Proposed Amendments to the *Volatile Organic Compound (VOC) Concentration Limits for Architectural Coatings Regulations*

Consultation Paper

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1. Introduction

The *Volatile Organic Compound (VOC) Concentration Limits for Architectural Coatings Regulations* were published in 2009 in response to the Government of Canada's commitment to improve air quality for Canadians.[1] In 2019, Environment and Climate Change Canada (ECCC or the department) conducted an internal review of the regulations to ensure that they continue to be appropriate and effective. In July 2022, the Government of Canada published a renewed *Federal Agenda on the Reduction of Emissions of Volatile Organic Compounds (VOC) from Consumer and Commercial Products*. The actions identified in this new agenda, to be implemented over the 2022 to 2030 period, aim to further reduce VOC emissions from various consumer and commercial products, including architectural coatings. Specifically, for architectural coatings, the Government of Canada is proposing to amend the current requirements to achieve additional VOC reductions and clarify certain existing regulatory provisions.

The Government is committed to ensuring that regulatory development activities include a process of meaningful and effective consultation with stakeholders. Consequently, stakeholders are invited to contribute to this consultation process by providing input on the proposed amendments to the regulations, in advance of publication in the *Canada Gazette*, Part I. Stakeholders are also invited to contribute to the regulatory review process by providing input to improve the effectiveness of the regulations in achieving their environmental objectives while minimizing regulatory burden.

This consultation also represents an opportunity for the Government to obtain information on the costs and benefits of the proposed amendments of the regulations to Canadians and to Canadian industry. The information collected will be compiled and shared with stakeholders and the public as part of the Regulatory Impact Analysis Statement that will accompany the publication of the proposed and final amended regulations.

Stakeholders are asked to provide written comments on this consultation document before January 13, 2023. Section 8 provides details on the submission of comments.

2. Rationale for amending the regulations

The Government is proposing to amend the regulations to achieve the objectives discussed below.

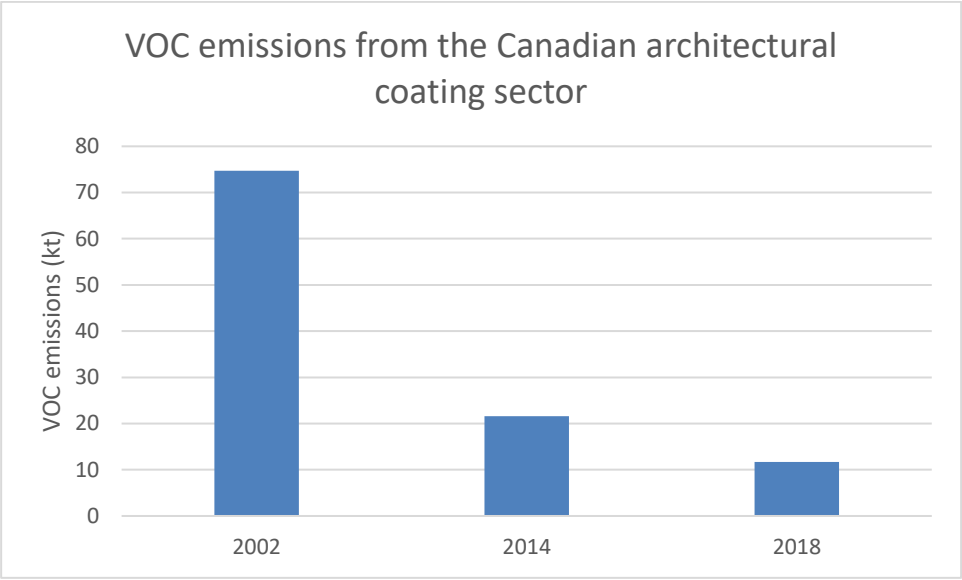
2.1 Achieving additional VOC reductions

Various surveys, carried out before and after the implementation of the regulations, have shown that they were successful in reducing VOC emissions from the Canadian architectural coating sector. Survey data show

[1] A description of the regulations can be found in Appendix A.

(in Figure 1) that, in 2002[2], 74.7 kilotonnes (kt) of VOC emissions were emitted in Canada from the sector. Emissions decreased to 22.6 kt in 2014[3] and 11.7 kt in 2018[4]. The volume of coatings produced varied over the years, but those of 2002 and 2018 are comparable at respectively 293 and 283 million litres.

Figure 1: VOC emissions from the Canadian architectural coating sector



Although significant reductions in VOC emissions have been achieved by the sector since the implementation of the regulations, and despite significant improvements in air quality over the past 20 years, the burden of air pollution on the health of Canadians continues to be significant.

Health Canada estimates that air pollution from industry, transportation and other human activities results in more than 15,300 premature deaths every year in Canada[5]. Both fine particulate matter ($PM_{2.5}$) and ozone (O_3), for which VOCs are precursors, affect health at all concentration levels, even in areas of the country with very good air quality.[6] Additional information on VOC emissions, and the measures put in place by the Government of Canada to reduce these emissions from consumer and commercial products can be found in Appendix B.

Given the continued contribution of VOC emissions from architectural coatings to air pollution, the impact of air pollution on the environment and human health, Canada's national and international commitments,

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[2] Quorus Consulting Group Inc., Volatile Organic Compounds (VOC) Concentration Limits for Architectural Coatings Regulations Performance Measurement, prepared for ECCC, April 30, 2015.

[3] Ibid.

[4] Cheminfo Services, Potential Additional Emission Reductions from the Volatile Organic Compound (VOC) Concentration Limits for Architectural Coatings Regulations: Final report, prepared for ECCC, February 6, 2020.

[5] Health Impacts of Air Pollution in Canada 2021 Report - Canada.ca

[6] En88-5-2011-eng.pdf (publications.gc.ca)

and the fact that paints and coatings are used more in higher population centres, where air quality is more of a challenge, additional actions are required to reduce these emissions.

The proposed amendments to further reduce VOC emissions are presented in section 3.

2.2 Improving existing regulatory provisions

In 2019, the Government of Canada conducted an internal review of the regulations[7]. The review's goal was to ensure that they continue to be appropriate, effective, and achieve their intended policy objectives. The review identified areas of the regulations needing clarification and proposed the following modifications:

- revise some definitions and provisions to help stakeholders interpret the regulations and ascertain compliance
- add record keeping requirements for users of traffic marking coatings to facilitate the enforcement of the regulations
- revise the permit renewal provisions to ease the administration of permits
- expand the permit provisions to users of traffic markings in case of force majeure events.

The amendments proposed to clarify the provisions of the regulations are presented in section 4.

3. ACHIEVING ADDITIONAL VOC REDUCTIONS

When the regulations were being developed between 2005 and 2009, the VOC content requirements were chosen to align with those found in the United States (U.S.) Ozone Transport Commission (OTC) *Model Rule 2001- Architectural & Industrial Maintenance (AIM) Coatings Phase I*. This OTC model rule was updated in 2011 (*Phase* II) and includes requirements that are more stringent than what is found in the current Canadian regulations. Other relevant instruments in the U.S. include the California Air Resources Board (CARB) Suggested Control Measures (SCM) for architectural coatings, which were last updated in 2020. The 2020 SCM, which is more stringent than the current Canadian regulations and OTC model rule, is a model rule developed by CARB that local air districts can use to develop their own rules. Additional background information on U.S. measures to limit VOC emissions from architectural coatings can be found in Appendix C.

The proposed approach to achieving additional reductions in VOC emissions is to align Canada's VOC concentration limits with those found in leading North American jurisdictions. This ensures regulatory

[7] This review stems from the 2018 *Treasury Board Secretariat Cabinet Directive on Regulation*, which lays out the rules and requirements for developing and implementing regulations. More information can be found here: Regulatory stock review plan 2019 to 2029: Environment and Climate Change Canada - Canada.ca

requirement consistency in the highly integrated North American market and enables Canada to benefit from the long U.S. experience in implementing regulatory limits on the VOC content of architectural coatings.

Available information suggests that opportunities exist for Canada to achieve further reductions in VOCs. To identify these opportunities, the department contracted a technical study entitled *Potential Additional Emission Reductions from the Volatile Organic Compound (VOC) Concentration Limits for Architectural Coatings Regulations (Cheminfo, 2020)*[8]. The study, which was finalised in 2020, included a survey of products sold on the Canadian market in 2018. The survey results, extrapolated to reflect the entire Canadian market, estimate that reductions in the range of 4.4 to 7 kt per year could be achieved by aligning Canada's VOC concentration limits with those found in leading North American jurisdictions. The survey results also show that products complying with current OTC and CARB limits are available, which is an indication that these reductions are possible.

To reduce VOC emissions from architectural coatings, the following changes are proposed:

- increase the stringency of concentration limits found in the schedule to the regulations
- align the categories that are found in the schedule to the regulations with those found in the OTC or CARB model rules
- introduce new categories of products in the schedule to the regulations
- revise the small container (1 litre or less) exemption provisions.

It is important to note that:

- categories already aligning with the VOC concentration limits of CARB and OTC model rules will remain unchanged and are therefore not included in the discussion below[9]
- at this time, it is not proposed to revisit the VOC concentration limit for traffic marking coatings
- although proposed changes to the architectural coating categories could have an impact on the regulatory definitions, they are not addressed in this consultation document, but will be included in the proposed regulations when they are published in the *Canada Gazette*, Part I, for further consultations on these amendments
- the "most-restrictive-limit" provisions included in section 8 of the regulations will be revisited once categories are established
- stakeholders are nevertheless invited to provide comments on definitions and on the "most-restrictive-limit" provisions during this consultation period.

The goal of this consultation document is to provide a high level overview of the changes the Government of Canada is proposing to make to the regulations in order for stakeholders to react to the proposed

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[8] Cheminfo Services, Potential Additional Emission Reductions from the Volatile Organic Compound (VOC) Concentration Limits for Architectural Coatings Regulations: Final report, prepared for ECCC, February 6, 2020.

[9] These are categories #3 metallic pigmented coating, #4 bituminous roof primer, #8 bond breaker, #9 concrete curing compound, #14 faux finish, #21 graphic arts coating, #23 any other high-temperature coating, # 26 shellac, clear, #27 shellac, opaque, #34 low solids coating, #36 multi-coloured coating, #38 pre-treatment wash primer, #46 interior wiping stain, and #49 swimming pool coating.

changes, and to provide information and comments that will enable the Government to shape the amendments. The proposed regulatory text and concentration limits will be developed following this preliminary consultation period, and will be published in the *Canada Gazette*, Part I for comments.

3.1 Proposed increase in the stringency of the VOC concentration limits

It is proposed to align VOC concentration limits of existing coating categories with limits found in the CARB 2020 SCM where the results of the 2018 survey of products sold on the Canadian market show that some products already comply with these limits. The proposed VOC limits are therefore considered to be technically and commercially feasible. In instances where this is not the case, it is proposed to align VOC limits with those found in the OTC AIM Coatings Phase II Model Rule. The department has heard concerns from stakeholders regarding the efficacy of lower VOC products in cold or severe weather applications. The department has considered these concerns when selecting the proposed concentration limits (e.g. for roof coatings). However, if some of the selected limits do not seem feasible when considering the Canadian climatic conditions, stakeholders are invited to provide data and information, specific to each categories of concern, on the feasibility of the proposed VOC limits.

The changes proposed are listed in table 1.

Table 1: proposed changes to the VOC concentration limits found in the schedule to the regulations

Cat. #	Category description	Current limit (g/L)	OTC AIM Coatings Phase II Model Rule limit (g/L)	CARB 2020 SCM limit (g/L)	Proposed limit (g/L)	Results of the 2018 survey of products sold on the Canadian market[10]		Considerations
						Weighted average VOC content (g/L)	% of products meeting proposed limit	
5	Any other bituminous roof coating	300	270	50	**270**	200 - 300	93	• Propose to align with OTC limit for this category as a very limited number of products from the survey have a VOC content below 50 g/L
6	Non-bituminous roof coating, for application to roofs to prevent penetration of the substrate by water or to reflect heat and ultraviolet radiation	250	250	50	**50**	104	65	
11	Form release compound, for application to concrete formwork	250	250	100	**100**	No product reported		• Numerous products offered on the Canadian market meet the proposed limit

[10] Ranges have been used where needed to protect confidential data.

Cat. #	Category description	Current limit (g/L)	OTC AIM Coatings Phase II Model Rule limit (g/L)	CARB 2020 SCM limit (g/L)	Proposed limit (g/L)	Results of the 2018 survey of products sold on the Canadian market[10]		Considerations
						Weighted average VOC content (g/L)	% of products meeting proposed limit	
12	Dry fog coating, for spray application such that overspray droplets dry before subsequent contact with surfaces in the vicinity of the coating activity	400	150	50	**50**	< 100	41	
15	Fire resistant coating, opaque, for protecting the structural integrity by increasing the fire endurance of interior or exterior steel and other structural materials	350	350	150	**150**	< 100	100	
18	Floor enamel, a high-gloss opaque floor coating for application to surfaces that may be subject to foot traffic	250	N/A	N/A	**100**	100 - 200	57	• This category does not exist in the OTC AIM Coatings Phase II Model Rule and the CARB 2020 SCM • These products are subject to the Floor coatings VOC limit of 100 g/L in the OTC AIM Coatings Phase II Model Rule and 50 g/L in the CARB 2020 SCM

Cat. #	Category description	Current limit (g/L)	OTC AIM Coatings Phase II Model Rule limit (g/L)	CARB 2020 SCM limit (g/L)	Proposed limit (g/L)	Results of the 2018 survey of products sold on the Canadian market[10]		Considerations
						Weighted average VOC content (g/L)	% of products meeting proposed limit	
								• A very limited number of products reported in the survey have a VOC content below 50 g/L • It is proposed to keep the category and reduce the limit to 100 g/L • Stakeholders indicated their preference for a 100 g/L limit for these products given performance concerns associated with a 50 g/L limit
19	Any other opaque floor coating for application to surfaces that may be subject to foot traffic	250	100	50	**50**	90	35	
25	Any other industrial maintenance coating	340	250	250	**250**	199	66	• The CARB and OTC limits are the same

Cat. #	Category description	Current limit (g/L)	OTC AIM Coatings Phase II Model Rule limit (g/L)	CARB 2020 SCM limit (g/L)	Proposed limit (g/L)	Results of the 2018 survey of products sold on the Canadian market[10]		Considerations
						Weighted average VOC content (g/L)	% of products meeting proposed limit	
31	Conversion varnish, clear acid curing coating with an alkyd or other resin blended with amino resins and supplied as a single component or two component product, for application to wood flooring	725	725	N/A	**500**	506	50	• This category does not exist in the CARB 2020 SCM • These products are subject to the Wood coatings VOC limit of 275 g/L in the CARB 2020 SCM • A very limited number of products reported in the survey have a VOC content below 275 g/L • It is proposed to keep the category and reduce the limit to 500 g/L
32	Conjugated oil varnish for sealing wood with a film formation due to the polymerization of naturally occurring conjugated vegetable	450	450	N/A	**350**	400 - 500	31	• This category does not exist in the CARB 2020 SCM • These products are subject to the Wood

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						Weighted average VOC content (g/L)	% of products meeting proposed limit	
	oil, modified with other natural or synthetic resins of which a minimum of 50% of the resin solids consist of conjugated oils, and that is supplied as a single component product, excluding shellacs							coatings VOC limit of 275 g/L in the CARB 2020 SCM • No products reported in the survey have a VOC content below 275 g/L
35	Mastic texture coating, to be applied in a single coat of at least 0.254 mm dry film thickness to cover holes and minor cracks and to conceal surface irregularities	300	100	100	**100**	300 - 400	75	• The CARB and OTC limits are the same
39	Specialty primer, sealer or undercoater, a coating to be applied to a substrate to: (a) seal fire, smoke or water damage; (b) condition a surface having a chalk rating of 4 or less as determined in accordance with the test method referred to in section 14 of these Regulations;	350	100	100	**100**	229	15	• The CARB and OTC limits are the same • The OTC and CARB definitions limit the scope of this category to coatings applied to block water-soluble stains resulting from: fire damage, smoke

Cat. #	Category description	Current limit (g/L)	OTC AIM Coatings Phase II Model Rule limit (g/L)	CARB 2020 SCM limit (g/L)	Proposed limit (g/L)	Results of the 2018 survey of products sold on the Canadian market[10]		Considerations
						Weighted average VOC content (g/L)	% of products meeting proposed limit	
	or (c) block stains.							damage, or water damage • The department could propose changes to the definition of this category to align with these definitions • Stakeholders indicated that a VOC limit of 100 g/L would have a serious impact on how Canadian formulators will make these products equivalent in performance • Stakeholders are invited to provide data to support these claims

Cat. #	Category description	Current limit (g/L)	OTC AIM Coatings Phase II Model Rule limit (g/L)	CARB 2020 SCM limit (g/L)	Proposed limit (g/L)	Results of the 2018 survey of products sold on the Canadian market[10]		Considerations
						Weighted average VOC content (g/L)	% of products meeting proposed limit	
42	Any other primer, sealer or undercoater	200	100	100	**100**	59	89	• The CARB and OTC limits are the same
44	Recycled coating, the total weight of which consists of not less than 50% of secondary and post-consumer coating and not less than 10% of the total weight consisting of postconsumer coating. A secondary coating is a finished coating originating from a manufacturing process.	350	250	250	**250**	< 100	100	• The CARB and OTC limits are the same
45	Rust preventive coating, exclusively for non-industrial use and does not include those for use in the construction or maintenance of: (a) facilities used in the manufacturing of goods; (b) transportation infrastructure, including highways, bridges, airports and railroads;	400	250	250	**250**	382	8	• The OTC and CARB definitions for rust preventive coatings are not limited to non-industrial use • The department could propose changes to the definition of this category to align with these definitions

Cat. #	Category description	Current limit (g/L)	OTC AIM Coatings Phase II Model Rule limit (g/L)	CARB 2020 SCM limit (g/L)	Proposed limit (g/L)	Results of the 2018 survey of products sold on the Canadian market[10]		Considerations
						Weighted average VOC content (g/L)	% of products meeting proposed limit	
	(c) facilities used in mining activities and petroleum extraction; or (d) utilities infrastructure, including power generation and distribution and water treatment and distribution systems.							• CARB and OTC limits are the same • Stakeholders indicated that rust preventive coatings with higher-VOC content protect substrates better and require less surface preparation than lower-VOC products • Stakeholders are invited to provide data to support these claims
47	Exterior wood stain, clear or semitransparent	250	250	100	**100**	158	48	• The OTC and CARB definitions for stains are not limited to wood substrates • The department could propose changes to the

Cat. #	Category description	Current limit (g/L)	OTC AIM Coatings Phase II Model Rule limit (g/L)	CARB 2020 SCM limit (g/L)	Proposed limit (g/L)	Results of the 2018 survey of products sold on the Canadian market[10]		Considerations
						Weighted average VOC content (g/L)	% of products meeting proposed limit	
								definition of this category to align with these definitions • Stakeholders indicated that additional research and testing are needed to develop exterior stains that could meet the 100 g/l limit and perform well in Canada • Stakeholders are invited to provide data to support these claims
51	Any flat coating, other than one set out in items 1 to 50, that registers a gloss of less than 15 on an 85° meter or less than 5 on a 60° meter	100	50	50	**50**	34	74	• The CARB and OTC limits are the same
52	Any non-flat coating, other than one set out in items 1 to 50,	150	100	50	**50**	41	66	

Cat. #	Category description	Current limit (g/L)	OTC AIM Coatings Phase II Model Rule limit (g/L)	CARB 2020 SCM limit (g/L)	Proposed limit (g/L)	Results of the 2018 survey of products sold on the Canadian market[10]		Considerations
						Weighted average VOC content (g/L)	% of products meeting proposed limit	
	that registers a gloss of 15 or greater on an 85° meter and 5 or greater and less than 70 on a 60° meter							

3.2 Proposed alignment of the categories with those found in the CARB 2020 SCM

When the regulations were developed, the coating categories were chosen to align with those found in the OTC *Model AIM Coatings Phase I*. Since then, CARB and OTC have streamlined the number of coating categories in their rules. Currently, the Canadian regulations have VOC limits for 15 categories that are no longer included in OTC and CARB's model rules. Another eight categories of products found in the regulations are not included in the CARB 2020 SCM. In the objective of simplifying the regulations, and consistent with the department's goal of further aligning with U.S. rules, it is proposed to align the categories with those found in the CARB 2020 SCM (as shown in table 2). Coatings covered by a deleted category would become subject to the VOC concentration limit for the most applicable remaining category. Results of the survey of products sold on the Canadian market in 2018, which show that many products already comply with the limit of the category anticipated to cover these products, were used to validate the feasibility of this proposed change. As such, categories that would have been removed, but for which no products sold on the Canadian market in 2018 met the CARB concentration requirements, were retained. These categories are #2 thermoplastic rubber coating and mastic, #7 calcimine recoater, #18 floor enamel, #31 conversion varnish and #32 conjugated oil varnish. The last three categories of this list are discussed in table 1 since it is proposed to lower their respective VOC limit.

It is important to note that some coatings from deleted categories would now be subject to the proposed new categories presented in section 3.3.

Table 2: categories proposed to be removed from the schedule to the regulations

Cat. #	Category description	Current Canadian limit (g/L)	OTC AIM Coatings Phase II Model Rule limit (g/L)	CARB 2020 SCM limit (g/L)	Results of the 2018 survey of products sold on the Canadian market[11]		Category anticipated to cover these products following the modification[12] and other considerations
					Volume (L)	VOC content: weighted average (g/L)	
1	Antenna coating, including coatings for an antenna's associated structural appurtenances	530	N/A	N/A	0	N/A	• #25 Any other industrial maintenance coating (currently at 340 g/L with a proposed limit of 250 g/L) • #45 Rust preventative (currently at 400 g/L with a proposed limit of 250 g/L)
10	Concrete surface retarder, mixture of retarding ingredients that interact chemically with the cement to prevent hardening on the surface where the retarder is applied, allowing the retarded mix of cement and sand at the surface to be washed away in order to create an exposed aggregate finish	780	780	N/A	0	N/A	• #9 Concrete curing compound (currently at 350 g/L with no change proposed to the limit)

[11] Ranges have been used where needed to protect confidential data.

[12] This is not an exhaustive list and these products could be subject to the VOC limit of other categories.

Cat. #	Category description	Current Canadian limit (g/L)	OTC AIM Coatings Phase II Model Rule limit (g/L)	CARB 2020 SCM limit (g/L)	Results of the 2018 survey of products sold on the Canadian market[11]		Category anticipated to cover these products following the modification[12] and other considerations
					Volume (L)	VOC content: weighted average (g/L)	
13	Extreme high durability coating, an air dry coating, including fluoropolymer-based coatings, for touch-up of precoated architectural aluminium extrusions and panels	800	N/A	N/A	100,000 - 1 M	500 - 600	• #25 Any other industrial maintenance coating (currently at 340 g/L with a proposed limit of 250 g/L)
16	Fire retardant coating, clear	650	N/A	N/A	0	N/A	• #51 Any flat coating (currently at 100 g/L with a proposed limit of 50 g/L) • #52 Any non-flat coating (currently at 150 g/L with a proposed limit of 50 g/L) • #25 Any other industrial maintenance coating (currently at 340 g/L with a proposed limit of 250 g/L)
17	Fire retardant coating, opaque	350	N/A	N/A	40,912	78	• #51 Any flat coating (currently at 100 g/L with a proposed limit of 50 g/L) • #52 Any non-flat coating (currently at 150 g/L with a proposed limit of 50 g/L) • #25 Any other industrial maintenance coating (currently at 340 g/L with a proposed limit of 250 g/L)

Cat. #	Category description	Current Canadian limit (g/L)	OTC AIM Coatings Phase II Model Rule limit (g/L)	CARB 2020 SCM limit (g/L)	Results of the 2018 survey of products sold on the Canadian market[11]		Category anticipated to cover these products following the modification[12] and other considerations
					Volume (L)	VOC content: weighted average (g/L)	
20	Flow coating, for maintaining the protective coating on utility transformer units	650	N/A	N/A	0	N/A	• #25 Any other industrial maintenance coating (currently at 340 g/L with a proposed limit of 250 g/L)
22	Temperature-indicator safety coating, a high temperature coating that changes colour to indicate a change in temperature	550	N/A	N/A	0	N/A	• #23 Any high temperature coating (currently at 420 g/L with no change proposed to the limit) • #25 Any other industrial maintenance coating (currently at 340 g/L with a proposed limit of 250 g/L)
24	Impacted immersion coating, for application to steel structures subject to immersion in turbulent or ice or debris-laden water	780	780	N/A	0	N/A	• #25 Any other industrial maintenance coating (currently at 340 g/L with a proposed limit of 250 g/L)
28	Clear brushing lacquer, a wood coating formulated with cellulosic or synthetic resins to dry by evaporation without a chemical reaction and to provide a solid, protective film, excluding clear lacquer sanding sealers and lacquer stains	680	N/A	N/A	1,266	528	• New category Wood coating (proposed limit of 275 g/L)

Cat. #	Category description	Current Canadian limit (g/L)	OTC AIM Coatings Phase II Model Rule limit (g/L)	CARB 2020 SCM limit (g/L)	Results of the 2018 survey of products sold on the Canadian market[11]		Category anticipated to cover these products following the modification[12] and other considerations
					Volume (L)	VOC content: weighted average (g/L)	
29	Any other lacquer, including lacquer sanding sealers	550	N/A	N/A	10,000 - 100,000	300 - 400	• New category Wood coating (proposed limit of 275 g/L)
30	Any other sanding sealer	350	N/A	N/A	10,000 - 100,000	200 - 300	• New category Wood coating (proposed limit of 275 g/L)
33	Any other varnish	350	N/A	N/A	2.1 M	264	• New category Wood coating (proposed limit of 275 g/L) • Stakeholders indicated that a limit of 275 g/L would result in lesser freeze/thaw capabilities for waterborne products and that alkyd products are normally sold in 1 litre size • Stakeholders are invited to provide data to support these claims
37	Nuclear coating, a protective coating to seal porous surfaces subject to intrusion by radioactive materials and resistant to chemicals and long-term, cumulative radiation	450	450	N/A	0 – 10,000	100 - 200	• #25 Any other industrial maintenance coating (currently at 340 g/L with a proposed limit of 250 g/L)

Cat. #	Category description	Current Canadian limit (g/L)	OTC AIM Coatings Phase II Model Rule limit (g/L)	CARB 2020 SCM limit (g/L)	Results of the 2018 survey of products sold on the Canadian market[11]		Category anticipated to cover these products following the modification[12] and other considerations
					Volume (L)	VOC content: weighted average (g/L)	
	exposure and easy to decontaminate						
40	Waterproofing sealer for concrete or masonry, a clear or pigmented, film-forming coating that provides resistance against water, alkalis, acids, ultraviolet light and staining	400	N/A	N/A	495,528	171	• New category Concrete/masonry sealer (proposed limit of 100 g/L) • New category Basement specialty coating (proposed limit of 400 g/L) • New category Reactive penetrating sealer (proposed limit of 350 g/L) • New category Stone consolidant (proposed limit of 450 g/L) • New category Wood coating (proposed limit of 275 g/L) • New category Waterproofing membrane (proposed limit of 100 g/L) • #25 Any other industrial maintenance coating (currently at 340 g/L with a proposed limit of 250 g/L) • Stakeholders indicated that a limit of 100 g/L would result in lesser freeze/thaw capabilities for sealers and that significant time would be

Cat. #	Category description	Current Canadian limit (g/L)	OTC AIM Coatings Phase II Model Rule limit (g/L)	CARB 2020 SCM limit (g/L)	Results of the 2018 survey of products sold on the Canadian market[11]		Category anticipated to cover these products following the modification[12] and other considerations
					Volume (L)	VOC content: weighted average (g/L)	
							needed for waterbase reformulation and product testing
41	Any other waterproofing sealer	250	N/A	N/A	100,000 – 1 M	< 100	• New category Waterproofing membrane (proposed limit of 100 g/L) • New category Wood coating (proposed limit of 275 g/L)
43	Quick-dry enamel, a high-gloss coating that has the following characteristics: (a) it is able to be applied directly from the container with ambient temperatures between 16 and 27°C; (b) it sets to touch in two hours or less, is tack free in four hours or less, and dries hard in eight hours or less by the test method referred in section 13 of these Regulations; and (c) it has a dried film gloss of 70 or above on a 60° meter.	250	N/A	N/A	0 – 10,000	< 100	• #52 Any non-flat (currently at 150 g/L with a proposed limit of 50 g/L)

Cat. #	Category description	Current Canadian limit (g/L)	OTC AIM Coatings Phase II Model Rule limit (g/L)	CARB 2020 SCM limit (g/L)	Results of the 2018 survey of products sold on the Canadian market[11]		Category anticipated to cover these products following the modification[12] and other considerations
					Volume (L)	VOC content: weighted average (g/L)	
48	Any other stain, including lacquer stains	250	N/A	N/A	4.3 M	113	• #46 Interior stain (currently at 250 g/L with no proposed change to the limit) • #47 Exterior wood stain (currently at 250 g/L with a proposed limit of 100 g/L) • New category Wood coating (proposed limit of 275 g/L) • Stakeholders indicated that resin suppliers would need to reformulate their resin with an exempt solvent. • Stakeholders are invited to provide data to support these claims
53	Any high-gloss coating, other than one set out in items 1 to 50, that registers a gloss of 70 or above on a 60° meter	250	150	N/A	444,554	106	• #52 Any non-flat coating (currently at 150 g/L with a proposed limit of 50 g/L)

3.3 New architectural coating categories and VOC concentration limits

When the regulations were developed, VOC concentration limits were chosen to align with those found in the OTC AIM Coatings Phase I Model Rule. Since then, 12 architectural coating categories were added to the OTC AIM Coatings Phase II Model Rule. Three coating categories (building envelope coatings, stains: interior, tile and stone sealers) were added to the CARB 2019 SCM and photovoltaic coatings were added to the CARB 2020 SCM.

To better represent new products available to the Canadian market, to reflect progress in coating technology, and to further align the categories of the regulations with those found in the OTC and CARB model rules, the department is proposing that VOC concentration limits be set for the categories listed in table 3. The definition of these new categories will be based on what is found in the CARB and/or OTC model rules.

As these are new categories, results of the survey of products sold on the Canadian market in 2018 for these categories were non conclusive.

Table 3: proposed VOC concentration limits for new categories

New category	Category description	OTC AIM Coatings Phase II Model Rule limit (g/L)	CARB 2020 SCM limit (g/L)	Proposed limit (g/L)	Considerations
Aluminum roof coating	Topcoat for asphalt roof systems or metal roofs. These coatings contain aluminum flakes for the reflection of solar radiation. They are used to reduce the surface temperature of the roof and the internal temperature of the structure.	450	100	**100**	• These products are currently covered by the category #3 Metallic pigmented coating, with a limit of 500 g/L (no proposed change)
Basement specialty coating	Coating that provides a waterproofing seal to prevent the intrusion of water into basement areas and help to prevent mold, mildew, and efflorescence.	400	400	**400**	• These products are currently covered by the category #40 Waterproofing sealer for concrete or masonry, with a limit of 400 g/L

New category	Category description	OTC AIM Coatings Phase II Model Rule limit (g/L)	CARB 2020 SCM limit (g/L)	Proposed limit (g/L)	Considerations
	Coating designed to withstand hydrostatic pressures.				(proposed to be eliminated) or by the category #41 Any other waterproofing sealer, with a limit of 250 g/L (proposed to be eliminated) • Products that do not have mold/mildew resistance and cannot withstand at least 10 psi of hydrostatic pressure would be covered by other categories
Building envelope coating	Coating applied to a building envelope to provide a continuous barrier to air or vapor leakage.	N/A	50	**50**	• These products are currently covered by the category #40 Waterproofing sealer for concrete or masonry, with a limit of 400 g/L (proposed to be eliminated) or by the category #41 Any other waterproofing sealer, with a limit of 250 g/L (proposed to be eliminated) • New category in the 2019 CARB SCM
Concrete/ masonry sealer	Coating applied to concrete and masonry surfaces to prevent water penetration or provide resistance to abrasion, stains, some chemicals, ultraviolet light or mildew. Coating can be used to harden or dustproof the surface	100	100	**100**	• These products are currently covered by the category #40 Waterproofing sealer for concrete or masonry, with a limit of 400 g/L (proposed to be eliminated)

New category	Category description	OTC AIM Coatings Phase II Model Rule limit (g/L)	CARB 2020 SCM limit (g/L)	Proposed limit (g/L)	Considerations
	of aged or cured concrete.				
Driveway sealer	Coating applied to worn asphalt driveway surfaces to fill cracks, seal the surface to provide protection, or restore or preserve the appearance.	50	50	**50**	• These products are currently covered by the categories default categories (#51, #52 and #53) • Stakeholders indicated that reformulation would be required to meet the proposed limit. Evaluation with lower levels of ethylene glycol will have to be conducted to evaluate freeze/thaw stability
Magnesite cement coating	Coating applied to magnesite cement decking to protect it from erosion by water.	450	450	**450**	• These products are currently covered by the category #40 Waterproofing sealer for concrete or masonry, with a limit of 400 g/L (proposed to be eliminated)
Photovoltaic coating	Photovoltaic Coatings are applied as a single layer to solar photovoltaic modules already installed.	N/A	600	**600**	• These products are currently covered by the category #34 Low solids coating, with a limit of 120 g/L (no proposed change) • Photovoltaic coatings were added to the CARB 2020 SCM • The VOC limit is expressed as VOC Actual in the CARB model rule. This means the VOC concentration must be determined using the

New category	Category description	OTC AIM Coatings Phase II Model Rule limit (g/L)	CARB 2020 SCM limit (g/L)	Proposed limit (g/L)	Considerations
					formula found in subsection 12(2) of the current regulations. • The proposed limit is less stringent than current limit to allow for increased efficiency of solar modules by 3-4%.
Reactive penetrating sealer	Coating that penetrates and chemically reacts with above-grade concrete and masonry substrates to provide a protective breathable hydrophobic seal that repels water and is resistant to waterborne contaminants such as salts, alkalis and acids.	350	350	**350**	• These products are currently covered by the category #40 Waterproofing sealer for concrete or masonry, with a limit of 400 g/L (proposed to be eliminated) or by the category #41 Any other waterproofing sealer, with a limit of 250 g/L (proposed to be eliminated).
Stone consolidant	Coating that penetrates into stone substrates to consolidate deteriorated material.	450	450	**450**	• These products are currently covered by the category #40 Waterproofing sealer for concrete or masonry, with a limit of 400 g/L (proposed to be eliminated) or the default categories #51, 52 and #53, depending on the gloss level of the product.
Tile and stone sealer	Coating used for sealing tile, stone or grout to provide resistance against water, alkalis,	N/A	100	**100**	• These products are currently covered by the category #40 Waterproofing sealer for concrete or masonry,

New category	Category description	OTC AIM Coatings Phase II Model Rule limit (g/L)	CARB 2020 SCM limit (g/L)	Proposed limit (g/L)	Considerations
	acids, ultraviolet light or staining.				with a limit of 400 g/L (proposed to be eliminated). • New category in the 2019 CARB SCM.
Tub & tile refinish coating	Coating used to refurbish tile and porcelain surfaces. Designed to provide a hard surface that can withstand abrasion and immersion in hot water.	420	420	**420**	• These products are currently covered by the category #25 Any other industrial maintenance coating (currently at 340 g/L with a proposed limit of 250 g/L).
Waterproofing membrane	Coating applied to concrete and masonry surfaces to provide a seamless waterproofing membrane that prevents any penetration of liquid water into the substrate. Coating intended for the following waterproofing applications: below-grade surfaces, between concrete slabs, inside tunnels, inside concrete planters, and under flooring materials.	250	100	**100**	• These products are currently covered by the category #40 Waterproofing sealer for concrete or masonry, with a limit of 400 g/L (proposed to be eliminated) or by the category #41 Any other waterproofing sealer, with a limit of 250 g/L (proposed to be eliminated).
Wood coating	Coating formulated for application to wood substrates only.	275	275	**275**	• These products are currently covered by the following categories (proposed to be eliminated): - #28 Clear brushing lacquer: 680 g/L

New category	Category description	OTC AIM Coatings Phase II Model Rule limit (g/L)	CARB 2020 SCM limit (g/L)	Proposed limit (g/L)	Considerations
					- #29 Any other lacquer, including lacquer sanding sealers: 550 g/L - #30 Any other sanding sealer: 350 g/L - #33 Any other varnish: 350 g/L - #41 Any other waterproofing sealer: 250 g/L - #48 Any other stain, including lacquer stains: 250 g/L
Zinc-rich primer	Coating containing a specified minimal zinc content and is used to protect steel surfaces from corrosion.	340	340	**340**	• These products are currently covered by the category #3 Metallic pigmented coating, with a limit of 500 g/L (no proposed change). • Stakeholders indicated that waterborne zinc-rich primer coatings are incompatible with the climate in Canada and that solvent-borne products can be formulated to meet 340 g/L.

3.4 Changes to the exemption for containers with capacity of one litre or less

Subsection 2 (3) of the regulations provides an exemption from the limits set-out in the schedule for 10 categories of coatings in containers with a capacity of one litre or less ("small container exemption").

Products in these categories are still subject to labelling and record keeping requirements. The intent of this exemption was to provide small, niche coating manufacturers facing the highest one-time costs associated with the transition to low-VOC coatings with the ability to continue to compete in the marketplace.

3.4.1 *Changes to the categories included in the small container exemption*

In the objective of reducing emissions, and considering the increased availability of low-VOC technology since the VOC concentration limits were adopted in 2009, the department proposes to revise the list of categories exempted under subsection 2 (3) of the regulations.

To determine which exempted categories were no longer necessary, the department used two sets of data:

- the Prairie Research Associates (PRA)[13] survey that targeted the 10 categories listed in subsection 2 (3) of the regulations
- the Cheminfo [14] survey that collected data on all of the categories, with the exception of traffic marking coatings.

Collected data indicated that the categories #45 rust preventive coating and #47 exterior wood stain were in the top 10 categories (out of 52) with the largest volume supplied. In addition, only a small fraction of products reported for these two categories exceeded the applicable VOC concentration limit. This suggests that the exemption may no longer be necessary for these products, as compliant alternative formulations are available and they should no longer be considered as niche or specialty products. It is therefore proposed that these 2 categories no longer be exempted under subsection 2(3) of the regulations.

The changes described in sections 3.2 of this consultation document will also impact the categories subject to the small container exemption, as it is proposed that some categories no longer be listed in the schedule to the regulations. These categories would be removed from the small container exemption as a consequence. These categories are:

- #29 any other lacquer, including lacquer sanding sealers
- #33 any other varnish
- #43 quick-dry enamel
- #48 any other stain

In conclusion, it is proposed that only the following categories remain in subsection 2 (3) of the regulations:

- #14 faux finish

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[13] Prairie Research Associates (PRA), One Litre Exemption Study for Volatile Organic Compound (VOC) Concentration Limits for Architectural Coatings, prepared for ECCC, March 29, 2019

[14] Cheminfo Services, Potential Additional Emission Reductions from the Volatile Organic Compound (VOC) Concentration Limits for Architectural Coatings Regulations: Final report, prepared for ECCC, February 6, 2020

- #23 any other high-temperature coating
- #34 low solids coatings
- #46 interior wiping stain

3.4.2 *Changes to prohibit the bundling of small containers*

It was brought to the department's attention that products listed in subsection 2 (3) of the regulations were being sold in large, labelled, pails containing multiple individually packaged containers of 946 mL each, circumventing the intent of the exemption.

To prevent this from occurring, the OTC and CARB have added language to their model rules to prevent the bundling of small containers of the same coating category. The language specifies that the label or any other product literature cannot suggest combining small containers and the coating container must not be bundled together with other containers of the same specific coating category to be sold as a unit if such combination would exceed a liter.

Proposed amendment

It is proposed to add an anti-bundling provision to the regulatory text. This text would be based on what is found in the CARB and OTC model rules:

CARB 2020 SCM provisions:

"[…], *this rule does not apply to any architectural coating that is sold in a container with a volume of one liter or less provided the following requirements are met:*

- The coating container is not bundled together with other containers of the same specific coating category to be sold as a unit that exceeds one liter, excluding containers packed together for shipping to a retail outlet, and

- The label or any other product literature does not suggest combining multiple containers of the same specific category so that the combination exceeds one liter."

OTC AIM Coatings Phase II Model Rule provisions:

"This rule does not apply to any architectural coating that is sold in a container with a volume of one liter or less, including kits containing containers of different colors, types or categories of coatings and two component products. This applicability exception does not include bundling of containers one liter or less, which are sold together as a unit, or any type of marketing which implies that multiple containers one liter or less be combined into one container. This exemption does not include packaging from which the coating cannot be applied. This exemption does include multiple containers of one liter or less that are packaged and shipped together with no intent or requirement to ultimately sell as one unit."

4. IMPROVING EXISTING REGULATORY PROVISIONS

The Government of Canada is proposing a number of amendments to the current regulations, including changes aimed at improving its clarity, administration and enforceability.

4.1 Clarifications

The proposed amendments described below aim to clarify certain aspects of the regulations.

4.1.1 *Definition of "architectural coating"*

The regulations define "architectural coating" in subsection 1 (1) as "*a product to be applied onto or impregnated into a substrate, for use on traffic surfaces such as streets and highways, curbs, berms, driveways, parking lots, sidewalks and airport runways, or stationary structures, including temporary buildings and their appurtenances, whether installed or detached*." This definition was based on the definition found in the OTC *Model Rule 2001- Architectural & Industrial Maintenance (AIM) Coatings Phase I*, which was the same as the one used by CARB for their *2000 SCM for Architectural Coatings*.

Since the regulations were published in 2009, the department has received inquiries from stakeholders requesting clarification of the architectural coating definition. The term "appurtenance" found in the definition is not defined. It is therefore unclear what it includes. For example, because appurtenances can be installed or detached, it is unclear whether furniture are covered. Another issue with the term is that some interpret it to be associated only with temporary buildings, while it should also be associated with stationary structures.

The OTC and CARB model rules have the same definition for appurtenance:
"Any accessory to a stationary structure coated at the site of installation, whether installed or detached, including but not limited to: bathroom and kitchen fixtures; cabinets; concrete forms; doors; elevators; fences; hand railings; heating equipment, air conditioning equipment, and other fixed mechanical equipment or stationary tools; lampposts; partitions; pipes and piping systems; rain gutters and downspouts; stairways, fixed ladders, catwalks, and fire escapes; and window screens."

Proposed amendment
It is proposed that the regulations include a definition of the term "appurtenance". It is also proposed to modify the definition of "architectural coating" to clarify that appurtenances of stationary structures and temporary buildings are covered.

4.1.2 *Definition of "excluded compounds"*

Currently, the regulations define "excluded compounds" in subsection 1 (1) "*as compounds that are excluded under item 65 of Schedule 1 of the Canadian Environmental Protection Act, 1999 and includes acetic acid, 1,1–dimethylethyl ester ($C_6H_{12}O_2$)*".

When the regulations were published in 2009, the substance acetic acid, 1,1–dimethylethyl ester ($C_6H_{12}0_2$), also known as t-butyl acetate, was not included in the list of excluded VOCs. It was added to the list of excluded VOCs in June 2016 by the Order amending Schedule 1 to the *Canadian Environmental Protection Act*.

Proposed amendment

It is proposed that the definition of excluded compounds no longer specifies the inclusion of acetic acid, 1,1–dimethylethyl ester ($C_6H_{12}0_2$).

4.1.3 *Laboratory versus field testing for traffic markings*

Article 2 (1) (c) exempts from coverage of these regulations coatings that are manufactured, imported, offered for sale or sold to be used as a laboratory sample or analytical standard. The intent of the regulations is to enable businesses to perform product development and product testing activities.

Traffic markings products may need to be tested on the roadway, instead of in a laboratory, to measure their durability and performance in real-life exposure setting.

Proposed amendment

It is proposed that the exemption in article 2 (1) (c) clarifies that laboratory samples include traffic markings that will be tested on roadways.

4.1.4 *Exclusion of cutback and emulsified asphalt used to seal roadways*

The regulations provide exemptions for various types of coatings expected to be addressed by other control instruments. A list of such exemptions is found in subsection 2 (2) of the regulations.

The department has received enquiries about whether the regulations apply to cutback and emulsified asphalt used to seal roadways. These asphalt products could be interpreted to meet the definition of architectural coatings, which include products to be applied onto or impregnated into a substrate, for use on traffic surfaces such as streets and highways, curbs, berms, driveways, parking lots, sidewalks and airport runways. As these products are subject to the *Code of Practice for the Reduction of Volatile Organic Compound (VOC) Emissions from Cutback and Emulsified Asphalt*, published in 2017, it is not the intention that they be covered by the regulations.

Proposed amendment

It is proposed that cutback and emulsified asphalt be added to the list of coatings for which the regulations do not apply that is found in subsection 2 (2).

4.1.5 *Laboratory accreditation*

Section 16 on accredited laboratory stipulates that "*Any laboratory that performs an analysis for the purposes of these Regulations must be accredited under the International Organization for Standardization*

standard ISO/IEC 17025:2005, entitled General requirements for the competence of testing and calibration laboratories and its accreditation must include the analysis in question within its scope of testing."

The department has identified the need for a number of changes to the regulatory text of several regulations made under the *Canadian Environmental Protection Act, 1999.* The analysis was undertaken in response to issues raised by the Standing Joint Committee for the Scrutiny of Regulations and the Standards Council of Canada with respect to the wording of laboratory accreditation requirements in a number of regulations. The analysis conducted by the department concluded with a recommendation to use standardized regulatory text to provide clarity and establish consistency in the laboratory accreditation provisions across multiple regulations. In response to this recommendation, the department published the *Regulations Amending Certain Regulations Made Under Subsection 93(1) of the Canadian Environmental Protection Act, 1999* on March 18, 2021.

Proposed amendment

The department is proposing that section 16 on accredited laboratory be amended to reflect the wording used in the *Regulations Amending Certain Regulations Made Under Subsection 93(1) of the Canadian Environmental Protection Act, 1999*, which is:

"Any analysis performed to determine the concentration of **[…]** *for the purposes of these Regulations must be performed by a laboratory that meets the following conditions at the time of the analysis:*

(a) it is accredited

> *(i) under the International Organization for Standardization standard ISO/IEC 17025, entitled General requirements for the competence of testing and calibration laboratories, by an accrediting body that is a signatory to the International Laboratory Accreditation Cooperation Mutual Recognition Arrangement, or*
>
> *(ii) under the Environment Quality Act, CQLR, c. Q-2; and*

(b) the scope of its accreditation includes the analysis performed to determine the concentration of **[…]***"*

4.1.6 *Test methods*

During the consultations that were held prior to the publication of the regulations in 2009, stakeholders indicated that they did not want the regulations to prescribe which test method manufacturers and importers should use to ensure their products are in compliance. As such, only two tests methods were included, and are used in the determination of parameters that do not have generally accepted units or scales.

There are however four parameters that need to be evaluated in order to establish VOC content of a product:

1. product volatility
2. product inorganic volatile content (mainly water but also inorganic acids and ammonia if present)
3. content of excluded VOCs
4. product density

Each of these four parameters are covered by internationally recognized standard test methods available from ASTM International, the U.S. Environmental Protection Agency and the European Union methods inventory. These methods are described in the guidance document entitled *Analytical methods for determining VOC concentration and other parameters for the VOC regulations* that was published by the department as a companion document to the regulations.

Since publication of the final regulations, some stakeholders indicated that because there are no specified standards or reference methods included in the regulatory text, it is challenging to find an accredited laboratory to test for VOCs in consumer and commercial products and to ascertain compliance with the regulations. Furthermore, some smaller companies subject to the regulations indicated that they do not have the technical resources required to determine how to carry out or mandate these tests. It is not clear if these stakeholders were aware of the existence of the guidance document.

Input required from stakeholders

The department would be interested to find out if the information provided in the guidance document is sufficient to meet industry's needs, or if it is necessary to include specific test methods within the regulations themselves and/or additional guidance on how to access accredited laboratories to perform these tests.

4.2 Administration

The proposed amendments described below aim to improve the regulations' administration.

4.2.1 *Permit provisions for users of traffic marking products*

The regulations include provisions for the allowance of temporary permits, to provide flexibility to manufacturers and importers facing unforeseen technological or economic barriers to reformulation.

Subsection 9 (1) of the regulations stipulates that: "*Any person that manufactures or imports an architectural coating set out in column 1 of the schedule, other than an architectural coating referred to in article 3(1)(a), or the components of an architectural coating that must be combined together before their use in which the VOC concentration exceeds the limit set out in column 2 of the schedule, must hold a permit issued under section 10.*"

Permits are only available to persons that manufacture or import coatings, and enable the permit holders to exceed the concentration limits set out in the schedule of the regulations. Traffic marking users have additional requirements imposed on them, and these requirements are not included in the schedule, but rather in section 4 of the regulations. There is no means by which the department can waive the regulatory requirements for users of traffic marking coatings, such as provinces, municipalities or road maintenance service providers.

Proposed amendment and input requested from stakeholders

It is proposed that the regulatory text found in section 9 of the regulations be amended to include users of traffic marking products, and cover the limits set out is section 4 of the regulations. Specific criteria for these permits would have to be proposed under section 10. The department would be interested to receive information relevant to the determination of these criteria.

4.2.2 *Renewal of permit*

Subsection 10 (3) of the regulations (expiry and permit renewal) stipulates that: "*A permit expires 24 months after the day on which it is issued unless, within the period of 30 days before the day on which the permit expires, the applicant submits a new application in accordance with section 9. The validity of the first permit may only be extended once for an additional 24 months for a given architectural coating and the same use*".

Item #1

The department currently has 30 days to review an application for the renewal of a permit and extend the permit. This timeframe does not provide the department with sufficient time to carefully review the application and request additional information from applicants, as required. This could potentially lead to the interruption of a permit, as it could expire before being renewed.

Proposed amendment #1

It is proposed that the 30 days in the text "*within the period of 30 days before the day on which the permit expires*" be changed to 90 days.

Item #2

The regulations stipulate that a permit may only be extended once for an additional 24 months for a given architectural coating and the same use. The intent of this is that only one permit be issued for a specific product and specific use. This permit can be renewed only once. The regulations do not specify that a manufacturer or importer cannot submit a new permit application for that same architectural coating and use.

Proposed amendment #2:

It is proposed that the regulatory text be modified to clarify that a new permit application cannot be submitted in lieu of a permit renewal application.

4.3 Enforcement

The proposed amendments described below aim to improve the regulations' enforceability.

4.3.1 *Use of traffic markings*

Section 4 of the regulations imposes an annual seasonal prohibition, over the period of May 1 to October 15 inclusive, on the use of traffic marking coatings containing more than 150 g/L of VOCs. These specific seasonal requirements were developed in response to concerns expressed by stakeholders regarding the performance and cost of low-VOC traffic marking coatings for cold weather application.

Inspections for the use of traffic markings need to occur at the time of application, as opposed to other types of coatings that do not have prohibitions on their use. Truly assessing compliance of traffic marking users is challenging as painters move quickly, making it difficult for inspections to occur without an appointment or at a time that is convenient for the user.

It is assumed that traffic marking companies maintain records on the application of these products. Currently, according to section 19 of the regulations, traffic marking companies have no legal requirements to maintain records on the use of traffic marking paint.

Proposed amendments

To help enforce the prohibition on the use of high-VOC traffic marking coatings, the proposed amendments would include additional record keeping requirements for traffic marking coatings users. Records would include the name of the product used, its VOC content, quantity purchased, quantity used and the date it was applied.

5. Implementation timeline

The proposed amendments to the regulations will include an implementation timeline that will consider the Government's goal of obtaining timely emission reductions and the industry's need for a transition period for any of the new or modified categories and limits. Therefore, it is proposed that prohibitions applicable to manufacture and import of architectural coatings in excess of the applicable VOC concentration limits take effect one year after the coming into force date of the amended regulations for most coating categories. However, the Government could consider that some limits could take effect after longer delays, according to the readiness of different coating reformulations and the conversion rate of professional applicators. The department will also consider a number of flexibility mechanisms, including sell-through periods.

The Government of Canada is seeking stakeholders input on reasons that could justify the need for an extended implementation period.

6. Anticipated outcomes

According to the Cheminfo 2020 study, it is estimated that adopting CARB's 2020 SCM VOC concentration limits would yield further reductions of about 7 kt per year. The study estimated that the cost of this measure to industry would be in the range of -$590 to $2,544 per ton of VOC reduced. Alternatively, adopting the OTC AIM Coatings Phase II Model Rule VOC concentration limits would yield reductions of about 4.4 kt per year, with preliminary analysis of costs in the range of $698 to $3,997 per ton of VOC reduced.

7. Regulatory review

In addition to comments on these potential regulatory changes, stakeholders are invited to provide comments on other aspects of the regulations, with a view to improve the effectiveness of the regulations in achieving their stated objectives. This input would serve to fulfill the external consultation requirements of the regulatory review process described in section 2.2.

This could be done, for example, by answering the following questions:

- Are there obstacles that may affect your ability to meet any of the regulatory requirements?
- How could the regulations better support innovation, and the development and use of new technologies or best practices?
- What improvements could be made with respect to the compliance or administrative aspects of the regulations to reduce the burden on businesses (especially to small businesses) while still ensuring environmental protection?
- What are the costs associated with complying with the regulations that are beyond what is considered "normal" in the industry with respect to the manufacture of architectural coatings?
- Are there impacts of the regulations that may be considered as unintended (positive or negative) that the department should be made aware of?
- What aspects of the regulations are not discussed in the present document that could improve its clarity?

Any other comments related to ways to further improve and modernize the regulations are welcomed.

It is expected that the outcome of the review and a brief summary of feedback will be published as part of the ECCC's regular online updates on the regulatory stock review plan once the review is completed.

8. Submission of comments

Stakeholders are invited to provide comments by email, before January 13, 2023. The Department encourages you to submit your feedback through the comment form sent along with the consultation notification email, and that can also be obtained by contacting Produits-Products@ec.gc.ca.

The Government of Canada is seeking stakeholders' views and comments on the issues and potential regulatory changes described above to inform the amendment process.

Comments on the technical or economical feasibility of the proposed changes should be accompanied with evidence demonstrating these claims.

All input will be considered in drafting proposed amendments. The proposed amendments would be published in the Canada Gazette, Part I for an official public comment period.
Please send your comments on this discussion document to the following address.

Email: Produits-Products@ec.gc.ca.

Please put “Consultation - Potential Amendments to the Volatile Organic Compound (VOC) Concentration Limits for Architectural Coatings Regulations” in the subject line of your message.

The Government of Canada welcomes the further distribution of this document.

9. Appendices

Appendix A: Description of the *Volatile Organic Compound (VOC) Concentration Limits for Architectural Coatings Regulations*

The *Volatile Organic Compound (VOC) Concentration Limits for Architectural Coatings Regulations* set mandatory VOC concentration limits for 53 categories of architectural coatings identified in the schedule to the regulations. They apply to manufacturers, importers and sellers of architectural coatings, and to users of traffic marking coatings.

Exemptions are provided for:

- the manufacture, import and sale of architectural coatings for the purpose of export, or for shipping to other persons for processing or repackaging
- coatings for application to a product or a component of a product, in or on the premises of a factory or a shop, as part of a repairing, manufacturing or processing activity
- aerosol coatings and adhesives
- pesticidal coatings, namely wood preservatives and antifouling coatings
- architectural coatings used in scientific research or as a laboratory analytical standard
- architectural coatings identified in subsection 2 (3) of the regulations sold in containers with volumes of one litre or less, which are exempt from meeting VOC concentration limits, but are subject to labelling and record keeping requirements.

Prohibitions

The regulations prohibit the manufacture, sale or offer for sale or import of architectural coatings with concentrations of VOCs in excess of the category-specific limits set out in column 2 of the schedule, with exemptions provided in sections 3 and 5. The VOC content limits apply at the time of application of the coating (e.g., after any thinning of the coating has been accomplished). The VOC content limits in the regulation are calculated on a "less water and exempt compounds" basis.

The traffic marking coating category is subject to a seasonal use prohibition during the period of May 1 to October 15. During this period, when the risk of ground-level ozone is higher due to the weather conditions, a person must not use traffic marking coating in which the VOC concentration exceeds 150 g/L. For the remainder of the year, traffic marking coatings have a VOC concentration limit of 450 g/L for use, manufacture, import, sale and offer for sale. These specific requirements were developed in response to

concerns expressed by traffic marking stakeholders regarding the performance and cost of low-VOC traffic marking coatings for cold weather application.

A "most-restrictive-limit provision" is included in section 8 of the regulations to ensure that coatings with multiple uses meet the most restrictive of the applicable VOC concentration limits.

Permits

A permit can be issued for the manufacture and import of an architectural coating product, when evidence is provided that the reduction in VOC concentration required for compliance is not technologically or economically feasible. Issuance of the permit is conditional on acceptance by the Minister of a compliance plan prepared by the firm, demonstrating what steps are to be taken in order to meet, within a period of four years, the prescribed limit for that coating. Section 10 of the regulations sets out the conditions under which a permit can be issued, and section 11 sets out the conditions under which it can be revoked.

Test methods, labelling and record keeping

The regulations include test methods, labelling and record keeping provisions, to facilitate the implementation and enforcement of the regulations.

The regulations do not prescribe which test method to use in the determination of VOC content. However, they incorporate by reference two test methods that are used in the determination of parameters that do not have generally accepted units or scales. These parameters are the drying times of quick-dry enamel, and the surface chalkiness of specialty primer, sealer or undercoater.

Section 17 of the regulations includes labelling requirements for all architectural coatings. Certain category-specific labelling requirements are included for proper identification of the coating category, to ensure correct representation of the coatings and allow sampling and testing to confirm compliance.

The labelling of the VOC concentration is voluntary. However, if a company indicates the VOC concentration on the container (Section 18), then the displayed VOC concentration must be calculated in accordance with section 12 of the regulations.

Record keeping provisions, found in section 19 require that the identified records of manufacture, import and sale, to a supplier, wholesaler or retailer of architectural coatings for use in Canada, be maintained in Canada.

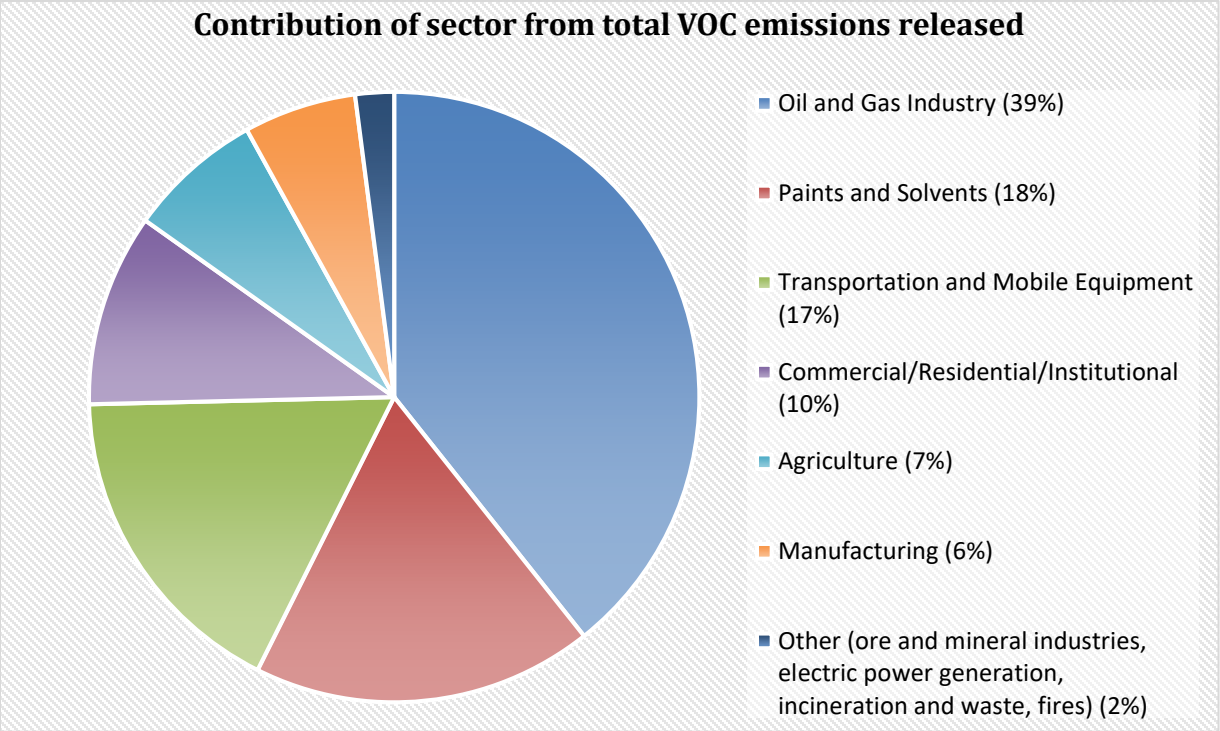
The department published a guidance document discussing the analytical methods for determination of VOC concentration and other parameters for the regulations. This guidance document was developed to inform the regulated community of the analytical methods that will be used by the department to verify regulatory compliance.

Appendix B: VOC background & Context

VOCs are organic compounds containing one or more carbon atoms that evaporate readily into the atmosphere. The more reactive VOCs combine with nitrogen oxides (NO_x) in photochemical reactions in the atmosphere to form ground-level ozone (O_3), a major component of smog. VOCs are also a precursor pollutant to the secondary formation of fine particulate matter ($PM_{2.5}$). Both O_3 and $PM_{2.5}$ are known to have harmful effects on human health and the environment, and are regarded by Health Canada as substances without a threshold for effects at the population level.

In 2019, approximately 1.7 Mt of VOCs were released in Canada. The Oil and Gas Industry was the largest contributor at 39% (659 kt) of total emissions. Paints and Solvents were the next-largest contributor, accounting for 18% (303 kt) of emissions (see Figure 2).

Figure 2: contribution of sector from total VOC emissions released in Canada



Within the Paints and Solvents category, VOC emissions from the Surface Coatings were 66 kt.[15] The Surface Coatings category is a broad range of applications and industries, including individuals and companies engaged in use of paints and coatings, and is broader than what is covered by the *Volatile Organic Compound (VOC) Concentration Limits for Architectural Coatings Regulations.*

[15] *Canada's Air Pollutant Emissions Inventory Report 1990-2019*: En81-30-2019-eng.pdf (publications.gc.ca)

Coatings covered by the regulations include paints, stains and varnishes that are applied to a wide variety of stationary structures in residential, commercial, institutional and industrial settings. Emissions occur when the solvents contained in these products evaporate, following product application onto a surface. Due to the field application of these coatings, it is not feasible to control VOC emission at the point of use. The best option to reduce VOC emissions is to reformulate products to contain lower levels of VOCs.

Since 2000, the Government of Canada has put in place various measures to reduce VOC emissions from consumer and commercial products. In 2004, to manage VOC emissions from non-industrial solvents, the Ministers of Environment and Health published a Notice of Intent entitled *Federal Agenda on the Reduction of Emissions of Volatile Organic Compounds from Consumer and Commercial Products* in the *Canada Gazette,* Part I. The 2004 Federal Agenda outlined the Government of Canada's plan for 2004 to 2010 to develop regulations under CEPA 1999 to reduce VOC emissions from specific consumer and commercial products. Coatings were addressed in 2009 by publishing the:

- *Volatile Organic Compound (VOC) Concentration Limits for Automotive Refinishing Products Regulations* (SOR/2009-197)
- *Volatile Organic Compound (VOC) Concentration Limits for Architectural Coatings Regulations* (SOR/2009-264)

To continue in its efforts to protect Canadians from the effects of air pollution, the Government of Canada published a renewed *Federal Agenda on the Reduction of Emissions of Volatile Organic Compounds (VOC) from Consumer and Commercial Products*. The actions identified in this new agenda will further reduce VOC emissions from consumer and commercial products and will be implemented over the 2022 to 2030 period. The architectural coatings sector is targeted by the renewed agenda, among other sectors and products.

Appendix C: Background information on U.S. measures to limit VOC emissions from architectural coatings

The United States (U.S.) have a long history of regulating architectural coatings.

California

In California, control of emissions from architectural coatings is primarily the role of the local air pollution control districts and air quality management districts, who adopt and enforce their own rules. Suggested control measures (SCMs) are developed by the California Air Resources Board (CARB) in conjunction with the districts, and serve as model rules for use by the districts. CARB approved an SCM for architectural coatings in 1977 and updated it regularly, with the latest updates occurring in 2019 and 2020. In 2019, the VOC limits of nine existing coating categories were lowered to align with the limits in the SCAQMD Rule 1113 (discussed below). VOC limits were set for new coating categories, and VOC limits were established for colorants. Updates were made to several test methods to reflect the latest versions. An anti-bundling provision was added to prevent the bundling of exempt small containers. The SCM was updated again in 2020 to add a new category for photovoltaic coatings.

California's South Coast Air Quality Management District (SCAQMD) adopted Rule 1113 in September 1977 to regulate VOC emissions from the application of architectural and industrial maintenance (AIM) coatings. Since its adoption, the rule has been amended numerous times to incorporate more stringent VOC limits as lower-VOC coatings have become available. In a 2011 amendment, the SCAQMD added colorants to the rule. The latest amendment in February 2016 included further reductions in the allowed VOC content of several coating categories, the removal of the small container exemption for some categories, and the addition of test methods to better address the determination of VOC content of low VOC coatings. It includes the most stringent VOC concentration limits of all U.S. jurisdictions.

U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency (EPA) promulgated the *National Volatile Organic Compounds Emission Standards for Architectural Coatings* in 1998. This rule limits the amount of VOC that manufacturers and importers of AIM coatings can put into their products. The Rule was amended in 2000 with no changes made to the VOC content limits. The National Rule contains additional categories that were not created in either the SCAQMD or CARB measures and, in general, VOC content limits are less stringent than these measures.

State and Territorial Air Pollution Program Administrators and Association of Local Air Pollution Officials

The State and Territorial Air Pollution Program Administrators (STAPPA) and the Association of Local Air Pollution Officials (ALAPCO) are the national associations representing state and local air quality officials in the states and territories and over 165 major metropolitan areas throughout the U.S. In 2000, STAPPA/ALAPCO issued an AIM Coatings Model Rule that was identical to CARB's 2000 SCM.

Ozone Transport Commission

The Ozone Transport Commission (OTC), which represents U.S. northeastern states, adopted the STAPPA/ALAPCO model rule as its model rule in 2001 with some modifications. The OTC updated its model rule in 2011 (effective January 1, 2014) based on the CARB 2007 SCM for Architectural Coatings with some modifications.

Table 5 summarizes the VOC content limits found in the OTC Model Rule 2010-11 - AIM Coatings Phase II and the CARB 2020 SCM.

Table 4: comparison of OTC and CARB VOC content limits

Categories	CARB 2020 SCM limits (g/L)	OTC AIM Phase II limits (g/L)
Flat Coatings	50	50
Nonflat Coatings	50	100
Nonflat - High Gloss	N/A	150
Aluminum Roof Coatings	100	450
Basement Specialty Coatings	400	400
Bituminous Roof Coatings	50	270
Bituminous Roof Primers	350	350
Bond Breakers	350	350
Building Envelope Coatings	50	N/A
Calcimine Recoaters	N/A	475
Concrete Curing Compounds	350	350
Concrete/Masonry Sealers	100	100
Concrete Surface Retarders	N/A	780
Conjugated Oil Varnishes	N/A	450
Conversion Varnish	N/A	725
Driveway Sealers	50	50
Dry Fog Coatings	50	150
Faux Finishing Coatings	350	350
Fire Resistive Coatings	150	350
Floor Coatings	50	100
Form-Release Compounds	100	250
Graphic Arts Coatings	500	500
High Temperature Coatings	420	420
Impacted Immersion Coatings	N/A	780
Industrial Maintenance Coatings	250	250
Low Solids Coatings	120*	120*
Magnesite Cement Coatings	450	450
Mastic Texture Coatings	100	100
Metallic Pigmented Coatings	500	500

Multi-colour Coatings	250	250
Nuclear Coatings	N/A	450
Photovoltaic Coatings	600*	N/A
Pre-Treatment Wash Primers	420	420
Primers, Sealers and Undercoaters	100	100
Reactive Penetrating Carbonate Stone Sealer	N/A	500
Reactive Penetrating Sealers	350	350
Recycled Coatings	250	250
Roof Coatings	50	250
Rust Preventive Coatings	250	250
Shellacs - Clear	730	730
Shellacs - Opaque	550	550
Specialty Primers, Sealers, and Undercoaters	100	100
Stains	N/A	250
Stains - Exterior-dual	100	N/A
Stains - Interior	250	N/A
Stone consolidants	450	450
Swimming Pool Coatings	340	340
Thermoplastic Rubber Coatings and Mastics	N/A	550
Tile and Stone Sealers	100	N/A
Traffic Marking Coatings	100	100
Tub and Tile Refinish Coatings	420	420
Waterproofing Membranes	100	250
Wood Coatings	275	275
Wood preservatives	350	350
Zinc-Rich Primers	340	340
Colorants	Various	N/A

* VOC limit is expressed as VOC Actual.

The following are key differences that exist between the Canadian *Volatile Organic Compound (VOC) Concentration Limits for Architectural Coatings Regulations* and the U.S. AIM VOC instruments described above:

- All coatings sold in containers with a volume of 1 litre or less are exempted from the OTC, CARB (with the exception of section 7 on Reporting Requirements, and with the exception of photovoltaic coatings) and U.S. EPA instruments
- The OTC, CARB and SCAQMD instruments have labeling requirements for VOC content
- The OTC, CARB, SCAQMD and U.S. EPA instruments specify the test methods to use to measure the VOC content

- The CARB 2019 and 2020 SCM and SCAQMD Rule 1113 have VOC limits for colorants
- The U.S. EPA Rule has exceedance fee and tonnage exemption provisions
- The U.S. EPA, CARB and OTC measures include categories for wood preservatives which, in Canada, are regulated by Health Canada's Pest Management Regulatory Agency (PMRA) under the authority of the *Pest Control Products Act* (PCPA)
- Exempted VOCs:
    - The Canadian regulations define excluded compounds as the compounds that are excluded under item 65 of Schedule 1 of the *Canadian Environmental Protection Act, 1999*
    - The CARB SCM lists exempted VOCs and does not include t-butyl acetate (TBAc) and other VOCs that are excluded from the Canadian VOC definition
    - The SCAQMD Rule 1113 contains a limited VOC exemption for TBAc to allow for its use in Industrial Maintenance Coatings only
    - The OTC model rule provides the following options to define VOCs: develop a State specific definition, reference Federal list at 40 CFR 51.100 (s)[16] or reference CARB.

[16] U.S. Federal list at 40 CFR 51.100 (s) exempts two VOCs that are not exempted from the Canadian VOC definition.

Appendix D: Summary of proposed changes to the architectural coating categories and VOC concentration limits

The table below summarizes the changes proposed in this document that relate to the categorization of architectural coatings and the VOC concentration limits.

Table 5: summary of proposed changes to the architectural coating categories and VOC concentration limits

Current Category #	Category description	Current limit (g/L)	Proposed limit (g/L)	Impact on limit
1	Antenna coating	530	N/A	Remove
2	Thermoplastic rubber coating and mastic	550	550	No change
3	Metallic pigmented coating	500	500	No change
4	Bituminous roof primer	350	350	No change
5	Any other bituminous roof coating	300	270	Reduce
6	Non-bituminous roof coating	250	50	Reduce
7	Calcimine recoater	475	475	No change
8	Bond breaker	350	350	No change
9	Concrete curing compound	350	350	No change
10	Concrete surface retarder	780	N/A	Remove
11	Form release compound	250	100	Reduce
12	Dry fog coating	400	50	Reduce
13	Extreme high durability coating	800	N/A	Remove
14	Faux finish	350	350	No change
15	Fire resistant coating	350	150	Reduce
16	Fire retardant coating, clear	650	N/A	Remove
17	Fire retardant coating, opaque	350	N/A	Remove
18	Floor enamel	250	100	Reduce
19	Any other opaque floor coating	250	50	Reduce
20	Flow coating	650	N/A	Remove
21	Graphic arts coating	500	500	No change
22	Temperature-indicator safety coating	500	N/A	Remove
23	Any other high-temperature coating	420	420	No change
24	Impacted immersion coating	780	N/A	Remove
25	Any other industrial maintenance coating	340	250	Reduce
26	Shellac, clear	730	730	No change
27	Shellac, opaque	550	550	No change
28	Clear brushing lacquer	680	N/A	Remove
29	Any other lacquer, including lacquer sanding sealers	550	N/A	Remove
30	Any other sanding sealer	350	N/A	Remove
31	Conversion varnish	725	500	Reduce

32	Conjugated oil varnish	450	350	Reduce
33	Any other varnish	350	N/A	Remove
34	Low solids coating	120	120	No change
35	Mastic texture coating	300	100	Reduce
36	Multi-coloured coating	250	250	No change
37	Nuclear coating	450	N/A	Remove
38	Pre-treatment wash primer	420	420	No change
39	Specialty primer, sealer or undercoater	350	100	Reduce
40	Waterproofing sealer for concrete or masonry	400	N/A	Remove
41	Any other waterproofing sealer	250	N/A	Remove
42	Any other primer, sealer or undercoater	200	100	Reduce
43	Quick-dry enamel	250	N/A	Remove
44	Recycled coating	350	250	Reduce
45	Rust preventive coating	400	250	Reduce
46	Interior wiping stain	250	250	No change
47	Exterior wood stain	250	100	Reduce
48	Any other stain	250	N/A	Remove
49	Swimming pool coating	340	340	No change
50	Traffic marking coating	450	450	No change
51	Any flat coating	100	50	Reduce
52	Any non-flat coating	150	50	Reduce
53	Any high-gloss coating	250	N/A	Remove
New	Aluminum roof coating	N/A	100	Add
New	Basement specialty coating	N/A	400	Add
New	Building envelope coating	N/A	50	Add
New	Concrete/ masonry sealer	N/A	100	Add
New	Driveway sealer	N/A	50	Add
New	Magnesite cement coating	N/A	450	Add
New	Photovoltaic coating	N/A	600	Add
New	Reactive penetrating sealer	N/A	350	Add
New	Stone consolidant	N/A	450	Add
New	Tile and stone sealer	N/A	100	Add
New	Tub & tile refinish coating	N/A	420	Add
New	Waterproofing membrane	N/A	100	Add
New	Wood coating	N/A	275	Add
New	Zinc-rich primer	N/A	340	Add