proposed substance restriction. Electronic products manufactured for sale in Canada will not contain rosin and therefore will have decreased reliability and increased cost to the consumer because electronics manufacturers would have to produce products specifically for Canada. Electronics manufacturers will likely move to countries that do not ban the use of Rosin, resulting in Canadian job losses.

IPC urges the Canadian government to remove Rosin from the proposed list of banned substances under the Chemicals Management Plan.

II. About the IPC

IPC, a global trade association, represents all facets of the electronic interconnection industry, including design, printed board manufacturing and electronics assembly. Printed boards and electronic assemblies are used in a variety of electronic devices that include computers, cell phones, pacemakers, and sophisticated missile defense systems. As a member-driven organization and leading source for industry standards, training, market research and public policy advocacy, IPC supports programs to meet the needs of an estimated \$1.7 trillion global electronics industry.

III. Rosin Is a Key Ingredient to All Electronic Products

Rosin is a key constituent of the soldering materials used in the manufacture of virtually all electronics products. It is a main ingredient in soldering flux, solder paste, flux-cored solder wire and some semiconductor packaging. The unique characteristics of Rosin make the chemical an essential, irreplaceable ingredient in these materials. Rosin is vital to the reliability and functionality of electronics products worldwide.

Solder flux is used during the soldering process to chemically reduce or remove metal oxides from surfaces so that a soldered metal-to-metal connection can be established. The flux facilitates the creation of an electrical and mechanical connection between the printed board and small components and integrated circuits. Without the physical connection that solder provides between the printed board and components, all electronics from Blackberries to aircrafts would literally fall apart.

In addition, Rosins are excellent insulators. They help protect electronic products in elevated humid environments and decrease or eliminate product corrosion and short circuits. Rosins enable electronic products to operate properly in environments with elevated humidity without the product corroding or short-circuiting due to disrupted conductive paths. The electrical reliability of the product in the long term would be compromised if Rosins were banned. After

soldering, Rosin forms an inert encapsulant for active flux constituents and prevents them from degrading the electrical reliability of the assembly. Without a reliable electrical connection, a pilot would not be able to navigate their aircraft, an astronaut in space would not be able to communicate with the base and a college student would not be able to keep in contact with their parents.

Rosin also functions well in high temperature electronic assembly applications because of its thermal stability. Higher temperature stability, when used in soldering fluxes and solder paste, makes the solder more resistant to oxidation during reflow and other solder assembly processes.

Excess oxide formation during reflow and other solder joining processes can result in poor solder joint formation which can result in failure of the solder joints months or years later while the electronic product is still in use. Anti-oxidation properties are vital to the reliability and functionality of all electronic products. Elimination of a proven assembly material like Rosin would alter the solder process and its primary function, the formation of reliable electronic interconnections, would be difficult if not impossible to achieve.

Rosin is also unique in its ability to act as a carrier for other materials that contribute to flux performance either by itself or in solvent solutions. The carrier properties of Rosin as part of solvent systems are vital for the formation of reliable electrical interconnections in reflow, wave and hand soldering processes.

If Rosin were to be removed from the soldering flux, solder paste and cored wire solder, quality and thus electrical reliability of all electronic products will be negatively affected. The performance of an electronic product is only as good as the solder joint and the solder joint is only as good as the performance of its flux to which Rosins make a critical contribution.

IV. No Suitable Alternatives for Rosin Exist

Rosin is a naturally occurring material sourced most commonly derived from pine trees and its active constituent is abietic acid. Due to the unique characteristics of rosin there are no “drop-in” substitutes. In other words, there is no other chemical or combination of chemicals known that can provide the same functionality and reliability as Rosin.

Banning rosin will force a change in the composition of soldering flux and solder paste that will ultimately affect the reliability of the final electronic product. Since Rosins are naturally occurring chemicals, there is a strong incentive for flux manufacturers to develop viable alternative materials that are more consistent in their properties. However, satisfactory alternatives have not been found and rosins are still an essential ingredient of almost all electronics grade fluxes. Rosins have unique characteristics that cannot be replicated.

If the Canadian Government bans the use of Rosin there is no other chemical that can replace it. Before banning a substance that is so critical to the quality of such a large number of products, the Canadian government must identify a suitable alternative.

V. Environmental Concerns Associated with Rosin are Insignificant

The U.S. Environmental Protection Agency (EPA), as part of the Chemicals Assessment and Management Program (ChAMP), conducted a risk prioritization assessment¹ of multiple substances including three of the five identified in these comments: Resin acids and Rosin acids, hydrogenated, esters with pentaerythritol (CAS# 64365-17-9); Rosin, hydrogenated (CAS# 65997-06-0); and Resin acids and Rosin acids, hydrogenated, esters with glycerol (CAS# 65997-13-9). The EPA concluded that the chemicals do not pose a hazard to the environment or human health and therefore no further action needs to be taken to restrict their use. These substances were also found to have low developmental, reproductive and systemic toxicity. Additionally, these substances were found to have low potential for bioaccumulation and present a low concern for potential risks through environmental releases.

VI. Conclusion

IPC strongly urges the Canadian Government to remove all Rosins from the list of proposed substances to be banned under the Chemicals Management Program. Rosins are an essential part of all electronic products and a ban would have significant damaging affects to the entire electronics supply chain. Rosins provide soldering flux and solder paste with the necessary qualities to make a reliable, safe, long-lasting product.

Rosins have unique characteristics that have not been able to be replicated. If the Canadian Government were to ban Rosins without having any viable alternatives, the quality and reliability of electronics products in *Canada* will decrease and the safety of the general public will be in question.

The IPC advises the Canadian Government to remove Rosin from the proposed list of banned substances.

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Cc: Susan Pecman, Environment Canada Chemical Management Plan Working Group

¹ U.S Environmental Protection Agency's Chemical Assessment and Management Program (ChAMP) High Production Volume Information System (HPVIS) Risk Prioritization
<http://www.epa.gov/http://www.epa.gov/champ/pubs/hpv/abouthpv.html#rbpv/hpvis/>