

Federal Court



Cour fédérale

Date: 20260714

Docket: T-1288-18

Citation: 2026 FC 901

Ottawa, Ontario, July 14, 2026

PRESENT: Madam Justice Pallotta

BETWEEN:

**GEMAK TRUST BY ITS TRUSTEES
GERALD THOMAS HINTON AND
ELIZABETH JANE HINTON**

Plaintiff/Defendant by Counterclaim

and

JEMPAK ULC

Defendant/Plaintiff by Counterclaim

PUBLIC REASONS AND JUDGMENT
(Identical to the Confidential Reasons and Judgment issued July 3, 2026)

I. Introduction

[1] This is an action for infringement of Canadian patent number 2,276,428 titled “Detergent” (428 Patent). The 428 Patent relates to detergent product formulations that can be packaged in a water-soluble film—for example, pods or sachets containing a single dose of laundry detergent or dishwasher detergent.

[2] The plaintiff and patent owner (GEMAK) is a trust established for the benefit of the inventor's children. The inventor Gerald Thomas Hinton and his wife Elizabeth Hinton are trustees.

[3] GEMAK started this action on July 3, 2018, against predecessors of the defendant, Jempak ULC (Jempak).¹ By then, the 428 Patent had expired, on January 12, 2018. GEMAK seeks declaratory relief and a monetary award for alleged infringement from July 3, 2012, which is six years before it started the action: *Patent Act*, RSC 1985, c P-4, s 55.01.

[4] In 2020, Jempak's predecessor was successful on a motion for summary judgment. This Court found there was no genuine infringement issue for trial and dismissed GEMAK's action: *Gemak Trust v Jempak Corporation*, 2020 FC 644 [*Gemak FC*]. However, the Federal Court of Appeal (FCA) held that the Court had erred by making credibility findings about the expert evidence that were not open to it on a motion for summary judgment, and the error affected the construction of a claim term that was central to the Court's finding of no infringement: *Gemak Trust v Jempak Corporation*, 2022 FCA 141 [*Gemak FCA*]. The FCA set aside the summary judgment and ordered that the matter proceed to trial.

[5] The 428 Patent has 13 claims, falling into two groups. Independent claim 1 and dependent claims 2-9 relate to a detergent composition suitable for storage in a water-soluble polyvinyl alcohol (PVA) film packaging for at least nine months comprising, among other things, a granulated percarbonate and a blend which encapsulates the percarbonate. Independent

¹ Due to corporate restructuring, Jempak ULC is now the only defendant.

claim 10 and dependent claims 11-13 relate to an encapsulated percarbonate granule for use in detergent products storable in PVA film packaging, the granule comprising a percarbonate and a blend encapsulating the percarbonate, wherein the blend comprises a sulfate,² carboxymethyl cellulose (also referred to as CMC), and a nonionic surfactant.

[6] GEMAK asserts claims 10-12 from the second group:

10. An encapsulated percarbonate granule for use in detergent products storeable [*sic*] in PVA film packaging, the granule comprising a percarbonate and a blend encapsulating the percarbonate, wherein the blend comprises a sulphate, carboxymethyl cellulose and a nonionic surfactant.

11. The encapsulated percarbonate granule as claimed in claim 10 wherein the percarbonate is sodium percarbonate.

12. The encapsulated percarbonate granule as claimed in claim 10 or 11 wherein the sulphate is sodium sulphate.

[7] Percarbonate is a bleaching agent used in powder detergents. It provides a solid source of hydrogen peroxide for the wash cycle, where hydrogen peroxide acts as an oxidizing agent and/or reacts with other ingredients to generate other oxidizing agents. But percarbonate is unstable. If it begins to react in the powder, it will off-gas oxygen. This decreases the active oxygen available for cleaning and creates challenges for detergent pods/sachets made with a water-soluble film, which can rupture if the pressure inside them builds up. An object of the 428 Patent is to provide a detergent or bleaching agent that is stable within a water-soluble film.

² The 428 Patent uses the spelling “sulphate.” Sulfate and sulphate are alternative spellings of the same chemical compound.

II. Overview of Issues and Conclusions

[8] GEMAK alleges that Jempak is liable for patent infringement because, between July 3, 2012 and patent expiry on January 12, 2018, Jempak's predecessors made and sold PVA film dishwasher pods containing a detergent product with encapsulated percarbonate granules that infringe claims 10, 11, and 12 of the 428 Patent. GEMAK refers to these dishwasher pods as the "asserted products."

[9] GEMAK states that tests on sodium percarbonate granules taken from representative asserted products detected sodium sulfate, carboxymethyl cellulose, and a nonionic surfactant on the surface of every tested granule. GEMAK states the evidence establishes that the sodium sulfate, carboxymethyl cellulose, and nonionic surfactant were in an encapsulating blend and capable of protecting the percarbonate from moisture and impurities, thereby preventing decomposition and subsequent off-gassing.

[10] Jempak denies infringement and states that GEMAK has not met its burden to show that the granules of the asserted products include all essential elements of claims 10-12. Among other things, Jempak challenges the tests that detected "a miniscule amount" of carboxymethyl cellulose, and states that the evidence does not establish that any detected sodium sulfate, carboxymethyl cellulose, and nonionic surfactant were present in *a blend encapsulating the percarbonate*. Jempak says GEMAK's allegations of infringement must fail for this reason alone.

[11] In addition, Jempak argues that GEMAK has not met its burden on infringement because it has not advanced any stability testing. There is no evidence to show that any encapsulating blend, if present, would stabilize the percarbonate in Jempak's products, and no evidence to show that the percarbonate in Jempak's products is functionally stable so as to be *storable in PVA film packaging*.

[12] GEMAK states that Jempak should be precluded from advancing non-infringement arguments based on a lack of stability. Prior to trial, GEMAK brought a motion to strike parts of an affidavit from Jempak's fact witness Nihat Elbi, arguing that Jempak was improperly using Mr. Elbi's evidence to advance a new non-infringement position at a late stage in the action—namely, that the percarbonate granules in the asserted products were not *storable in PVA film packaging* because the percarbonate would degrade and release oxygen over time, and Jempak had to puncture or perforate the PVA film so gas could escape without rupturing the dishwasher pods. I granted the motion in part (Elbi Order). GEMAK argues that Jempak's stability arguments violate the Elbi Order and attempt to advance a non-infringement position that I determined would be prejudicial if permitted late in the action. GEMAK contends there was no need for it to do stability testing. It did the infringement testing that was necessary to prove the claim elements that were in dispute.

[13] GEMAK also brought a pre-trial motion for leave to file reply expert evidence on infringement. I did not think I could justly and fairly decide, before trial, whether the proposed reply evidence should be admitted. The parties agreed that GEMAK's impugned reply evidence would be tendered at trial under reserve of objection on admissibility, and Jempak could tender

sur-reply evidence at trial on the same basis. These reasons provide my ruling on the admissibility of reply and sur-reply evidence. As I will explain, I am admitting much of the reply and sur-reply evidence, even though some is *prima facie* inadmissible. I am not admitting certain reply testing on infringement.

[14] In addition to its non-infringement defence, Jempak alleges that claims 10-12 of the 428 Patent were always invalid for anticipation, obviousness, insufficiency, overbreadth, and inutility. Jempak also relies on the *Gillette* defence³ to argue that GEMAK cannot succeed because the asserted patent claims cannot be both valid and infringed. In this regard, Jempak says it always used the same process that has been used for decades to make powder detergents, and if the process results in an encapsulated percarbonate granule according to claims 10-12 then those claims are necessarily invalid.

[15] GEMAK states that Jempak has not met its burden to establish any properly pleaded invalidity ground, particularly since it does not rely on the evidence of its own validity expert. GEMAK also says the *Gillette* defence has not been established, including because Jempak has not shown that the product of the prior art process and the product of its own process would be the same.

[16] If Jempak is liable for infringing any valid asserted claim, GEMAK seeks a monetary award. GEMAK elects an accounting of Jempak's profits, but if it is not entitled to make that election then it asks for damages in the form of royalties. In addition to a monetary award for

³ A way of answering an allegation of patent infringement that originated in *Gillette Safety Razor Company v Anglo-American Trading Company Ltd* (1913), 30 RPC 465 (HL).

acts of infringement from July 3, 2012 to patent expiry, GEMAK states it is entitled to a monetary award for Jempak's post-patent-expiry manufacture and sale of the same dishwasher pod products or replacement products that use the infringing technology. GEMAK alleges that Jempak built its business on infringing dishwasher pods and asks the Court to award springboard profits to disgorge Jempak's post-patent-expiry gains or springboard royalties to compensate for GEMAK's post-patent-expiry losses.

[17] Beginning with infringement, there is no dispute that Jempak's predecessors made and sold private label monodose dishwasher pods consisting of a powder detergent product inside a PVA film pouch. Jempak's predecessors made dishwasher pods for different private label brands and different product lines of those brands, so it made a range of dishwasher pods with different detergent formulations that fell into three general categories: standard, premium, and environmental. However, all dishwasher pods at issue in this action contain detergent products that include a percarbonate as an ingredient, and more specifically, sodium percarbonate granules.

[18] To determine if GEMAK has established infringement, the Court must first construe claims 10-12 of the 428 Patent from the perspective of the skilled person in view of their common general knowledge. Therefore, the issues for determination include defining the skilled person and their common general knowledge, and claim construction. On these issues, the parties' experts are largely aligned. This is not a case where the Court's construction of a disputed claim term effectively determines whether the claim is valid and infringed.

[19] Despite references to dishwasher pods and asserted products, one must keep in mind that claims 10-12 cover an encapsulated percarbonate granule. The question is whether the asserted products contain encapsulated percarbonate granules that infringe claim 10, 11, or 12 of the 428 Patent.

[20] Infringement turns on independent claim 10. If the asserted products have granules that infringe claim 10, there is no dispute that the granules also infringe dependent claim 11 (where the percarbonate must be sodium percarbonate) and dependent claim 12 (where the sulfate must be sodium sulfate).

[21] GEMAK has not proven infringement. In this regard, the central infringement issue is whether the asserted products have granules comprising a percarbonate and *a blend encapsulating the percarbonate, wherein the blend comprises a sulfate, carboxymethyl cellulose, and a nonionic surfactant* according to claim 10.

[22] As I will explain, I am not satisfied that GEMAK has proven, on a balance of probabilities, that the tested granules had all three blend components on their surface.

[23] Furthermore, even if I were to accept that the three claimed blend components were likely present on the surface of the tested percarbonate granules, this would be insufficient to prove infringement. I am also not satisfied that the evidence establishes that *a sulfate, carboxymethyl cellulose, and a nonionic surfactant* are present in a *blend*, or that the blend encapsulates the percarbonate.

[24] Given my reasons for granting the Elbi Order, I agree with GEMAK that Jempak should not be permitted to argue that the percarbonate granules in the asserted products are insufficiently stable to meet the claim limitation *storable in PVA film packaging*. However, other stability-related arguments are open to Jempak, as they relate to whether the evidence establishes the presence of *a blend encapsulating the percarbonate*. GEMAK did not adduce evidence to prove that the stability of Jempak's granules or products is attributable to a blend encapsulating the percarbonate of claim 10, rather than non-infringing means. In my view, this is an additional reason why GEMAK has not proven infringement.

[25] Since GEMAK has not proven infringement, it is not necessary to address the remedies issues (GEMAK's entitlement to and the quantum of profits or damages). Furthermore, the remedies issues cannot be resolved independently of infringement and validity findings. In my view, this is not a case where it would be appropriate to address remedies for the purpose of an appeal.

[26] Although the 428 Patent expired years ago, Jempak was sued within the limitation period and maintains its counterclaim for a declaration that claims 10-12 have always been invalid, void, and of no effect. Therefore, validity is another issue for determination. Jempak alleges that the claims have always been invalid for anticipation, obviousness, insufficiency, overbreadth, and lack of utility. Jempak relies on the following prior art: the Soludoz Product, Le Nigen, Solvay, Rommel, Green, and Olson.⁴

⁴ Jempak relies on the first five for anticipation and all six for obviousness. See Schedule A for a short description of the prior art.

[27] The Court must consider evidentiary issues related to validity. Jempak does not rely on the invalidity opinions of its expert Dr. Tremblay. In closing arguments, Jempak said Dr. Tremblay was confused on the stand, and defaulted to merely agreeing with points that were put to him in cross-examination even when they were plainly wrong (for example, he agreed that he gave an infringement opinion when he never did). Jempak says this “should be taken into consideration when assessing the weight to be given to his live testimony evidence.” Jempak does not withdraw Dr. Tremblay’s evidence, but it relies on evidence from other experts and fact witnesses to support its invalidity allegations.

[28] In my view, Jempak cannot meet its burden to prove anticipation or obviousness without Dr. Tremblay’s evidence. The evidence Jempak relies on, from other experts and fact witnesses, does not establish that claims 10-12 of the 428 Patent are invalid for anticipation or for obviousness.

[29] For insufficiency, overbreadth, and lack of utility, Jempak relies on the inventor’s trial testimony. Mr. Hinton said that when he was developing the invention, he made multiple formulations that started with the four claimed ingredients—a percarbonate, a sulfate, CMC, and a nonionic surfactant—before adding other ingredients. He tested their storability in PVA film pouches, and some formulations worked while others did not (for example, the PVA film pouch expanded or burst).

[30] In my view, Jempak has met its burden to prove insufficiency. Mr. Hinton withheld information about the formulations that worked and did not work, and he did not put the skilled person in a position to make the same successful use of the invention as he could.

III. Witnesses

[31] The parties introduced evidence from eight expert witnesses and several fact witnesses. By agreement, some fact witnesses did not appear at trial. Their affidavits were introduced on consent without cross-examination. Four of Jempak's fact witnesses testified by videoconference.

[32] Even though it is not necessary to address all the evidence (for example, the evidence about remedies), I list the witnesses below together with a general statement of what their evidence was about. The witnesses' reports or affidavits were marked as trial exhibits and taken as read, subject to any objections, corrections/errata lists, or withdrawals/redactions. Other trial evidence included discovery read-ins and English translations of documents and evidence.

[33] GEMAK called three witnesses who were qualified as experts and two fact witnesses, and it introduced affidavits from witnesses who did not appear at trial:

- Allen Clauss: Dr. Clauss is an expert in inorganic and organic chemistry, including the synthesis and evaluation of detergent products, bleaching actives, and unitized-dose detergent products. Dr. Clauss's first report provides opinions on the skilled person, common general knowledge, construction of the patent claims, and infringement. For infringement, Dr. Clauss relied on the evidence of

another GEMAK expert, Colin Nuckolls, who tested percarbonate granules from Jempak's products. Dr. Clauss's second report responds to Jempak's validity expert's report (Mario Tremblay), including on claim construction, anticipation, obviousness, sufficiency, and overbreadth. Dr. Clauss prepared a third report, in reply to Jempak's responding reports on infringement. His reply report was marked as a trial exhibit under reserve of objection.

- Colin Nuckolls: Dr. Nuckolls is an expert in organic chemistry and materials characterization, including analytical techniques for identifying and quantifying analytes. His first report explains the technical background, design, results, and analyses of his tests on Jempak's products. He took granules from representative dishwasher pods, tested them using a suite of analytical techniques, and gave opinions on what the tests showed. Dr. Nuckolls prepared a second report, in reply, which was marked as a trial exhibit under reserve of objection. His reply report addresses Jempak's experts' critiques of the tests and opinions in his first report, and critiques the experimental testing done by one of Jempak's experts (Jason Babcock). Dr. Nuckolls also conducted reply testing, and his reply report presents his analyses of the results.
- Andrew Harington: Mr. Harington gave expert evidence on remedies—Jempak's profits and damages (royalties).
- Gerald Hinton: Mr. Hinton is the sole inventor on the 428 Patent. His affidavit and trial testimony described the invention story, the patenting process, and his efforts to commercialize the invention.

- Elizabeth Hinton: Mrs. Hinton's affidavit and testimony described her involvement in testing Mr. Hinton's formulations on the family's laundry and dishes. She also gave evidence on the patenting process and on how she learned about Jempak's monodose dishwasher products.
- Kelly Allenspach Del Dotto, Tanya Cabral, Casey Kraning (affidavits only): These affidavits explain how sample dishwasher pods were acquired, stored, and shipped to Dr. Nuckolls for testing.

[34] Jempak called five witnesses who were qualified as experts and five fact witnesses, and it introduced affidavits from witnesses who did not appear at trial:

- Mario Tremblay: Dr. Tremblay is an expert in industrial chemistry, the chemical and physical nature and characteristics of detergent products and formulations, and analytical testing of detergent products and formulations. Dr. Tremblay's first report provides his opinions on the skilled person, common general knowledge, claim construction, and validity (anticipation, obviousness, sufficiency, and overbreadth). His second report provides his opinions in response to certain paragraphs of Dr. Clauss's first report and certain paragraphs of Dr. Nuckolls' first report.
- Jason Babcock: Dr. Babcock is an expert in the design and application of analytical chemistry techniques, including imaging techniques. Dr. Babcock's first report responds to Dr. Nuckolls' first report, and also explains the design, results, and analysis of his own tests on granules taken from Jempak's products

and on ingredients from Jempak's suppliers. Dr. Babcock also provided sur-reply to Dr. Nuckolls' reply report.

- Paul Mort: Dr. Mort is an expert in the properties and functions of detergent formulation ingredients, in the development and manufacturing of detergent formulations, granulated detergent products, and stabilized detergent ingredients (like sodium percarbonate), and in the interpretation of analytical tests of detergent products and compositions. Dr. Mort provided one expert report with opinions on infringement (in response to Dr. Clauss's and Dr. Nuckolls' first reports) and on the *Gillette* defence.
- Pauline Booth and Sid Jaishankar: Ms. Booth and Mr. Jaishankar provided expert evidence in response to Mr. Harington's opinions on remedies.
- Nihat Elbi: Mr. Elbi, a chemist, was Senior Vice President of Research and Development at Jempak from 2010 to 2022 and he was responsible for the design, development, and manufacture of Jempak's monodose dishwasher pods. Mr. Elbi gave evidence about Jempak's products, including the ingredients and manufacturing processes.
- Pierre Goffinet: Dr. Goffinet gave evidence on two pieces of prior art that Jempak relies on for anticipation and obviousness—the Soludoz Product (for sale in France between 1988 and 1992) and the Le Nigen patent. Dr. Goffinet was the Director of Research and Development for a company in the Le Nigen group and he was in charge of developing a monodose laundry product in PVA film, later

marketed as Soludoz. Mr. Goffinet's affidavit and testimony described the development work for the Soludoz Product, its formulation, and the related patents.

- Georges-Éric Le Nigen: Mr. Le Nigen works for the Le Nigen group of companies founded by his late father, Norbert Claude Le Nigen. Norbert Claude Le Nigen is the named inventor on the Le Nigen patent. Mr. Le Nigen's affidavit and testimony described his work in the family business, his father's work, and the Soludoz Product, including product development, patent protection, and marketing.
- Richard Kalber: Mr. Kalber is the president of OCI Peroxygens LLC (OCI), a company that supplied percarbonate granules to Jempak's predecessors. Mr. Kalber gave evidence that his company's formulations for sodium percarbonate have not contained CMC or a nonionic surfactant since at least 2011.
- Derren Matthews: Ms. Matthews was a sales manager for Barentz Canada, formerly Cambrian Solutions Inc. She gave evidence that the sodium percarbonate granules Barentz Canada (and formerly Cambrian) supplied to Jempak's predecessors were manufactured by Zhejiang Jinke Chemicals Co, Ltd (Jinke), and by Jiangxi Boholy Chemicals Co, Ltd and Jiangxi Boholy Chemical Co, Ltd (Boholy). Her affidavit attaches documents about the Jinke and Boholy sodium percarbonate granules: (i) a document from Jinke stating that the sodium percarbonate it sold to Cambrian does not contain CMC; (ii) a document from

Lan Industrial Co, Ltd stating that the sodium percarbonate it supplied to Barentz Canada (formerly Cambrian) was manufactured by Boholy, Boholy does not use CMC to manufacture sodium percarbonate, and the product does not include nonionic surfactant (and providing the composition).

- Joël Gény (affidavit only): Dr. Gény worked for Solvay SA and gave evidence about Solvay SA's coated granular sodium percarbonate product and the Solvay prior art reference.
- Bastian Viel (affidavit only): Mr. Viel's evidence relates the remedies question of whether there was a non-infringing option or alternative. Some of Jempak's products contained a granular tetraacetylenediamine (TAED) bleach activator that had CMC as a binder, and Jempak contends it could have used a CMC-free TAED instead. Mr. Viel gave evidence about a CMC-free TAED that has been on the market since 2007.
- Lesley Bourget (affidavit only): Ms. Bourget, Vice President of Finance, provided an affidavit explaining Jempak's restructuring and attaching financial reports that are relevant to remedies.
- Elysia Panaroni, Kamal Poonia, Suzanna La Rose, Henry DeLima (affidavits only): These affidavits provide evidence on miscellaneous issues such as the samples that were sent to Dr. Babcock for analysis and prior art searching.

IV. Claim Construction

[35] Claim construction is the Court’s first task, antecedent to consideration of infringement and validity issues: *Whirlpool Corp v Camco Inc*, 2000 SCC 67 at para 43 [*Whirlpool*]. Patent claims receive one construction for all purposes: *Whirlpool* at para 49.

[36] Patents must be read in an informed and purposive way through the eyes of the skilled person—someone who is “ordinarily skilled in the art to which the invention relates and possessing the ordinary amount of knowledge incidental to that particular trade”: *Whirlpool* at para 70, citing *Consolboard Inc v MacMillan Bloedel (Sask) Ltd*, 1981 CanLII 15 (SCC) at 523 [*Consolboard*]; see also *Free World Trust v Électro Santé Inc*, 2000 SCC 66 at para 44 [*Free World*]. The skilled person has a level of skill and knowledge necessary to appreciate the nature and description of the invention at a technical level and embodies the “common general knowledge” or CGK that is generally known and accepted in the field: *Whirlpool* at para 53. For construction, the relevant date is the date the patent application was published: *Whirlpool* at para 55; *Free World* at paras 53-54.

[37] The common general knowledge or CGK is what the skilled person would generally know and accept at the relevant time: *Gemak FCA* at paras 95-96; *Mylan Pharmaceuticals ULC v Eli Lilly Canada Inc*, 2016 FCA 119 at para 24 [*Mylan*]. It is derived from a commonsense approach to the question of what would be known to the skilled person who is good at their job and reasonably diligent in keeping up with advances in the field: *Rovi Guides Inc v Videotron Ltd*, 2024 FCA 125 at para 61. Information only migrates into the CGK if the skilled person

would become aware of it and accept it as a good basis for further action: *Mylan* at para 24; *Munchkin, Inc v Angelcare Canada Inc*, 2024 FCA 156 at para 17.

[38] The *Patent Act* promotes adherence to the language of the claims, which in turn promotes certainty, fairness, and predictability: *Free World* at paras 31, 43, 51, 59; *Whirlpool* at paras 49, 53. A patent must be read by a mind willing to understand and paying close attention to the author's purpose and intent, not by a mind desirous of misunderstanding: *Whirlpool* at para 49; *Free World* at para 44.

[39] A purposive construction will determine whether claim elements are essential or non-essential: *Free World* at para 31; *Tearlab Corporation v I-MED Pharma Inc*, 2019 FCA 179 at paras 30-34 [*Tearlab*]. If an essential element of a claim is different or omitted, there is no infringement: *Free World* at para 31.

[40] Claim construction is a matter of law for the Court to decide: *Whirlpool* at para 61; *Zero Spill Systems (Int'l) Inc v Heide*, 2015 FCA 115 at para 41. Expert witnesses assist the Court by opining on the skilled person (their qualifications, relevant experience, and knowledge) and how to assess the issues in dispute from the skilled person's frame of reference in view of the relevant experience and knowledge they would bring to bear: *Tetra Tech EBA Inc v Georgetown Rail Equipment Company*, 2019 FCA 203 at para 88, citing *Free World* at para 51.

[41] In this case, Dr. Clauss and Dr. Tremblay gave opinions on the skilled person, their common general knowledge, and claim construction.

[42] As noted above, Jempak contends there are reasons to treat Dr. Tremblay's evidence carefully, given his cross-examination testimony. Jempak does not withdraw Dr. Tremblay's evidence or argue that it should be struck (in fact, Jempak relies on Dr. Tremblay's opinions for claim construction). Rather, Jempak submits that it would be appropriate for the Court to give his evidence diminished weight.

[43] For the most part, Dr. Clauss's and Dr. Tremblay's opinions on the skilled person, their common general knowledge, and claim construction are very close, and both experts' opinions therefore assist in construing the claims from the skilled person's frame of reference. On the few points where their opinions diverge, I prefer Dr. Clauss's opinions. Ultimately, my construction of the claim terms is not affected by the weight afforded to Dr. Tremblay's evidence.

A. *The 428 Patent*

[44] The application for the 428 Patent was filed in Canada on January 12, 1998 with an earliest priority date of January 10, 1997. It was published on July 16, 1998, issued on January 2, 2007, and expired on January 12, 2018. Mr. Hinton is the sole named inventor. GEMAK is the owner by assignment.

[45] The 428 Patent states that the invention relates to detergent product formulations that can be packaged in water-soluble film. It explains that a product of the invention is ideally for use in laundering and conditioning of fabrics in washing machines and for use in dishwashers. For convenience it is useful if this can be achieved by means of a soluble single compartment sachet

made from a water-soluble film such as PVA with varying amounts of bleaching detergents, including sodium percarbonate.

[46] The 428 Patent states:

- conventional detergents comprise perborates and zeolites and these compounds are not stable in water-soluble film;
- sodium percarbonate is a recognized bleaching agent but the use of percarbonate in sachets is not popular as it is unstable when combined with other components of high moisture content;
- previous attempts to manufacture fully built detergent and conditioner systems in a sachet have required a twin compartment sachet manufactured from a perforated film;
- twin compartment sachets are disadvantageous as they require more mechanical action to dissolve and they are expensive to manufacture;
- perforated film does not confer a significant shelf life to the components within the sachet and can reduce the oxidizing power of the bleaching agent;
- zeolites have high moisture content which affects the mechanical properties of the film.

[47] The 428 Patent states that an object of the invention is to provide a detergent or bleaching agent for cleaning in laundries, or in domestic washing machines or dishwashers, which is stable within a water-soluble film. It then states what the invention provides, being:

- a granulated percarbonate compound suitable for cleaning products where the percarbonate compound has been mixed with an encapsulating blend;
- an encapsulated percarbonate granule for use in detergent products storable in PVA film packaging, the granule comprising a percarbonate and a blend encapsulating the percarbonate, wherein the blend comprises a sulfate, carboxymethyl cellulose, and a nonionic surfactant;
- an encapsulation blend comprising sodium sulfate, carboxymethyl cellulose, and a nonionic surfactant blend;
- a detergent formulation comprising sodium percarbonate, carboxymethyl cellulose, sodium sulfate, nonionic surfactant blend, sodium [sic] silicate, and sodium tripolyphosphate—and not including zeolites or perborates;
- a detergent composition suitable for storage in a water-soluble PVA film packaging for at least nine months, comprising a granulated percarbonate and a blend which encapsulates the percarbonate, the blend comprising a sulfate, carboxymethyl cellulose and a nonionic surfactant, wherein the detergent composition further comprises sodium metasilicate and sodium tripolyphosphate and does not include a zeolite or a perborate, and wherein the detergent composition further comprises between 1% and 15% percarbonate.

[48] The 428 Patent has five examples. Example 1 describes what was done to determine the storage and durability of sachets that contained laundry and conditioner products. Example 2 provides the main ingredients for typical detergent product formulations and states that the amounts of the components can be varied, depending on the type of product required. Examples 3 and 4 describe the formulations for two laundering products that were prepared and packaged in PVA film. Example 5 describes a formulation for a dishwashing powder that was prepared and packaged in PVA film.

[49] The 428 Patent then describes the “Production of Formulation”:

The percarbonate was added to the sachet as shown in Figure 1 in the form of granules. These granules comprised percarbonate, sulphate and carboxy methyl cellulose in varying amounts together with a blend of nonionic surfactants to create a binding agent. These components were processed in order to produce a dust free granule of a diameter not less than 150 microns.

In order to produce the granules a horizontal type mixer was used. A liquid blend⁵ of the abovementioned laundry components was added to the mixer from a high pressure vessel incorporating an agitator. The liquid blend was fed in at a pressure of 60 pounds per square inch.

[...]

A typical encapsulation blend is as follows:

Sodium Sulphate (Anhydrous)	5-98%
Carboxy Methyl Cellulose	1-25%
Nonionic Surfactant blends	1-40%

Alternative nonionic surfactant blends comprising alcohol polyglycol ethoxylate oxide in the range of 0.5-5% have been used successfully.

⁵ A component of the formulations of examples 3, 4 and 5 was a “liquid blend.” The disclosure says this liquid blend was a nonionic surfactant blend and a low foam wetting agent together.

[50] The 428 Patent disclosure ends with:

The advantages of the invention and of the ways in which the disadvantages of the previously known arrangements are overcome include encapsulation of a percarbonate with a powder/liquid blend forming a granular product of suitable size and strength for use in a hot or cold process.

A single component sachet sealed such that the percarbonate does not decompose in the detergent contained within the sachet.

Upon dissolution the PVA leaves no residues i.e. it is fully dissolved.

No mechanical action is required to dissolve the PVA film.

The encapsulation process extends the shelf life of fully built detergent within the PVA sachet.

In the super concentrated form, a laundering formulation normally requires 50g per 4.5kg (dry weight) wash with normal soiling.

[51] The 428 Patent specification ends with 13 claims. The claims fall into two groups:

- Independent claim 1 and dependent claims 2-9 relate to a *detergent composition* suitable for storage in a water-soluble PVA film packaging for at least nine months. The detergent composition comprises a granulated percarbonate and a blend which encapsulates the percarbonate wherein the blend comprises a sulfate, carboxymethyl cellulose, and a nonionic surfactant, further comprises sodium metasilicate and sodium tripolyphosphate and does not include a zeolite or a perborate, and further comprises between 1% and 15% percarbonate.
- Independent claim 10 and dependent claims 11-13 relate to an *encapsulated percarbonate granule* for use in detergent products storable in PVA film packaging. The granule comprises a percarbonate and a blend encapsulating the

percarbonate wherein the blend comprises a sulfate, carboxymethyl cellulose, and a nonionic surfactant.

[52] GEMAK asserts claims 10-12 from the second group.

B. *The skilled person and their common general knowledge*

[53] Dr. Clauss and Dr. Tremblay opine that the skilled person has at least a BSc in chemistry and practical experience in powder and/or dry form detergent formulations. The only difference is in the years of practical experience the skilled person would have: two to three years according to Dr. Clauss and one year according to Dr. Tremblay.

[54] I agree with GEMAK that there is little difference between these opinions. Dr. Clauss said he chose two to three years of practical experience because the nuances of powder processing and powder formulation are not typically taught in school. In closing arguments, Jempak accepted that the skilled person would have two to three years of practical experience. I find that the person of ordinary skill in the art or science to which the 428 Patent relates is someone with a BSc in chemistry and two to three years of practical experience in powder and/or dry form detergent formulations.

[55] While the skilled person embodies the common general knowledge at the relevant time for considering an issue, the parties and their experts agree that there are no differences in the CGK at any of the relevant dates for deciding the issues in this action. I accept this and find that the skilled person and their CGK would be the same at all relevant dates.

[56] Dr. Clauss and Dr. Tremblay were mostly aligned on the CGK. Where there was a material difference in their opinions, I favoured Dr. Clauss's evidence. Dr. Clauss gave reasoned explanations for his CGK opinions and supported them with published references. I find that the following points would have been part of the skilled person's CGK as of the priority date, January 10, 1997, and would have remained part of the skilled person's CGK as of the publication date, July 16, 1998.

- Sodium percarbonate, CMC, sodium sulfate, and nonionic surfactants were well known ingredients in detergents.
- Sodium percarbonate is a bleaching agent used in powder laundry and dish detergents. It provides a solid source of hydrogen peroxide, which acts as an oxidizing agent in the wash and/or reacts with other ingredients to generate other oxidizing agents. Oxidizing bleaches introduce oxygen to chemically break up stains and soil molecules on laundry or dishware.
- Other bleaching agents were more common, historically. Sodium perborate was the dominant source of hydrogen peroxide in powder laundry detergent formulations, but there were concerns about the environmental impact. Dishwasher detergents were made with chlorine bleaches, which are corrosive. Sodium percarbonate was an alternative.
- Dr. Tremblay's evidence was that sodium percarbonate was widely used in both laundry and dish detergent formulations in the 1980s and it was the predominant bleaching agent in detergent products. Dr. Clauss disagreed, stating that sodium

percarbonate was not widely used in any detergents; there was a strong interest in using percarbonate for environmental and other reasons, but perborate was the predominant bleach in laundry detergents. I accept Dr. Clauss's opinion on this point. He explained that very few laundry detergents contained bleach. Before 1988, the only product with bleach that had a substantial market share was Oxydol, and the bleaching agent was perborate tetrahydrate. When Tide with Bleach was launched in 1988, it was considered to be a special type of detergent. When it was launched, Tide with Bleach had sodium perborate, and this remained the case through the 1990s.

- Sodium percarbonate was known to suffer from stability problems that cause it to degrade and lose its effectiveness as a bleaching agent, especially in the presence of moisture. In a detergent, sodium percarbonate must be stabilized and protected from moisture and other reactive components in the composition. Work was being done to improve stability. The strategies included a shell or barrier layer (which could also delay release into wash liquid) and physically isolating percarbonate in a separate compartment or layer.
- Most detergent compositions were powders, and the consumer would measure an amount for each load. There was an interest in unitized dose forms such as tablets and dissolving packets containing detergent granules, gels, or liquids—for convenience and to minimize skin contact and inhalation. However, the detergent industry was not focused on unitized detergent products, and there were challenges. Different strategies were tried, with varied success.

- PVA film was known. Detergents packaged in PVA film were also known. Monodose detergent products in a water-soluble PVA film were being developed and some were sold as commercialized products.
- However, developing detergent ingredients that were compatible with PVA film and could be enclosed in a pouch presented difficulties. When sodium percarbonate degrades, a byproduct is oxygen gas. In addition to reduced effectiveness (by decreasing the active oxygen available for cleaning), it was known that off-gassing can cause pressure to build and rupture a packet.

C. *Construction of claims 10-12*

[57] GEMAK asserts claims 10-12 of the 428 Patent, which are set out again below.

10. An encapsulated percarbonate granule for use in detergent products storeable [*sic*] in PVA film packaging, the granule comprising a percarbonate and a blend encapsulating the percarbonate, wherein the blend comprises a sulphate, carboxymethyl cellulose and a nonionic surfactant.

11. The encapsulated percarbonate granule as claimed in claim 10 wherein the percarbonate is sodium percarbonate.

12. The encapsulated percarbonate granule as claimed in claim 10 or 11 wherein the sulphate is sodium sulphate.

[58] Before trial, the parties provided a chart identifying the areas of agreement and disagreement on claim construction.

[59] Beginning with independent claim 10, there is no dispute between the parties or their experts about the meaning of the following claim terms:

- *percarbonate*;
- *detergent products and for use in detergent products* (which include dishwasher detergent products);
- *PVA film*;
- *sulfate*;
- *carboxymethyl cellulose*;
- *nonionic surfactant*.

[60] There is also no dispute that *comprising* and *comprises* are non-limiting terms.

[61] The parties said that the opinions in their experts' reports were not aligned on these terms:

- *an encapsulated percarbonate granule*;
- *the granule comprising...a blend encapsulating the percarbonate, wherein the blend comprises a sulfate, carboxymethyl cellulose, and a nonionic surfactant*;
- *storable in PVA film packaging*, including whether the granule must be storable in a sealed PVA film (that is, a film that is airtight and not perforated).

[62] With respect to dependent claims 11 and 12, there is no dispute between the parties or their experts about the meaning of the added limitations (*sodium percarbonate*, *sodium sulfate*). In fact, as noted above, the parties agree that if the percarbonate granules of the asserted products infringe claim 10 of the 428 Patent then they also infringe claims 11 and 12.

[63] GEMAK asserts that:

- the skilled person would understand encapsulation to mean capable of protecting the percarbonate; encapsulation does not need to be a perfect coating;
- *a blend encapsulating* means a mixture of substances that coats and is thus capable of protecting the percarbonate; the *blend* or mixture does not need to be uniform or permanent;
- *storable in PVA film packaging* means there is little to no deterioration of the product so as to be stable for a commercially relevant period of time (i.e. in excess of nine months), not that the product actually be stored in PVA film packaging; this aligns with the 428 Patent disclosure, which describes how the invention achieves stability of a percarbonate detergent within a sealed PVA film;
- *PVA film packaging* refers to a fully sealed PVA pod or sachet, not one where the PVA film is perforated.

[64] GEMAK criticizes Dr. Tremblay's claim construction opinion, arguing that his first and second reports provided different constructions for *encapsulated percarbonate granule* and

storable, with the second report requiring a higher level of stability for the percarbonate and his trial testimony confirming that he considers the encapsulating blend must provide stability that is measured in months to years and falls at the higher end of the stability spectrum. GEMAK says Dr. Tremblay’s “two-construction approach” is inconsistent with the principle that claims must receive one construction for all purposes. GEMAK contends Dr. Mort’s non-infringement opinions carry the same concerns because he followed Dr. Tremblay’s construction.

[65] Jempak states it was Dr. Clauss who gave different construction opinions and violated the principle that claims must receive one construction for all purposes. Dr. Tremblay’s construction was substantially aligned with Dr. Clauss’s first construction of *a blend encapsulating the percarbonate*—both constructions required the presence of a coating for the purpose of stability, but without any quantified level of stability—and Dr. Mort generally agreed with this construction. However, Jempak states Dr. Clauss departed dramatically from his first construction opinion in his report on validity (his second report), and he did so to avoid the prior art. In his first report, Dr. Clauss’s construction of *storable in PVA film packaging* was limited to explaining what PVA means. His “validity construction” added that *storable in PVA film packaging* means the encapsulating blend must provide sufficient stability to the percarbonate granule so it can be stored in a sealed (i.e., non-perforated) PVA film.

[66] Regarding Dr. Tremblay’s evidence, Jempak says Dr. Tremblay defaulted to agreeing with questions that were put to him in cross-examination even when they were clearly wrong—for example, he agreed that he gave two different constructions, one for validity and one for infringement, and that he was instructed by counsel to have two different constructions, even

though he never gave an infringement opinion. The suggestion that Dr. Tremblay was instructed to change his construction and did change his construction for the purpose of a non-existent infringement opinion is simply not consistent with the evidence. Jempak says Dr. Clauss, on the other hand, opined on construction and infringement in his first report and then revised his construction when he opined on validity in his second report.

[67] I do not agree with Jempak that Dr. Tremblay defaulted to agreeing with the questions put to him in cross-examination. He agreed with some points that were put to him, and he disagreed with other points. Cross-examination tests a witness's evidence and Dr. Tremblay's cross-examination revealed that he was confused about some concepts, such as the legal principle that claims must receive one interpretation. While this is, of course, a fundamental principle of Canadian patent law, what matters is whether Dr. Tremblay's confusion affects the reliability of his evidence on how the skilled person would construe claims 10-12 of the 428 Patent.

[68] Dr. Tremblay did add points about his claim construction in his second report. Dr. Clauss did the same. But I do not agree with the parties that either expert changed his construction opinion in his second report. In my view, both experts were clarifying their construction opinions in response to the other's opinions.

[69] Dr. Tremblay's evidence demands more care, but his claim construction opinion largely aligns with Dr. Clauss's opinion, with few points of difference between them. This alignment provides a measure of reliability (I note that GEMAK itself cites Dr. Tremblay's evidence to

support certain claim construction points). I have drawn from Dr. Tremblay's claim construction opinions on points that I find to be well-supported and consistent with Dr. Clauss's opinions.

[70] I accept Dr. Clauss's evidence that the skilled person would consider a *blend* to be synonymous with a mixture, and *blend* could be replaced with the word mixture without losing any important meaning. I also accept Dr. Clauss's opinion that a *blend encapsulating* means a mixture of substances that coats and is thus capable of protecting the percarbonate. Dr. Tremblay gave a similar opinion. He opined that an encapsulated percarbonate granule is one in which the percarbonate is coated with a mixture of substances comprising a sulfate, carboxymethyl cellulose, and a nonionic surfactant, and the blend creates a separation between the percarbonate and the surrounding environment to promote the stability of the percarbonate. He also opined that a skilled person would understand that the "encapsulation" described in the 428 Patent can attenuate or minimize the premature reactivity of the percarbonate (before it is meant to react in the washing machine or dishwasher). By attenuating this reactivity, the effective life of the percarbonate and the detergent product containing the percarbonate is extended. Dr. Clauss expressed uncertainty about what Dr. Tremblay meant by a "separation" between the surrounding environment and the percarbonate to "promote the stability of the percarbonate." However, Dr. Clauss noted that the 428 Patent indicates that formulations of the invention are stable, exhibiting little to no deterioration of the product or the sachet containing the product, so as to be stable for a commercially-relevant period of time (i.e., in excess of nine months). Dr. Clauss stated that, if this is what Dr. Tremblay intended, he would agree.

[71] In my view, Dr. Tremblay's "coated with a mixture of substances to create a separation between the percarbonate and the surrounding environment to promote the stability of the percarbonate" expresses the same concept as Dr. Clauss's "coats and is thus capable of protecting the percarbonate," or "create[s] a protective barrier that effectively stabilizes the percarbonate." Dr. Clauss testified that:

...the purpose of coating the percarbonate granules is, in fact, to provide a protective barrier layer around the granules to stabilize them. So the barrier layer is intended to impede the penetration of moisture through into the percarbonate granule to minimize the direct contact that the percarbonate has with other detergent ingredients that aren't in the coating.

[72] I find Dr. Clauss's and Dr. Tremblay's opinions on this point to be consistent with each other, and in my view their opinions are faithful to the claim language and the inventor's purpose and intent as reflected in the 428 Patent disclosure. Encapsulation does not need to be a perfect coating, but it must be one that creates a barrier or separation that protects the percarbonate from the surrounding environment.

[73] Dr. Clauss states that a *blend* need not be uniform (the components of the mixture do not have to be distributed uniformly) or permanent (the components of the mixture can separate out over time, or they can be separated). I will begin with uniformity and return to permanence in paragraph 84.

[74] Dr. Clauss states that claim 10 does not require the blend components to be uniformly distributed at any particular scale, pointing out that well-recognized mixtures have varying degrees of uniformity and that standard blending techniques may not result in a uniform

distribution. At trial, he said that blends in detergent coatings are not uniform on the molecular scale, but they are uniform on a practical scale of the size of the granules. He said that the blend of claim 10 does not need to be “unequivocally uniform.”

[75] I accept that claim 10 does not require the *blend* to exhibit uniformity at a molecular scale or be “unequivocally uniform,” but I do not find these extremes to be a helpful refinement of the skilled person’s understanding that a *blend* means a mixture, and a *blend encapsulating* means a mixture of substances that coats and is thus capable of protecting the percarbonate. Claim 10 covers a granule that *comprises* a percarbonate and a *blend* encapsulating the percarbonate. For that limitation to have meaning there must be a combination or distribution, on a practical scale, of the substances that make up the blend. A granule that simply comprises a percarbonate, a sulfate, carboxymethyl cellulose, and a nonionic surfactant does not fall within the scope of claim 10, even if the granule is storable in PVA film. To fall within the scope of claim 10, sulfate, carboxymethyl cellulose, and nonionic surfactant must be present in an encapsulating *blend*.

[76] Dr. Tremblay opined that, while the standard term “encapsulation” refers to a substance that is coated such that it is surrounded or “sealed” by one or more layers of another substance or substances (like a chocolate covered peanut), the skilled person reading the 428 Patent as a whole would understand that the encapsulation of the patent is not limited to this, because the process described in the patent would not make this type of encapsulated granule but instead would make granules formed by the agglomeration of the blend ingredients with the percarbonate. In Dr. Clauss’s second report, he agreed with Dr. Tremblay’s broader

understanding of “encapsulation” that is not limited to a coating that completely surrounds or seals the percarbonate.

[77] A purposive construction keeps the focus on the language of the claims: *Free World* at para 66. One considers the patent specification to understand what was meant by the words in the claims, but one must not enlarge or contract the scope of the claim as written and understood: *Tearlab* at para 33, citing *Whirlpool* at para 52 and *Free World* at para 32. As noted above, an *encapsulated percarbonate granule* of claim 10 is a granule comprising two things: *a percarbonate* and *a blend encapsulating the percarbonate*, the latter being a mixture of substances that coats and is thus capable of protecting the percarbonate. I find that a purposive construction would not restrict an *encapsulated percarbonate granule* to the standard meaning of encapsulation.

[78] Claim 10 says the granule is *for use* in detergent compositions that are *storable* in PVA film packaging. The claim elements *for use* and *storable* do not require the detergent composition to be stored in PVA film packaging. I agree with the experts that the skilled person would understand *for use in detergent compositions storable in PVA film packaging* to be a characteristic of the granule of claim 10, as a measure of its stability.

[79] In this regard, I accept Dr. Clauss’s opinion that stability is a spectrum (rather than a binary state) and the encapsulating blend must provide sufficient stability to the percarbonate granule so that it can be stored in a sealed (i.e., non-perforated) PVA film sachet. As Dr. Tremblay points out (in his first report), there are statements in 428 Patent that convey to the

skilled person that an advantage of the invention is that the percarbonate can be sealed in a sachet made of PVA film that is, to some extent, airtight and not perforated. The 428 Patent disclosure also says the use of percarbonate in sachets is “not popular” because percarbonate is unstable, and it refers to previous attempts to manufacture detergent sachets that required a twin compartment and perforated film. Construing *PVA film* to mean intact PVA film (no holes in it) is consistent with the 428 Patent specification without enlarging or contracting the scope of claim 10.

[80] I also accept Dr. Clauss’s opinion that the claim 10 term *storable* in PVA film packaging means storable for a commercially relevant period of time, with no rupturing of the pouch or degradation of the PVA film, no loss of solubility, and no substantial loss of active oxygen from the percarbonate bleach. In my view, the skilled person reading the 428 Patent would understand that a purpose of encapsulation is to attenuate or minimize the percarbonate off-gassing oxygen, which can rupture a PVA film pouch. Reading the claims purposively and in light of the specification as a whole, I find that claim 10 requires the encapsulated percarbonate granules to be sufficiently stable for use in a detergent composition that is storable in PVA film packaging for a commercially relevant period of time.

[81] Dr. Tremblay’s and Dr. Clauss’s construction opinions are very close on “stability.” Both consider *storable in PVA film packaging* to be about shelf life. Their opinions diverge on the specific “level” of stability, in months or years, that they believe is implicit in *storable in PVA film packaging*. Dr. Clauss said that the skilled person reading the patent would understand that the granules should have stability for at least nine months. According to his construction, *an*

encapsulated percarbonate granule of claim 10 is one where the encapsulation protects the percarbonate from reacting with other ingredients or moisture and decomposing to a degree that would compromise its usefulness as a bleaching agent “for use” in a detergent composition that is meant to be stored in a sealed PVA film pouch in excess of nine months. Dr. Tremblay agreed that stability is a spectrum and said the encapsulating blend must be sufficiently protective to stabilize percarbonate for a significant duration of time (i.e., months to years), toward the higher end of the stability spectrum.

[82] Neither expert explains why the skilled person would read claim 10 to require a specific number of months (or years) of storability. Storability in excess of nine months is an explicit limitation of claims 1 to 9⁶ but it is not an explicit limitation of claims 10 to 13. I question whether interpreting claim 10 to require storability in PVA film packaging for at least nine months (or other minimum period) is a purposive construction that is faithful to the claim language.

[83] That said, nothing turns on whether claim 10 requires a minimum period of storability and what the period would be. While it is improper to construe claims with a view to infringement or validity, it is not improper to concentrate on the important points of claim construction, based on an appreciation of what is in dispute: *Shire Biochem v Canada (Health)*, 2008 FC 538 at para 22. Defining storability with more precision than “a commercially relevant period of time” has no practical consequence for the infringement and validity issues in this action.

⁶ Claims 1-9, which are not asserted, cover a detergent composition suitable for storage in a water-soluble PVA film packaging for at least nine months.

[84] Lastly, I address Dr. Clauss's opinion that the skilled person reading the claims would not understand a *blend* to be permanent. There are two aspects to his opinion. The first is whether a blend can separate over time (Dr. Clauss's example was a blend of oil and vinegar). In my view, this is a "storability" point. It does not add to the skilled person's understanding that the blend must confer stability for a commercially relevant period of time, because an encapsulating blend that quickly separates would not be suitable. The second is whether a blend can be manually or chemically separated (Dr. Clauss's example was a blend of ground coffee with different types of coffee beans). I accept that components of a blend do not have to be irreversibly combined and impossible to separate back out, but again, I do not see this as a particularly helpful refinement. Claim 10 requires a granule that comprises a blend with three components. A granule that does not have sulfate, carboxymethyl cellulose, and nonionic surfactant present in a blend encapsulating the percarbonate does not fall within claim 10.

[85] GEMAK does not assert that claims 10-12 have non-essential elements and GEMAK has not shown that any element is non-essential. No experts opine that any elements of claims 10-12 are not essential. On a purposive construction, I find all claim elements to be essential elements.

[86] Having considered the experts' opinions on construction and the parties' positions, I find the skilled person would construe claim 10 as follows:

- *An encapsulated percarbonate granule for use in detergent products storable in PVA film packaging:*

- *granule* – an agglomeration of smaller particles; a granule has a larger size and greater stability by having less surface area relative to its volume;
- *percarbonate* – an alkali salt of percarbonate represented by the formula $M_2CO_3 \cdot 1.5 H_2O_2$ that can act as an oxidizing agent;
- *encapsulated percarbonate granule* – the percarbonate is coated and thus protected in a way that promotes stability of the percarbonate; encapsulation does not need to be a perfect coating, but it must be one that creates a barrier or separation that protects the percarbonate from the surrounding environment;
- *for use in detergent products storable in PVA film packaging* – a characteristic of the granule that relates to shelf life; the encapsulated percarbonate granule is sufficiently stable for use as a bleaching agent in a detergent product that would be stored in a sealed PVA film pouch for a commercially relevant period of time;
- *PVA film* – a water-soluble, polyvinyl alcohol film.
- *the granule comprising a percarbonate and a blend encapsulating the percarbonate:*
 - *the granule* – refers back to encapsulated percarbonate granule;
 - *comprising* – including but not limited to;

- *a percarbonate* – as above;
- *a blend encapsulating the percarbonate* – a mixture of substances that coats and thus is capable of protecting the percarbonate; *blend* requires a combination or distribution, on a practical scale, of the substances that make up the blend.
- *wherein the blend comprises a sulfate, carboxymethyl cellulose and a nonionic surfactant:*
 - *the blend* – refers back to a blend encapsulating the percarbonate;
 - *comprises* – including but not limited to;
 - *a sulfate* – a detergent ingredient typically used as a surfactant; a divalent anion with the chemical formula SO_4^{2-} ;
 - *carboxymethyl cellulose* – a cellulose derivative that consists of a cellulose backbone made up of glucopyranose monomers connected by hemiacetal linkages and bound to carboxymethyl groups ($-\text{CH}_2\text{-COOH}$);
 - *a nonionic surfactant* – a class of surfactants; an amphiphilic molecule that has no charged group in the hydrophilic head.

[87] The only limitation added by dependent claim 11 is that the percarbonate is *sodium percarbonate* ($\text{Na}_2\text{CO}_3 \cdot 1.5 \text{H}_2\text{O}_2$).

[88] The only limitation added by dependent claim 12 is that the sulfate is *sodium sulfate* (Na₂SO₄).

V. **Infringement**

[89] A patent grants to a patentee the exclusive right to make and use the invention and sell it to others to be used: *Patent Act*, s 42; *Monsanto Canada Inc v Schmeiser*, 2004 SCC 34 at para 25 [*Monsanto*]. Infringement is an act that deprives the inventor in whole or in part, directly or indirectly, of full enjoyment of the monopoly conferred by law: *Monsanto* at para 35. The issue is what the defendant does, not what he intends: *Monsanto* at paras 49, 57-58.

[90] GEMAK bears the burden of proving on a balance of probabilities that the asserted products contain granules with all essential elements of claim 10, 11, or 12. This requires sufficiently clear, convincing and cogent evidence to satisfy the burden of proof: *Takeda Canada Inc v Apotex Inc*, 2024 FC 106 at para 116 [*Takeda*], citing *Angelcare Canada Inc v Munchkin, Inc*, 2022 FC 507 at para 155.

A. *The parties' arguments*

[91] GEMAK states there is no dispute that all asserted products have *a percarbonate granule for use in detergent products*, and it states there should not be any dispute about the claim term *storable in PVA film packaging* even though Jempak refuses to concede the point. On this point, GEMAK says Jempak should be precluded from advancing non-infringement arguments that are based on a lack of stability or based on the asserted products having a PVA film that is perforated/not sealed, because these arguments violate the Elbi Order and attempt to advance a

non-infringement position that I determined would be prejudicial if permitted at a late stage in the action. Therefore, GEMAK's position is that infringement turns on whether the percarbonate granules in the asserted products are encapsulated by a blend, the blend comprising a sulfate, carboxymethyl cellulose, and a nonionic surfactant.

[92] GEMAK asserts that the experimental test results and expert opinions it advanced at trial prove, on a balance of probabilities, that each representative product contains sodium percarbonate granules (also referred to as beads) that are encapsulated by a blend that comprises a sulfate, CMC, and a nonionic surfactant:

- percarbonate beads, which can be visually distinguished from other detergent particles, were isolated from representative samples of the asserted products and tested;
- the tests confirmed that the beads were in fact sodium percarbonate granules; the tests also confirmed that CMC, sodium sulfate, and nonionic surfactant were all present on the surface of every tested granule;
- images of the post-extracted beads supported the likely location of the blend components;
- collectively, the blend was capable of protecting the percarbonate from moisture and other impurities, thereby preventing decomposition and consequent off-gassing:

- sodium sulfate reacts to immobilize water and slow its diffusion into the granule;
- nonionic surfactant also slows water penetration, by repelling or binding water; and
- CMC binds metal ions that are detrimental to percarbonate stability, immobilizing them and slowing their diffusion into the granule.

[93] Jempak argues that GEMAK has not met its burden on infringement.

[94] According to Jempak, GEMAK's experimental testing does not prove that the percarbonate granules of the asserted products have *a blend encapsulating the percarbonate, wherein the blend comprises a sulfate, carboxymethyl cellulose, and a nonionic surfactant*. Dr. Nuckolls claims to have found nanograms of CMC, measured in the number of molecules. However, Jempak's products do not contain CMC as a separate ingredient and the only known source of CMC is a granular bleach activator (TAED), added to only some of its products, that has 6-8% CMC as a binder. GEMAK does not explain the "mystery source" of CMC and Dr. Nuckolls' experiments did not test for false positives or control for cross-contamination. Furthermore, GEMAK has not advanced evidence that can prove that any detected CMC, sulfate, and nonionic surfactant are present in an encapsulating blend, and for this reason alone the infringement allegations must fail.

[95] GEMAK counters that Jempak tries to undermine Dr. Nuckolls' testing evidence with meritless theories that the experiments did not properly control for contamination (to raise the spectre of false positives) and did not demonstrate that detected substances came from the surface of the tested granules, which the Court should reject. Furthermore, GEMAK says Jempak tried but failed to affirmatively prove that its manufacturing process would not likely result in an encapsulating blend, and tried but failed to affirmatively prove that the source percarbonate granules used in its detergents (from Jempak's suppliers) and the percarbonate granules taken from inside its detergent pods do not contain all three blend components. According to GEMAK, Jempak's own expert evidence actually supports infringement.

[96] In addition, Jempak argues that GEMAK has not met its burden on infringement because it has not: (i) advanced evidence demonstrating that any encapsulating blend, if it exists, would be capable of protecting or stabilizing the percarbonate granules of the asserted products; or (ii) proven that the percarbonate granules are functionally stable in any way, let alone storable in sealed PVA film packaging that does not allow oxygen to escape as Dr. Clauss's construction of claim 10 requires. Jempak submits that:

- GEMAK did not do stability testing to assess the stability of source percarbonate granules from Jempak's suppliers (which do not contain a combination of sulfate, CMC, and nonionic surfactant) or compare it to the stability of percarbonate granules manually removed from Jempak's products;

- without stability testing, there is no evidence that any encapsulating blend that may be present on removed granules is capable of protecting or stabilizing the percarbonate as claim 10 requires;
- the miniscule amounts of detected CMC cannot and do not function to coat and protect/stabilize the percarbonate in Jempak's products;
- there is no evidence that the coated sodium percarbonate granules of Jempak's products are storable in PVA film packaging that is sealed and prevents oxygen from escaping, and there is evidence to the contrary:
 - Jempak's granules decompose and lose significantly more active oxygen than the amount of active oxygen loss that Dr. Clauss said was a sign that prior art formulations did not contain encapsulated percarbonate; and
 - the outer packaging for the asserted products has a vent hole, which is necessary to prevent bloated packaging.

[97] GEMAK counters that Jempak should not be permitted to rely on these additional arguments about stability. GEMAK states there was never a dispute about *storable in PVA film packaging*. It did the infringement testing that was necessary to prove the claim elements that were in dispute, and there was no need to do stability testing.

B. *In-chief and responding expert evidence*

(1) GEMAK: Dr. Nuckolls

[98] GEMAK asked its expert, Dr. Nuckolls, to test sodium percarbonate beads that were manually removed from eight representative Jempak detergent products. There were two aspects to Dr. Nuckolls' mandate. He was asked to give his analysis and conclusions on whether sodium sulfate, carboxymethyl cellulose, and nonionic surfactant were present, and whether they were present in a blend encapsulating the sodium percarbonate beads.

[99] Dr. Nuckolls designed and conducted tests that employed three experimental techniques:

- Raman spectroscopy: Spectroscopy is the science of measuring how a substance responds to electromagnetic radiation at different frequencies. Raman spectroscopy uses radiation from a laser to detect molecular vibrations in the infrared range (i.e., $\sim 10^{-4}$ to 10^{-6} m). A molecule or material will exhibit multiple Raman active vibrational modes which, taken together, provide a “fingerprint” that can distinguish between different molecules or materials.
- Ultra-high performance liquid chromatography-mass spectrometry (UPLC-MS): This is a type of LC-MS. LC-MS combines two techniques. First, components in a liquid sample are separated using a column. The conditions are designed so that components of the sample pass through the column at different rates. Second, as each separated component emerges from the column, a mass spectrometer introduces a charge to create ions (a charged molecule is a molecular ion) and plots the results, showing the ions that are detected. Dr. Nuckolls used two

instruments: one to detect the target analyte for nonionic surfactant (UPLC-Q-TOF-MS) and another to detect the target analyte for CMC (LC-QQQ (TQ)-MS).

- Scanning electron microscopy (SEM): This equipment uses electrons to image materials at high magnification. A focused beam of electrons sweeps over the surface of the sample and produces a detailed topographic image.

[100] Dr. Nuckolls developed a method to extract CMC and nonionic surfactant localized on the exterior of each sodium percarbonate bead, leaving an intact bead, and then test both the extract and the bead left behind.

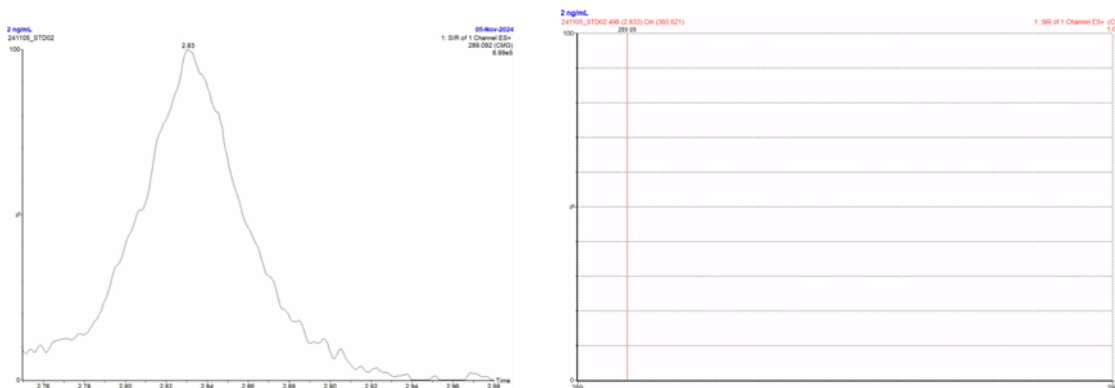
[101] Detergent pods were cut open and the contents emptied into a petri dish. Sodium percarbonate beads were visually identified, removed with tweezers, and placed in separate vials. A methanol extraction process was used to remove organic material. Since CMC and nonionic surfactant are organic materials that are soluble in methanol, and the inorganic salts sodium sulfate and sodium percarbonate are not, the extracted material was tested for CMC and nonionic surfactant using UPLC-MS and the parts of the bead left behind were tested for sulfate and percarbonate using Raman spectroscopy. The post-extracted beads were imaged using SEM.

[102] For the UPLC-MS tests:

- Acidic methanolysis, using hydrochloric acid and methanol, was used to break down carboxymethyl cellulose into its carboxymethyl glucose (or CMG) subunits. The reaction forms dimethylcarboxymethyl glucose (or dimethyl CMG). The

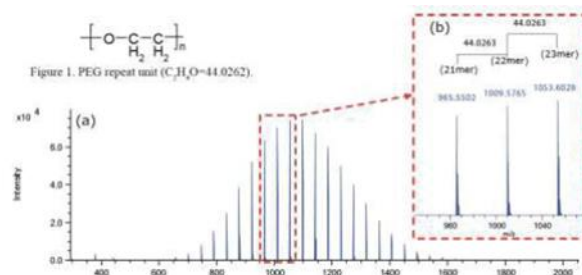
methanol and hydrochloric acid were then evaporated and the residue dissolved in acetonitrile for injection into the chromatography column.

- Mass spectrometry was used to detect a molecular ion of dimethyl CMG. A signal at a retention time of ~2.80-2.85 minutes with a mass to charge ratio of 289.09 was considered to be confirmation of the presence of the dimethyl CMG ion, and hence, CMC. Two plots for a dimethyl CMG standard are shown below for illustration. The chromatogram on the left shows when the analyte elutes (i.e., the retention time in the column) and the mass spectrogram on the right shows the analyte's mass to charge ratio.



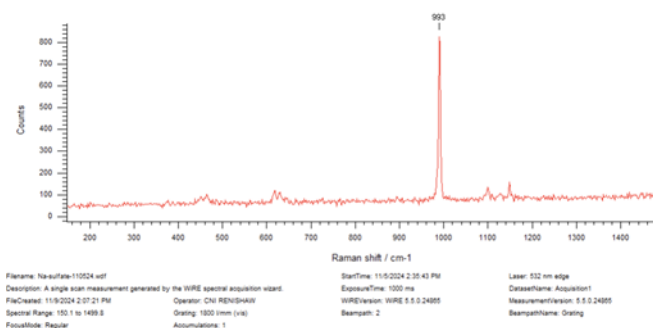
- The amount of CMC in the extracts from the tested beads was estimated using a calibration curve, generated with a series of dimethyl CMG standards. The equation for the calibration curve was used to estimate the concentration of dimethyl CMG in the bead extracts, and the estimated dimethyl CMG concentration was then used to calculate the corresponding mass and number of molecules of CMC.

- Mass spectrometry was also used to detect nonionic surfactant. A pattern of peaks having the same spacing between them (representing the repeat units for common nonionic surfactants) was taken as confirmation of the presence of nonionic surfactant. To illustrate, an example pattern for polyethylene glycol is shown below:



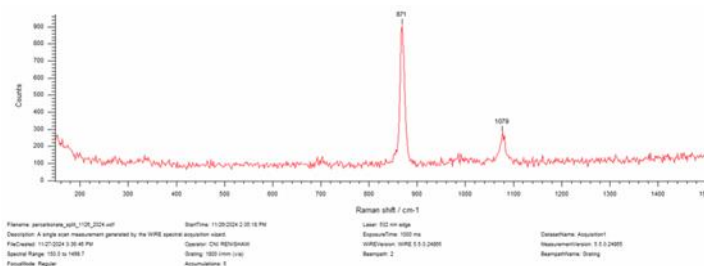
[103] For the post-extracted beads:

- Raman spectroscopy was used to detect sodium sulfate at random locations on the exterior surface of each bead. The presence of a peak at $\sim 994 \text{ cm}^{-1}$ (the wavenumber can vary by a few units) was taken as confirmation of sodium sulfate. To illustrate, a Raman spectrum for sodium sulfate, showing a peak at 993 cm^{-1} , is below:



- To confirm that the tested beads were percarbonate granules, the beads were cut and Raman spectroscopy was used to look for peaks at $\sim 1080 \text{ cm}^{-1}$ (carbonate

peak) and $\sim 873\text{ cm}^{-1}$ (peroxide peak) on the interior. The peroxide peak was not always present, in which case the carbonate peak coupled with visual identification were taken as confirmation that the bead was a percarbonate granule. A representative Raman spectrum for sodium percarbonate (with peaks at 871 cm^{-1} and 1079 cm^{-1}) is shown below:



- The post-extracted beads were covered with a conductive material and imaged using SEM.

[104] Based on the results of the experiments, Dr. Nuckolls concluded that each of the tested products contains sodium percarbonate beads encapsulated by a blend comprising sulfate, carboxymethyl cellulose, and nonionic surfactant. He stated:

- Raman spectra confirmed the presence of sulfate on the exterior of the beads and sodium percarbonate on the interior of the beads.
- UPLC-MS confirmed the presence of carboxymethyl cellulose on the extracted exteriors of the beads. Dr. Nuckolls calculated the amount of detected CMC to be in the range of 822 to 14,763 parts per billion (ppb), with an overall average of 5,004 ppb or about 500 nanograms of CMC. The amount of CMC could be as

much as two orders of magnitude higher, given the losses inherent in the experimental process.

- UPLC-MS confirmed the presence of nonionic surfactant on the extracted exteriors of the beads.
- Thus, Raman spectroscopy and UPLC-MS demonstrated that carboxymethyl cellulose, nonionic surfactant, and sodium sulfate were all present on the exterior of the tested sodium percarbonate beads.
- The three components together “comprise a blend that encapsulates the sodium percarbonate bead.”
- SEM images were taken of post-extracted beads, to help understand the likely spatial relationship between the three blend components:
 - the surface of post-extracted beads was irregular, and it is evident that the visible negative space was formerly occupied by the now-removed CMC and nonionic surfactant:



- from a review of SEM images, Dr. Nuckolls concluded that the organic carboxymethyl cellulose and nonionic surfactant are “necessarily in a mechanical mixture” with the sodium sulfate on the exterior of the sodium percarbonate beads in representative tested products;
- in this blend, the sodium sulfate is the anchor to the polar and ionic percarbonate core, and the polar and ionic portions of the sodium sulfate are complementary to the polar carboxylate groups on the carboxymethyl cellulose;
- the remaining carbohydrate portions of carboxymethyl cellulose are complementary to the nonionic surfactant;
- the three components then effectively form a shell around the percarbonate core, filling in and conforming to the crevices and craters seen in the SEM image;
- thus, together these components are the blend that makes up the exterior of the particle and encapsulates the sodium percarbonate core.

(2) GEMAK: Dr. Clauss

[105] For his first report, Dr. Clauss considered information from the examination for discovery of Jempak’s representative, Jempak’s Standard Manufacturing Procedures (SMPs) for the asserted products, and Dr. Nuckolls’ report.

[106] Dr. Clauss opined that Dr. Nuckolls' test results are representative of Jempak's products from all three categories—standard, premium, and environmental. In his opinion, the SMPs, Jempak's discovery, and Dr. Nuckolls' report establish that each of the asserted products exhibits the essential elements of claim 10: (i) an encapsulated percarbonate granule for use in detergent products and that is storable in PVA film packaging; (ii) the granule comprising percarbonate and a blend encapsulating the percarbonate; and (iii) the blend comprising a sulfate, carboxymethyl cellulose, and a nonionic surfactant.

[107] In Dr. Clauss's view, the following information shows that the asserted products have element (i), an encapsulated percarbonate granule for use in detergent products and that is storable in a PVA film packaging:

- Each of the asserted products contains percarbonate granules, identified on the SMPs as "sodium percarbonate coated." Jempak confirmed on discovery that "sodium percarbonate coated" are percarbonate granules that provide an oxidizing or bleaching function and that each of its monodose dishwasher detergent products contains them. Jempak further confirmed that all sodium percarbonate used in the pods at issue was sourced from OCI or Cambrian, and the Cambrian percarbonate granules were made by Jinke and Boholy. Jempak provided documentation from suppliers with the asserted contents of "sodium percarbonate coated."
- Jempak confirmed on discovery that its detergent is stored in PVA film that is between 20 and 80 microns thick. The film is apparent on inspection.

[108] With respect to element (ii), the granule comprising percarbonate and a blend encapsulating the percarbonate, and element (iii), the blend comprising a sulfate, carboxymethyl cellulose and a nonionic surfactant, Dr. Clauss relied on the opinions and analyses in Dr. Nuckolls' report:

- Dr. Nuckolls detected carboxymethyl cellulose, nonionic surfactant, and sulfate on the exterior of sodium percarbonate beads from each of the asserted products that he tested. In Dr. Nuckolls' opinion, based on the testing data and how these products are configured, the carboxymethyl cellulose, nonionic surfactant, and sulfate encapsulate the percarbonate (i.e., they comprise a mixture of substances that coats and is capable of protecting the percarbonate).
- Given Dr. Nuckolls' conclusion as to the presence of a mixture of sodium sulfate, carboxymethyl cellulose, and a nonionic surfactant on the surface of the granules, the mixture is capable of protecting the sodium percarbonate from moisture and various impurities, thereby preventing decomposition and consequent off-gassing:
 - sulfates bind water and slow its diffusion into the granule;
 - nonionic surfactants slow the penetration of water by binding and/or repelling water;
 - CMC inhibits decomposition caused by metal ions; due to its high surface activity and high affinity for binding metal ions, very small amounts of CMC can stabilize much greater amounts of sodium percarbonate when used as part of an encapsulating blend; the amounts of CMC quantified by

Dr. Nuckolls are sufficient to provide a functional benefit, and sufficient to cover the surface of a bead many times—tens to hundreds of layers.

- The presence of sulfate, carboxymethyl cellulose, and a nonionic surfactant is consistent with information in the SMPs:
 - Jempak admitted that the asserted products contain sulfate and nonionic surfactant, documentation from OCI indicates that the sodium percarbonate granules it supplied contain sulfate, and the SMPs show that sodium sulfate and nonionic surfactant were detergent ingredients;
 - one potential source of CMC is the bleach activator TAED—the SMPs show that some of the asserted products had TAED and Jempak confirmed on discovery that the TAED it used (Mykon TAED, manufactured by Warwick Chemicals) contains CMC;
 - since Dr. Nuckolls detected CMC in all tested products, even those without TAED, there are evidently other sources of CMC, either as unconfirmed components of other ingredients in the asserted products or as a component that is introduced through Jempak's production process.
- The levels of carboxymethyl cellulose that Dr. Nuckolls quantified are sufficient to provide a benefit to the blend encapsulating the percarbonate or to the detergent composition itself:

- carboxymethyl cellulose's high surface activity (i.e. high absorptivity onto and coverage of surfaces) and high affinity for binding transition metal ions at very low concentrations provide a mechanism for very small amounts of carboxymethyl cellulose to stabilize much greater amounts of sodium percarbonate when used as part of an encapsulating blend on the percarbonate;
- the amounts of CMC that Dr. Nuckolls detected would be sufficient to cover the surface of the percarbonate beads with tens to hundreds of layers;
- carboxymethyl cellulose is therefore present as a substantial component of the blend protecting the sodium percarbonate.

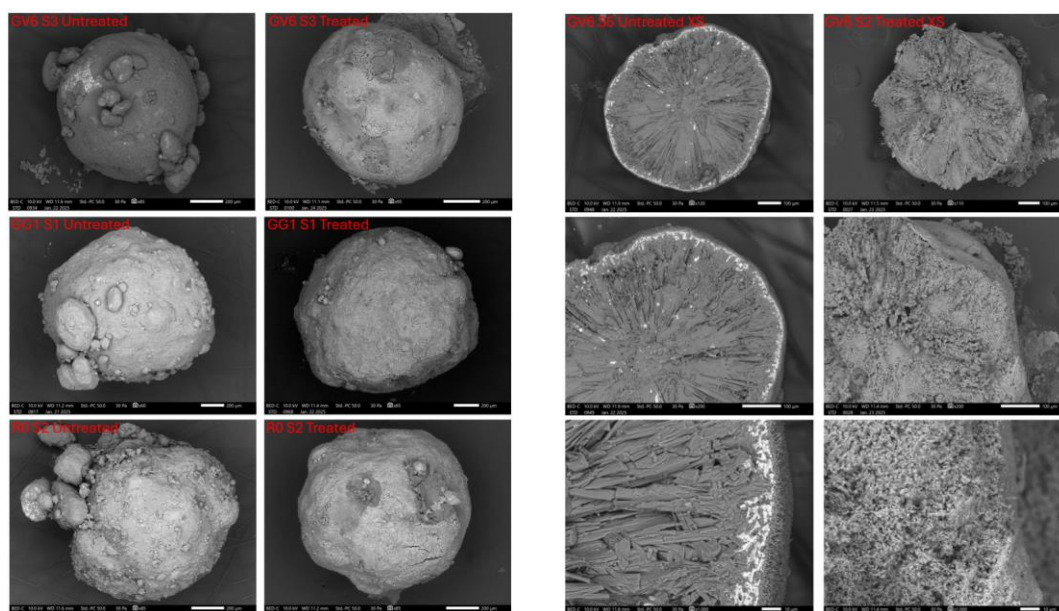
(3) Jempak: Dr. Babcock

[109] Dr. Babcock imaged and tested ingredients from suppliers (percarbonate granules and TAED from suppliers) as well as percarbonate granules that he manually removed from Jempak's detergent pods. While he used similar experimental techniques as Dr. Nuckolls (LC-MS, Raman, SEM) he used different laboratory equipment and/or experimental methods. For example, Dr. Babcock used an SEM instrument capable of performing energy dispersive X-ray spectroscopy (EDS), which can identify chemical elements such as carbon and oxygen, although he did not rely on the EDS results (the EDS functionality failed during testing, and according to Dr. Babcock, the data were incomplete and of uncertain accuracy). Another difference was that Dr. Babcock used a different chemical process to break down CMC, and his LC-MS testing targeted a different analyte (ions of CMG) using a different type of mass spectrometer. He

opined that the samples he tested did not have, or his tests did not detect, CMC, and some samples also did not have nonionic surfactant.

[110] Dr. Babcock also responded to Dr. Nuckolls' report. He gave his opinions on Dr. Nuckolls tests and the conclusions that Dr. Nuckolls drew from the results, including:

- The methanol treatment Dr. Nuckolls used is a destructive process that indiscriminately degrades and removes material that may be located around, on, and inside samples subjected to this process. Once a granule is subjected to the methanol treatment and material is removed, any information about where a substance was relative to other substances or relative to the granule itself is lost, and there is no way to know where the detected analytes originated. Dr. Nuckolls' test method does not and cannot provide information as to where any detected substance was in relation to other substances or in relation to the granule itself.
- Dr. Nuckolls' use of SEM images that were taken after methanol treatment to deduce what materials were on the bead's surface and where they were before being subjected to the experimental process is not a reliable or reasonable scientific methodology. Dr. Babcock imaged untreated and methanol-treated beads using SEM, and opined that the images (examples are below) show that methanol treatment removes materials resting on the surface, degrades the surface layer, and removes material from the interior of the beads.



- With LC-MS testing, it is important to run and analyze both process blanks and solvent blanks to verify that a detected analyte was not introduced by the test process (i.e., contamination). Dr. Nuckolls did not run process blanks. He ran solvent blanks but did not analyze them. Consequently, it is not possible to conclude whether the compounds he detected came from the samples or from test materials or equipment. It cannot be known with a sufficient level of scientific certainty if the parts per billion CMC concentrations Dr. Nuckolls detected were due to CMC being present around, on, and/or in the tested samples or whether experimental error introduced it as a contaminant.
- Further, the method that was used to isolate and remove sodium percarbonate granules from the detergent carries a high risk of cross-contamination by other detergent material, especially at the parts per billion concentrations that Dr. Nuckolls detected.

- Dr. Nuckolls' report does not present the full chromatogram or mass spectra results or explain differences between the reported results as compared to the complete experimental data, and in Dr. Babcock's opinion, the differences call into question the reliability of Dr. Nuckolls' conclusions:
 - the full dimethyl CMG chromatograms for the bead extracts have three additional peaks not found in the dimethyl CMG standards that, in Dr. Babcock's opinion, represent different ions with the same molecular weight as the target ion;
 - the solvent blank chromatograms exhibited peak at retention times that were very close to the retention time for dimethyl CMG;
 - the nonionic surfactant chromatograms in the report and the complete experimental data do not match.

(4) Jempak: Dr. Mort

[111] Dr. Mort provided opinions on the nature and characteristics of Jempak's detergent manufacturing process and detergent products. He also responded to Dr. Clauss's and Dr. Nuckolls' opinions and reports and opined on infringement and the *Gillette* defence.

[112] Dr. Mort opined that:

- The process to manufacture the Jempak detergents is a standard admixing process using a low-shear paddle mixer with the sequential addition of bulk powder

ingredients, the spray-addition of liquid ingredients (including nonionic surfactant), and then the addition of sensitive ingredients, such as coated sodium percarbonate granules, coated enzymes, and coated TAED granules, at the end of the process. The resulting detergent formulation is a function of the manufacturing process and would be a formulation of granules, powders, and some agglomerates thereof.

- The coated sodium percarbonate granules in Jempak's products are commercially available granules supplied by the manufacturers as coated sodium percarbonate granules. Based on information from the suppliers (and other information), the coated sodium percarbonate granules do not contain CMC. Also, CMC was not added to Jempak's products as a separate ingredient.
- CMC is present in TAED as a binder. There is no rational scientific reason to believe CMC will disassociate from TAED granules and migrate preferentially to another surface in the detergent formulation process.
- Nonionic surfactant (a liquid) may adhere powdered ingredients that are present at the time of its addition. To a lesser degree, there may be adherence between the sensitive ingredients that are added after this step and components of the formulation. During the manufacturing process, granulated components, such as coated sodium percarbonate, may contact other components such that smaller granules or agglomerates of other ingredients would randomly adhere to their exterior surface, but the process would not substantially degrade or break the

intact raw ingredients into their constituent subcomponents—including, for example, the CMC in TAED granules.

- Jempak’s products incorporate the claim elements *for use in detergent products, storable in PVA film packaging, and the granule comprising...percarbonate.*

However, Jempak’s detergent products do not infringe claim 10 of the 428 Patent (nor claims 11 to 12 which depend on claim 10) because the coated sodium percarbonate contained in Jempak’s products are not encapsulated with a blend containing a sulfate, carboxymethyl cellulose, and a nonionic surfactant:

- Jempak’s process would have little to no effect on the commercial sodium percarbonate granules, which are “encapsulated” by the manufacturer and remain as such when incorporated into the Jempak products; these granules are not encapsulated by a blend that comprises a sulfate, carboxymethyl cellulose, and a nonionic surfactant;
- Jempak’s formulation will contain coated sodium percarbonate granules as supplied from the manufacturer and, at least in some instances, the granules will have other ingredients and clusters of ingredients adhered to their surface;
- ingredients adhering to the external surface of the granules serve no role in stabilizing and protecting the percarbonate and there is no reason to believe that the particles randomly adhering to the already coated sodium percarbonate would provide any additional stability; the amount of CMC Dr. Nuckolls detected is miniscule and would not protect and stabilize the percarbonate.

- The testing Dr. Nuckolls conducted cannot support the conclusion that CMC and/or nonionic surfactant is localized on the exterior of sodium percarbonate granules, including as a component of a blend that encapsulates the sodium percarbonate core. Fundamental shortcomings of Dr. Nuckolls' testing protocol make it impossible to conclude what components are on the exterior of the sodium percarbonate beads or their spatial arrangement: the protocol does not control for other components of the formulation accompanying the sodium percarbonate beads tested, and the destructive nature of the methanol treatment makes it impossible to draw conclusions on the origin of the components detected using LC-MS. Dr. Clauss relies on Dr. Nuckolls' data, information, and conclusions, and the shortcomings in Dr. Nuckolls' testing and analysis similarly preclude Dr. Clauss from drawing any conclusions on the components located on the exterior of the sodium percarbonate granules or their spatial arrangement.
- Dr. Mort disagrees with Dr. Clauss that the detected CMC (on the scale of parts per billion or nanograms) serve a functional role in protecting the sodium percarbonate granules by binding to and immobilizing metal ions, and disagrees with Dr. Clauss that CMC would form sheets enveloping the coated sodium percarbonate granules, which is a chemically and physically impossible result.
- Regarding the *Gillette* defence, Dr. Mort opines that Rommel, Solvay, Le Nigen, and the Soludoz Product were made using a standard admixing process with the same general characteristics as Jempak's process. If one assumes that Jempak's

products contain free CMC, then the general nature and characteristics of the prior art formulations and Jempak's formulations would be the same.

C. *Reply and sur-reply expert evidence*

[113] GEMAK seeks leave to rely on reply expert evidence on infringement, from both Dr. Nuckolls and Dr. Clauss. Jempak contends that all of Dr. Nuckolls' reply evidence and parts of Dr. Clauss's reply evidence are inadmissible.

[114] GEMAK seeks leave to rely on reply evidence from Dr. Nuckolls that:

- explains how Dr. Babcock failed to provide detailed and complete experiment protocols for the tests he conducted;
- provides Dr. Nuckolls' opinion that Dr. Babcock's LC-MS experiments were not capable of reliably detecting CMC or nonionic surfactant; the reply explains the shortcomings of Dr. Babcock's LC-MS method, which used a trifluoroacetic acid (TFA) process according to the Momcilovic⁷ manuscript, and why the method is inadequate for detecting CMC compared to the "well preceded" acidic methanolysis method that Dr. Nuckolls used; Dr. Nuckolls also ran tests to show that Dr. Babcock's TFA method would have lost most of the CMC and invalidated his LC-MS experiments;

⁷ D. Momcilovic et al, *Rapid Commun Mass Spectrom* 2003; 17: 1107–1115

- analyzes Raman data and EDS data that Dr. Babcock obtained but did not analyze; in Dr. Nuckolls' opinion, the Raman and EDS data confirm and/or support the presence of nonionic surfactant and carboxymethyl cellulose on the surface of tested percarbonate beads;
- explains what Dr. Babcock's SEM images show and why Dr. Nuckolls believes the inferences Dr. Babcock draws from them are incorrect;
- provides Dr. Nuckolls' responses to Jempak's experts' critiques of the tests and opinions in his first report; as part of the response, Dr. Nuckolls directed additional testing on sodium percarbonate beads that were first "vortexed"⁸ to remove potential particles from the surface," to address opinions that the nonionic surfactant and CMC he detected likely came from particles that were sitting on the surface of the percarbonate beads; and
- explains that Dr. Nuckolls did not test any of the ingredients used in Jempak's detergent products because he did not have access to the ingredients.

[115] GEMAK seeks leave to rely on reply evidence from Dr. Clauss that:

- explains that certain points in Dr. Tremblay's second report are incorrect or incomplete;

⁸ Dr. Nuckolls' reply explains that, "A vortex machine (or vortex mixer) is a device that has a circular rubber platform that vibrates or spins in a circular motion. It can be operated at high speeds and is used to thoroughly mix ingredients together. Here, the vortex mixer was used to dislodge any clumps or extraneous particles sitting on the surface of the percarbonate bead."

- provides Dr. Clauss's responses to Dr. Mort's infringement opinions that Dr. Clauss says he could not have anticipated, and to Dr. Mort's opinions on the *Gillette* defence (Jempak does not object to Dr. Clauss's reply evidence on the *Gillette* defence); and
- provides Dr. Clauss's responding opinions on non-infringing options or alternatives (GEMAK had a right of reply on non-infringing options or alternatives).

[116] Dr. Babcock's sur-reply report addresses opinions in Dr. Nuckolls' and Dr. Clauss's reply reports. In his sur-reply report, Dr. Babcock:

- provides his responses to Dr. Nuckolls' critiques or analysis of the test methods, test results/data, and opinions of Dr. Babcock's first report, and to Dr. Clauss's critiques or analysis of test results/data from EDS and SEM;
- addresses Dr. Nuckolls' tests related to Dr. Babcock's LC-MS process using TFA;
- provides Dr. Babcock's opinions on the flaws of Dr. Nuckolls' experiments on vortexed beads and his responses to Dr. Clauss's opinions about Dr. Nuckolls' experiments on vortexed beads.

[117] Turning to the parties' arguments, GEMAK states Dr. Nuckolls' and Dr. Clauss's evidence is proper reply. The evidence is not "mere disagreement" between experts, and its

admission is necessary for the Court to have a balanced and complete evaluation of evidence that is central to infringement. Much of the reply evidence responds to new experimental tests by Dr. Babcock (which differed from GEMAK's testing in significant ways) and the opinions of Jempak's experts that are based on the results. It explains flaws in the methodology that should not be shielded from expert scrutiny, and it also explains how the test results (including results that Dr. Babcock did not analyze) are actually consistent with infringement. GEMAK states the reply evidence also responds to unexpected opinions from Jempak's experts about the in-chief evidence on infringement. Dr. Nuckolls conducted reply testing that was designed to address and evaluate the material flaws in Dr. Babcock's testing and to experimentally demonstrate the unfounded nature of unanticipated theories advanced by Jempak's experts.

[118] Jempak argues that GEMAK bears the burden of proving infringement, and the challenged reply evidence amounts to improper case splitting as none of it relates to new methods, materials, or subject matter that could not have been anticipated. Jempak states it is entitled to know the case to meet and admitting GEMAK's reply evidence would be procedurally unfair and prejudicial.

- Dr. Nuckolls' reply report, longer than his in-chief report, provides a point-by-point response to disagree with Dr. Babcock, and presents extensive testing that should have been part of the case in chief:
 - Dr. Nuckolls used the TFA process of the Momcilovic manuscript for his tests in the summary judgment motion; if he had reasons for changing his experimental method he should have explained them in his first report;

- Dr. Nuckolls chose not to use Raman spectroscopy to identify CMC and nonionic surfactant and admits that this technique cannot confirm their presence, yet he opines that Dr. Babcock's Raman spectra results are indicative of the presence of these compounds when they are not;
- similarly, Dr. Nuckolls chose not to do EDS testing, yet he seeks to rely on Dr. Babcock's EDS data as being indicative of CMC and nonionic surfactant based only on the presence of carbon and oxygen;
- in response to criticisms about the shortcomings of his in-chief infringement testing, Dr. Nuckolls provides reply opinions based on entirely new infringement tests on vortexed beads; this is improper case splitting, and the reply testing is flawed to the point of irrelevance.
- Jempak states that the parts of Dr. Clauss's reply evidence it objects to are mere disagreements Jempak's experts, improper case splitting, and attempts to have the last word.
 - Dr. Clauss's reply to Dr. Tremblay's report merely repeats and expands on points Dr. Clauss made in chief, on issues he already addressed.
 - Dr. Clauss's reply to Dr. Mort introduces a new infringement theory that should have been led in chief.

[119] The principles governing admissibility of reply evidence are not in dispute. The considerations include whether the evidence is simply confirmatory, or whether the evidence is

directed to a matter first raised in cross-examination and/or simply a rebuttal of defence evidence that should have been part of the case in chief, subject to a discretion to admit evidence that should have been led in chief: *Janssen Inc v Teva Canada Limited*, 2019 FC 1309 at para 16 [*Janssen v Teva*], citing *Halford v Seed Hawk Inc*, 2003 FCT 141 at para 15. The Court may also consider whether the reply evidence serves the interests of justice, whether it assists the Court in making a determination on the merits, whether admitting it will cause substantial or serious prejudice to the other side, and whether it was available and/or could not be anticipated as being relevant at an earlier date: *Merck-Frosst v Canada (Health)*, 2009 FC 914 at para 10.

[120] Jempak correctly notes that the evidentiary rule against allowing a plaintiff to split its case tempers the evidence that will be allowed in reply: *Janssen v Teva* at para 13. However, the Court retains a discretion to admit reply evidence that constitutes case splitting. For example, the Court may exercise discretion to admit such evidence where the interests of justice and lack of prejudice clearly favour it, or where the circumstances of the case warrant a flexible approach because the issues presented in reply concern complex issues of science: *Pharmascience Inc v Janssen Inc*, 2025 FC 669 at paras 16, 22; *Adeia Guides Inc v BCE Inc*, 2025 FC 633 at para 19.

[121] Beginning with Dr. Nuckolls' reply report, I find that the new testing on vortexed beads should not be admitted. I have decided to admit the rest of the report, either because it is proper reply evidence or because, despite being *prima facie* inadmissible, I am exercising my discretion to admit it.

[122] The new suite of infringement testing on vortexed beads is improper case splitting. The evidence seeks to bolster GEMAK's in-chief infringement case with new and different experimental evidence that is intended to fill gaps that Jempak's experts identified, and which they say undermine the foundation for Dr. Nuckolls' and Dr. Clauss's opinions that the percarbonate granules in the asserted products embody the essential elements of claim 10. The new tests go to a central aspect of Dr. Nuckolls' mandate, which was to detect whether sodium sulfate, CMC, and nonionic surfactant are present in a blend encapsulating sodium percarbonate beads from in the tested detergent products. The opinions of Jempak's experts were not unexpected and should have been anticipated.

[123] I find it is not in the interests of justice to admit the vortex testing evidence, and I decline to admit it in the exercise of my discretion. Admitting this new testing evidence by way of reply would change the case Jempak must meet and would be unfair and prejudicial. Furthermore, the new tests do not assist the Court to decide whether the granules in the asserted products have all essential elements of claim 10. Jempak's experts criticized Dr. Nuckolls for failing to image the removed beads before running his in-chief experiments, yet he did not image removed beads before running the reply experiments. And while Dr. Nuckolls testified that the post-vortexed granules were "naked as a cue ball," small satellites are visible on the SEM images of post-vortexed beads. Moreover, I do not accept that vortexing 10 beads in a 2 mL vial for 5 to 10 minutes would "dislodge any clumps or extraneous particles sitting on the surface of the percarbonate bead" rather than redistribute the materials. It is evident that vortexing alters the granules. I agree with Jempak that the altered granules are not representative of granules in the asserted products.

[124] The following paragraphs of Dr. Nuckolls' reply report, and his related testimony, are inadmissible:

- paragraphs 8, 9 and the associated schedules 1 and 2 are inadmissible to the extent that they relate to Dr. Nuckolls' second suite of tests on sodium percarbonate beads removed from Jempak's detergent pods, which he designed to answer the alleged shortcomings of his first set of tests; therefore, paragraphs 8, 9 and the associated schedules 1 and 2 are admissible only for the purpose of and to the extent that they relate to Dr. Nuckolls' "responsive testing" regarding the alleged flaws of the TFA treatment that Dr. Babcock used for his LC-MS tests;
- paragraphs 16, 90-101, 111-113, 116, and 133 (including their associated images, tables, plots or diagrams, schedules, and footnotes).

[125] I have decided to admit the rest of Dr. Nuckolls' reply evidence because it is responsive to (i) new testing evidence by Dr. Babcock and/or Dr. Babcock's opinions based on that evidence, (ii) Dr. Mort's and Dr. Tremblay's opinions that are based on evidence from Dr. Babcock (like SEM images), or (iii) Jempak's experts' opinions about what they consider to be gaps that affect the foundation for Dr. Nuckolls' and Dr. Clauss's opinions that the percarbonate granules in question embody the essential elements of claim 10; and it is responsive in a way that is more than mere disagreement or an attempt at the last word. Jempak argues that some of Dr. Nuckolls' remaining reply evidence is insufficiently reliable to be admitted, but in my view, Jempak's arguments in this regard relate to weight rather than admissibility. I agree with Jempak that some of this evidence is *prima facie* inadmissible because GEMAK is splitting

its case, and/or for other reasons. For example, I agree with Jempak that Dr. Nuckolls should have addressed any concerns with the Momcilovic method he used for the summary judgment motion in his in-chief report. However, unlike the tests of the vortexed beads, Dr. Nuckolls' remaining tests and opinions are responsive to Jempak's expert evidence in a way that allows the Court to have both sides' evaluation of that evidence and assists the Court to decide infringement. Therefore, I am exercising my discretion to admit it.

[126] Turning to Dr. Clauss, Jempak does not object to the parts of his reply report that address the *Gillette* defence and non-infringing alternatives/options.

[127] In paragraph 49 of his reply report, Dr. Clauss's comments on the results of Dr. Nuckolls' tests that I have found to be inadmissible. Paragraph 49 of Dr. Clauss's reply report and his related testimony are also inadmissible.

[128] I have decided to admit the remaining challenged paragraphs of Dr. Clauss's reply report. These paragraphs are responsive to Dr. Mort's and Dr. Tremblay's opinions that are based on new tests by Dr. Babcock, or they are responsive to Jempak's experts' opinions about what they consider to be gaps affecting the foundation for Dr. Nuckolls' and Dr. Clauss's opinions that the percarbonate granules in question embody the essential elements of claim 10. Dr. Clauss's evidence in these paragraphs is responsive to Jempak's experts in a way that is more than mere disagreement or an attempt at the last word and it assists the Court to decide infringement. While I agree with Jempak that some of the evidence is *prima facie* inadmissible as case splitting, I

have decided to admit it in the exercise of my discretion, for the same reasons given in respect of Dr. Nuckolls' reply.

[129] Jempak says paragraph 40 of Dr. Clauss's reply is objectionable for more reasons than case splitting. Jempak says paragraph 40 presents an entirely new infringement theory where Dr. Clauss opines that nonionic surfactant and carboxymethyl cellulose would be expected to diffuse into sodium sulfate that is on the surface of the coated sodium percarbonate granules Jempak buys from its suppliers, thereby creating a blend.

[130] While I agree with Jempak that paragraph 40 of Dr. Clauss's reply report is case splitting, I do not agree that it raises a new infringement theory. Therefore, I see no reason to treat paragraph 40 differently from other case-splitting paragraphs that I am admitting in the exercise of my discretion.

[131] Dr. Babcock was permitted to file sur-reply in response to GEMAK's expert's reply. With the exception of the vortex testing, I have admitted Dr. Nuckolls' and Dr. Clauss's reply evidence. Dr. Babcock's sur-reply is admitted as well. Since I have found that Dr. Nuckolls' proposed reply tests on vortexed beads and his related opinions are inadmissible, the paragraphs of Dr. Babcock's sur-reply about these tests and opinions are no longer necessary.

D. *Analysis*

[132] For the reasons below, I find that GEMAK has not met its burden to prove infringement.

[133] GEMAK's infringement case rests on Dr. Nuckolls' testing evidence and opinions.

Dr. Clauss relies on Dr. Nuckolls' evidence and opinions as the foundation for his own opinions that the granules of the asserted products include all the essential elements of claim 10.

[134] Jempak's experts, Drs. Babcock and Mort, disagree with Drs. Nuckolls' and Clauss's opinions. Jempak's experts say there are shortcomings in Dr. Nuckolls' test protocol. They say Dr. Nuckolls makes unsupported and unreliable statements about his testing methods, the test results, and the conclusions that can be drawn from those results. I accept their opinions and their evidence on these points, and I agree with them.

(1) Reliability and credibility of the expert evidence on infringement

[135] GEMAK contends there are numerous, significant flaws with Dr. Babcock's analytical tests, which rendered them incapable of reliably detecting CMC or nonionic surfactant. GEMAK contends that Jempak focused its closing arguments on whether GEMAK met its burden, rather than its own affirmative evidence of non-infringement, because of the serious problems with Dr. Babcock's experiments.

[136] GEMAK states that beyond these substantive failures, there were troubling aspects of Dr. Babcock's testimony, and problems with what he was advancing. It states that Dr. Babcock failed to discharge his overriding duty to provide fair, objective, and non-partisan expert evidence. His opinions on his analytical tests were neither independent nor unbiased, and he strayed into assuming the role of an advocate. Despite delivering his evidence with calm and poise, GEMAK says there were difficulties and evasion on cross-examination. Counsel

encouraged me to read the words of the transcript, absent his demeanour, before deciding if he gave credible testimony at trial. GEMAK submits that Dr. Babcock was not credible and his evidence should be given little weight.

[137] I disagree with GEMAK's description of Dr. Babcock's evidence. There is no basis to impugn Dr. Babcock's credibility. GEMAK's allegation that he failed to discharge his duty to the Court is not justified.

[138] Dr. Babcock explained the tests he performed and the conclusions he drew from the results. His evidence was tested by cross-examination. He answered questions directly, did not evade, and acknowledged the limits of his analytical tests and evidence where appropriate. I am in a position to understand the reasons for his opinions, assess the extent to which his evidence assists me to decide the issues in dispute, and decide what weight to give it, in the context of the evidence as a whole.

[139] Having heard and observed Dr. Babcock give his evidence, I do not have concerns that he lacked objectivity or independence, or that he assumed the role of an advocate. Dr. Babcock was a careful and credible witness. I did the transcript exercise GEMAK invited me to do—as a check of my perception.⁹ That review did not alter my assessment. I remain satisfied that Dr. Babcock was a credible witness, and I see no reason to question his objectivity or independence.

⁹ I recognize that the FCA overturned *Gemak FC* and ordered that this matter proceed to trial because the Court made negative credibility findings on a transcript of expert testimony.

[140] I have concerns with Dr. Nuckolls' expert evidence. As I will explain below, Dr. Nuckolls overstates the conclusions that can be drawn from his analytical testing. In my view, there was an unevenness in Dr. Nuckolls' assessment of the evidence, indicative of a results-oriented approach that favoured evidence supporting his conclusions.

[141] Dr. Nuckolls' cross-examination exposed the limitations of his test methods, and his trial testimony affected his credibility. When he was cross-examined on the limitations of his test methods, he resisted making reasonable concessions. At times, he avoided giving a direct answer to a straightforward question, and at times he was argumentative. I find that Dr. Nuckolls' evidence strayed beyond objective and scientifically supported observations and conclusions.

[142] Dr. Clauss accepted Dr. Nuckolls' test results and conclusions, without any real assessment of them, to reach his own opinions that the granules in Jempak's products have all the essential elements of claim 10. In my view, Dr. Clauss's opinions are also overstated and insufficiently supported.

[143] On the infringement questions, including whether the evidence establishes that the asserted products have granules comprising a percarbonate and *a blend encapsulating the percarbonate wherein the blend comprises a sulfate, carboxymethyl cellulose, and a nonionic surfactant*, I prefer the evidence of Jempak's witnesses, Drs. Babcock and Mort, over the evidence of Drs. Nuckolls and Clauss. I acknowledge that Dr. Babcock's and Dr. Mort's cross-examinations exposed some weaknesses in their opinions and I have adjusted the weight of these

points accordingly. But in evaluating the infringement evidence, I find Dr. Babcock's and Dr. Mort's opinions to be objective and better supported. I afford their evidence more weight.

- (2) GEMAK has not established that the asserted products contain granules comprising *a percarbonate and a blend encapsulating the percarbonate, wherein the blend comprises a sulfate, carboxymethyl cellulose, and a nonionic surfactant*

[144] Dr. Nuckolls tested granules taken from three categories of detergent products: standard, premium, and environmental. There is no dispute that these detergent products are representative of dishwasher pods that Jempak's predecessors made and sold between July 3, 2012 and January 12, 2018.

[145] There is also no dispute that the granules Dr. Nuckolls tested are sodium percarbonate granules. Jempak admits that it adds sodium percarbonate granules to its dishwasher products, and Raman tests generally confirmed the presence of percarbonate in the interior of the tested granules. GEMAK has established that the tested granules comprise *a percarbonate*, and specifically, sodium percarbonate.

[146] Turning to the blend components—sodium sulfate, nonionic surfactant, and CMC—Jempak contends Dr. Nuckolls' test methodology was flawed and the test results do not establish that all three components were part of the tested granules. Jempak focuses on the LC-MS results for CMC and nonionic surfactant, and especially CMC because of the small quantities detected. Jempak states that Dr. Nuckolls: (i) did not run the necessary controls to verify whether experimental contamination was generating false positive results; (ii) employed a crude experimental procedure that introduced a real risk of cross-contamination; and (iii) did not

control for the risk that the detected compounds originated from satellites on or around the tested percarbonate granules, instead of from the granules themselves.

[147] I accept Dr. Babcock's evidence that it is important to run and analyze process blanks. Dr. Nuckolls did not do so. He therefore omitted a step that would verify whether and to what extent the compounds he detected originated from his test process. I also accept Dr. Babcock's evidence that Dr. Nuckolls' experimental process introduces a risk of cross-contamination that leads to unacceptable experimental error. Dr. Mort gave a similar opinion about the risk of cross-contamination. One step that introduced a risk of cross-contamination was that the same serrated-tip plastic tweezers were used to push the detergent around a petri dish and grip the target granules, which could press detergent materials onto granules or pick up materials on the tweezers, transferring them to the testing vials. I agree with Dr. Babcock and accept his evidence that the risk of cross-contamination leading to unacceptable experimental error is particularly acute for the CMC testing because of the small quantity of the dimethyl CMG analyte that Dr. Nuckolls detected, an amount that corresponds to nanograms of CMC.

[148] I do not agree with GEMAK that these risks of false positives or cross-contamination are meritless theories. They are valid observations about aspects of the test methodology that affect the reliability of Dr. Nuckolls' test results.

[149] Dr. Babcock also took SEM images of granules as they appeared after he removed them from samples of the tested detergent products. These magnified images show extraneous materials (satellites) that are resting on and around the granules. Dr. Mort opined that when

coated sodium percarbonate granules that Jempak adds to its detergents are incorporated into the detergent formulation, other detergent ingredients can randomly adhere to their surfaces; these adhered ingredients are not part of the granule and serve no role in protecting and stabilizing the sodium percarbonate. According to Dr. Mort, Dr. Babcock's SEM images show percarbonate granules with randomly adhered particles, which is what he would expect to see based on Jempak's process. Drs. Babcock and Mort opined that the methanol treatment Dr. Nuckolls used to extract material for LC-MS testing would remove any material that was resting on the exterior of the percarbonate granules, and once material is removed there is no way to know its prior spatial location. I accept their evidence.

[150] In his reply report, Dr. Nuckolls states that the beads Dr. Babcock imaged "are not representative of the percarbonate beads that are collected when the protocol I developed is carried out." He also states that the consistency with which he detected CMC and nonionic surfactant, and lack of a pattern between the amount of CMC he detected for a given product and the number of particles on beads Dr. Babcock removed from the same product indicates that the CMC was "not simply" the result of extraneous particles sitting on the surface.

[151] I do not accept Dr. Nuckolls' explanations. In my view, they are not supported and they do not address the concerns with his experimental method.

[152] On cross-examination, Dr. Nuckolls acknowledged that he was not the person who manually removed the percarbonate beads from the detergent. That person was Dr. Decatur. Dr. Nuckolls says that he asked Dr. Decatur to select beads with few large satellites, and to find

beads that were free of clumps and did not have extraneous material. But this instruction is not in the report, there is no evidence from Dr. Decatur, and Dr. Nuckolls did not look at the beads himself.

[153] When it was put to Dr. Nuckolls that there is no reason to believe that the beads he tested would not have clumps, he pointed to the vortex experiment of his reply report. According to Dr. Nuckolls, he devised the vortex experiment to “eliminate the extraneous material” from the beads. The vortex experiment detected similar levels of CMC, “therefore, the clumps don’t matter.”

[154] I explained above that the reply testing on vortexed beads is inadmissible. Even if I were to admit this evidence, I do not accept that the vortex experiment shows that the clumps do not matter. I do not accept that vortexing 10 beads in a 2 mL vial for 5 to 10 minutes would “dislodge any clumps or extraneous particles sitting on the surface of the percarbonate bead” instead of redistributing materials. I agree with Jempak that the vortex experiments are flawed to the point of being irrelevant.

[155] I do not accept that the asserted consistency of test results or absence of a pattern between those results and the number of particles on different beads shows that the CMC Dr. Nuckolls detected was “not simply” from extraneous particles. That view rests on impressions, not analysis. There is no evidence of the number of particles on the beads that Dr. Nuckolls actually tested or the particles’ composition, and no scientifically supported reason to expect a correlation between the amount of CMC detected on the tested granules and the number of particles

observed on different granules. Dr. Clauss provides a similar opinion about the consistency of the test results and absence of a pattern, and I do not accept his opinion for the same reasons. I am not satisfied that this reasoning provides any confidence that the detected analytes did not come from extraneous particles.

[156] When Dr. Nuckolls was questioned about the effect of satellites on his experimental results, he was evasive. He resisted logical propositions, even when posed as hypotheticals. Eventually, Dr. Nuckolls acknowledged a possibility that the tested beads had satellites on them. He acknowledged that, if they did, the satellites would be transferred to the test vials and LC-MS could not confirm if detected CMC and/or nonionic surfactant came from a satellite. He added that, in his opinion, it is very unlikely that the detected CMC and/or nonionic surfactant came from satellites, but I am not satisfied there is a foundation for that opinion.

[157] There are no SEM images, or any magnified images, showing how the granules appeared after Dr. Decatur removed them from the detergent products, and before they were subjected to the experimental procedure. Dr. Nuckolls agreed that he could have taken SEM images of the removed beads. Even in reply, Dr. Nuckolls did not take SEM images or other magnified images of removed beads.

[158] Dr. Nuckolls also acknowledged there could be other sources of contamination. He admitted that Dr. Decatur could have squeezed detergent powder onto a bead when picking it up with tweezers. For detergents with TAED in them, he said that some TAED “probably ended up

getting injected onto the column.” This matters because of the evidence that the TAED granules in Jempak’s detergents had CMC as a binder.

[159] I am not satisfied that Dr. Nuckolls’ evidence addresses the concerns that his LC-MS test results are compromised by a real risk that they include CMC and nonionic surfactant that originated from extraneous materials. Dr. Nuckolls’ explanations do not satisfy me that his tests reliably measure what they purport to measure—compounds that originated from the tested beads themselves.

[160] Considering all the evidence, I find it is likely that the beads Dr. Nuckolls tested had satellites. I also find a likelihood of cross-contamination. I find that these factors compromise Dr. Nuckolls’ test results.

[161] Furthermore, the lack of a process control is a material omission that compromises the reliability of the CMC results in particular. I accept Dr. Babcock’s evidence that a process control was needed to verify whether the experimental process was contributing to the small quantities of CMC that Dr. Nuckolls’ tests detected.

[162] Consequently, I am not satisfied that Dr. Nuckolls’ test results reliably measure CMC and nonionic surfactant that came from the surface of the percarbonate granules. His tests may raise a possibility that tested granules had CMC and/or nonionic surfactant on their surfaces, but I am not satisfied that they establish, on a balance of probabilities, that the tested granules likely did have CMC and/or nonionic surfactant on their surfaces.

[163] GEMAK submits that Jempak tried but failed to affirmatively prove that the coated sodium percarbonate granules it purchased and added to its detergent formulations do not contain CMC and nonionic surfactant, and that the sodium percarbonate granules from its finished detergent pods do not contain these components. Dr. Babcock did LC-MS experiments to test whether he could detect CMC or nonionic surfactant in samples of suppliers' granules and granules from detergent pods, but his experiments were incapable of reliably detecting either compound. His tests could not even detect CMC in sample TAED granules with product specifications stating they are made with 6-8% CMC.

[164] GEMAK submits that Jempak's evidence actually supports infringement. In addition to the LC-MS testing, Dr. Babcock investigated the surface of percarbonate granules using Raman spectroscopy and EDS. He omitted any analysis or discussion of the resulting data for reasons that were speculative and baseless, and when properly considered, the data provide further support for the presence of CMC and nonionic surfactant on sodium percarbonate beads from tested products. GEMAK says Dr. Nuckolls provided the analysis that Dr. Babcock failed to provide and opined that, even if not confirmatory on their own, Dr. Babcock's Raman and EDS data are similar to and strongly support his own test results.

[165] GEMAK states Jempak's evidence about the composition of purchased granules was based on hearsay information from suppliers, rather than independent tests establishing that the suppliers' granules did or did not have CMC and/or nonionic surfactant. In fact, GEMAK says Dr. Babcock's Raman spectra for Jinke coated sodium percarbonate was inconsistent with Jinke's information because the data showed an organic compound on the surface.

[166] The burden to prove infringement rests with GEMAK. Arguments that Jempak failed to affirmatively prove non-infringement do not assist GEMAK, and I do not agree that Jempak's evidence supports infringement.

[167] Dr. Babcock explained that, like Dr. Nuckolls' LC-MS technique, his own LC-MS technique cannot provide information as to where a detected compound may have been located prior to being dissolved.

[168] I do not accept Dr. Nuckolls' evidence that Dr. Babcock's Raman and EDS data strongly support his own tests results. I prefer Dr. Babcock's sur-reply evidence on these points. He explained that the Raman spectra do not support the presence of CMC or nonionic surfactant because characteristic peaks for these compounds are missing from the spectra. Dr. Nuckolls relies on the presence of peaks that are common to multiple detergent ingredients and do not identify CMC or nonionic surfactant specifically. With respect to the EDS data, Dr. Babcock explained that EDS detects chemical elements—atoms such as carbon or oxygen—and not molecules. The presence of carbon, oxygen, or other atoms found in multiple detergent ingredients does not support a conclusion that CMC or nonionic surfactant are present on the surface of granules. In my view, the Raman and EDS data do not add weight to Dr. Nuckolls' in-chief testing evidence.

[169] GEMAK says it is "far from clear" that the commercially sourced percarbonate granules Jempak used were free from CMC and nonionic surfactant. However, this is an evidentiary gap of GEMAK's own making. GEMAK could have adduced evidence about the composition of the

granules from Jempak's suppliers and did not. GEMAK says it asked for samples of source granules, to do reply testing, and Jempak refused, but I do not accept that the blame lies with Jempak. I am not satisfied that GEMAK could not have sourced the granules itself. Furthermore, Jempak did produce samples of source granules, for the summary judgment motion. GEMAK could have tested those samples, and if it needed new ones, it should have asked for them and done the testing as part of its case in chief, not in reply.

[170] In summary, I am not satisfied that GEMAK has established that all three claimed blend components are likely present on the surface of Jempak's granules.

[171] Even if I were to accept that all three blend components of claim 10 are likely present on the surface of the tested percarbonate granules, Jempak is correct that this would be insufficient to prove infringement. To prove infringement, the evidence must also establish that sodium sulfate, CMC, and nonionic surfactant are present in *a blend encapsulating* the percarbonate.

[172] Dr. Nuckolls' LC-MS tests do not and cannot establish where CMC and non-ionic surfactant were or how they were distributed on the granule. In this regard, I accept and agree with Dr. Babcock's opinion that once a removed granule is treated with methanol, any information about the spatial location of detected substances, relative to other substances on the granule or to the granule itself, is lost.

[173] Dr. Nuckolls opines that the sodium sulfate, CMC, and nonionic surfactant are necessarily in a mechanical mixture, and that these components together are the blend that makes

up the exterior of the granule and encapsulates the percarbonate core. I accept Dr. Babcock's and Dr. Mort's evidence and agree with them that Dr. Nuckolls' opinions in this regard are unsupported and unreliable. SEM images showing the irregular surface of post-extracted beads do not provide a factual basis to conclude that CMC and nonionic surfactant formerly occupied the visible negative space, especially without SEM images of pre-extracted beads for comparison. Dr. Nuckolls' opinions that a blend of sodium sulfate, CMC, and nonionic surfactant would form a shell that encapsulates the percarbonate core are not scientifically supported.

[174] GEMAK argues that Dr. Clauss was not challenged in cross-examination on his assessment of Dr. Nuckolls' testing evidence. I do not accept that Dr. Clauss undertook an assessment of the testing evidence. He was not qualified as an expert in the analytical techniques and instrumentation that Dr. Nuckolls used, and he did not say that he reviewed Dr. Nuckolls' process and results or explain his independent work and the conclusions he reached. Dr. Clauss's in-chief report instead makes conclusory statements about the testing—for example, that Dr. Nuckolls' testing revealed a mixture of sodium sulfate, CMC, and nonionic surfactant encapsulating a percarbonate bead and his results “thus demonstrate the presence of a blend encapsulating the percarbonate, the blend comprising a sulphate, carboxymethyl cellulose and a nonionic surfactant.” At trial, Dr. Clauss added that he thought Dr. Nuckolls' analysis was sound and produced “convincing evidence” of a blend encapsulating the percarbonate, again without explaining why. Those statements amount to reliance on Dr. Nuckolls' conclusions as the premise for Dr. Clauss's opinions, not an independent assessment of the analytical tests or the conclusions that can be drawn from them.

[175] On the question of whether the asserted products contain granules *comprising a percarbonate and a blend encapsulating the percarbonate, wherein the blend comprises a sulfate, carboxymethyl cellulose, and a nonionic surfactant*, I agree with Jempak that Dr. Clauss's opinion rests entirely on Dr. Nuckolls' opinions of what his tests showed. Dr. Clauss's opinion that sodium sulfate, CMC, and nonionic surfactant are each capable of protecting the percarbonate assumes, and does not show, that the tested percarbonate granules are encapsulated by the blend of claim 10.

[176] Therefore, I am not satisfied that GEMAK has established that Jempak's granules have sodium sulfate, CMC, and nonionic surfactant in *a blend*, or that the blend encapsulates the percarbonate.

[177] For these reasons GEMAK has not established that the asserted products contain granules *comprising a percarbonate and a blend encapsulating the percarbonate, wherein the blend comprises a sulfate, carboxymethyl cellulose, and a nonionic surfactant*.

(3) Stability

[178] While the above finding is determinative, I will address Jempak's arguments that GEMAK has not met its burden on infringement because it advanced no evidence of stability.

[179] Jempak makes two main arguments. It states GEMAK has adduced no evidence to prove:

(i) that the percarbonate granules of the asserted products are functionally stable so as to be

storable in PVA film packaging; or (ii) that the stability of Jempak's granules or products is attributable to the presence of *a blend encapsulating the percarbonate* of claim 10.

[180] GEMAK counters that Jempak should not be permitted to rely on stability arguments, in light of the Elbi Order. GEMAK says there was never a dispute about *storable in PVA film packaging*, it did the infringement testing that was necessary to prove the claim elements that were in dispute, and there was no need to do stability testing.

[181] GEMAK brought the motion to strike parts of Mr. Elbi's affidavit because, according to GEMAK, Jempak was improperly using Mr. Elbi's evidence to advance a new non-infringement position at a late stage in the action—namely, that the percarbonate granules in the asserted products were not *storable in PVA film packaging* because the percarbonate would degrade and release oxygen over time and Jempak had to puncture or perforate the PVA film to allow the gas to escape. Jempak argued it was not advancing a new non-infringement position; rather, it was responding to GEMAK's expert's changed claim construction (to distinguish prior art) that *storable in PVA film packaging* means storable in a sealed, intact, and unperforated PVA film.

[182] I granted GEMAK's motion in part. I did not strike all the challenged paragraphs, but I did strike Mr. Elbi's evidence about Jempak having to put holes in the PVA film of its pods to allow gas to escape and prevent rupturing. I ruled that such evidence was inadmissible because it did not appear to be relevant to the expert opinions on infringement (Dr. Mort opined that Jempak's products are *storable in PVA film packaging*), but rather appeared to relate to a new non-infringement theory that would be prejudicial if permitted late in the action.

[183] Since the Elbi Order was a pre-trial order made before receiving the trial evidence, the order stated that my admissibility ruling was subject to reconsideration. Although Jempak has appealed the Elbi Order, it has not asked me to reconsider it or provided a basis to do so. For this decision, the order stands.

[184] The Elbi Order does not expressly preclude Jempak from making stability arguments. However, I struck parts of Mr. Elbi's evidence because his evidence appeared to raise a new non-infringement theory, unrelated to expert opinion, that would be prejudicial if permitted late in the action. Given my reasoning and concerns about prejudice, I agree with GEMAK that Jempak should not be permitted to argue that the percarbonate granules in the asserted products are not *storable in PVA film* because they lose too much oxygen to meet this claim limitation.

[185] Jempak's other stability-related arguments are different. They are about whether the percarbonate granules in question have *a blend encapsulating the percarbonate* according to claim 10—something Jempak has always denied. Jempak used commercially available sodium percarbonate granules that were supplied by the manufacturers as coated granules. As Jempak points out, GEMAK cannot meet its burden on infringement by appropriating for itself the stability provided by pre-existing coatings applied by the manufacturers. Arguments that GEMAK did not compare the stability of these source percarbonate granules to the stability of granules in the asserted products, prove that any encapsulating blend protects or stabilizes the percarbonate, or show that CMC serves a protective function are not a new non-infringement theory, and Jempak can rely on these arguments.

[186] On cross-examination, Dr. Clauss said the following with respect to how practitioners could determine whether encapsulation was successful:

...[T]he practical approach that practitioners would take would be to – to treat the granule in a way that should produce encapsulation and then measure a property that they are trying to improve. And if it improved, it would be consistent that encapsulation had occurred.

[...]

You run stability tests, and if you successfully stabilized it, most practitioners would not really care exactly what the distribution was on the surface. They would assume that they had achieved encapsulation, and the property they were trying to improve by way of encapsulation was, in fact, improved.

[187] GEMAK did not attempt to measure a property that an encapsulating blend should improve and show that it did improve. It did not compare the stability of source percarbonate granules to the stability of granules removed from the asserted products or run any other tests of stability or protection to support the presence of an encapsulating blend.

[188] Dr. Clauss opines that sulfate, CMC, and nonionic surfactant are each capable of a protective function. However, his evidence assumes, based on Dr. Nuckolls' opinions, that the tested percarbonate granules are encapsulated by a blend comprising the claimed blend components. Dr. Nuckolls did not do stability tests, and Dr. Clauss's opinions do not provide evidence that would establish that the percarbonate in Jempak's detergent products likely is protected or stabilized by an encapsulating blend of claim 10.

[189] GEMAK bears the burden to prove infringement, and evidence of improved stability might have helped. But there is no stability evidence before me to prove that the stability of

Jempak's granules or products is attributable to a blend encapsulating the percarbonate of claim 10, rather than non-infringing means. For this additional reason, GEMAK has not proven infringement.

VI. **Invalidity**

[190] Jempak alleges that claims 10-12 of the 428 Patent have always been invalid for anticipation, obviousness, insufficiency, overbreadth, and lack of utility.

[191] The claims of an issued patent are presumed to be valid and Jempak bears the burden of proving invalidity. As I noted in the overview, Jempak does not rely on the opinions of its expert, Dr. Tremblay, to prove invalidity. It relies on evidence from other experts and from fact witnesses.

[192] GEMAK contends that Jempak cannot meet its burden on invalidity when it has no expert to opine that the requirements for each alleged ground of invalidity have been met.

[193] Unlike claim construction, the weight afforded to Dr. Tremblay's evidence does impact the validity analysis. Jempak does not rely on Dr. Tremblay's evidence to prove the grounds of invalidity that it is advancing, and in my view, his invalidity evidence should not be afforded any weight.

[194] However, I do not agree with GEMAK that Jempak cannot meet its burden on invalidity without Dr. Tremblay's evidence. Expert opinion evidence assists the Court to decide the issues,

but it is incumbent on the Court to decide them. If the Court does not have the evidence required to decide an issue, including expert evidence where it is needed, the party with the onus has not met its burden of proof.

[195] For the reasons below, Jempak has not met its burden on anticipation or obviousness. The evidence Jempak relies on does not establish anticipation, and Jempak points to no evidence that would establish obviousness.

[196] Jempak's allegations of insufficiency, overbreadth, and inutility are based on Mr. Hinton's evidence. I agree with Jempak that claims 10-12 are invalid for insufficiency. However, Jempak has not met its burden on the grounds of overbreadth or inutility.

A. *Anticipation and Obviousness*

[197] Jempak alleges that a prior art product (the Soludoz Product) and four prior art references (Le Nigen, Solvay, Rommel, Green) inherently anticipate claims 10-12 because they each disclose detergent formulations that comprise sodium percarbonate granules, sodium sulfate, carboxymethyl cellulose, and a nonionic surfactant.¹⁰ Jempak submits that the skilled person making the prior art detergent formulations using commercially available coated sodium percarbonate granules and a standard admixing process would have made a granule with the

¹⁰ For the Soludoz Product, which was sold in stores, Jempak says a skilled person would have reverse-engineered the ingredients of the detergent formulation. For Green, which refers to "sodium percarbonate tetrahydrate" (a compound that does not exist), Jempak says the skilled person would know it should say sodium percarbonate, and it asks the Court to reject Dr. Clauss's opinion that the skilled person would read this as a reference to sodium perborate tetrahydrate, not sodium percarbonate.

inherent attributes of the claimed subject matter. Therefore, the prior art inherently anticipates the claims: *Takeda* at para 153.

[198] For anticipation, Jempak relies on the expert opinions of Dr. Clauss and Dr. Mort. Jempak also relies on the evidence of fact witnesses Dr. Goffinet and Mr. Le Nigen, who testified about the development and marketing of the Soludoz Product and the Le Nigen patent protecting it, and Dr. Gény, whose affidavit describes Solvay SA's coated granular sodium percarbonate product and the Solvay prior art document that gives example detergent formulations that can be made with this product.

[199] To establish that a patent claim is invalid for anticipation, the allegedly anticipatory prior art must disclose and enable the subject-matter of the claim. A claim is anticipated if a prior art reference discloses subject matter that, if performed, would necessarily infringe the claim, and the skilled person would have been able to perform the subject matter of the claim without inventive ingenuity or undue burden: *Apotex Inc v Sanofi-Synthelabo Canada Inc*, 2008 SCC 61 at paras 25-33 [*Sanofi*]; *Apotex Inc v Shire LLC*, 2021 FCA 52 at paras 36-40.

[200] Anticipation is a difficult test to meet. Anticipatory prior art cannot be a signpost on the road to the invention; it must be a flag planted at the destination: *Agracity Crop & Nutrition Ltd v UPL NA Inc*, 2024 FCA 133 at para 12 [*Agracity*], citing *Free World* at para 26. As GEMAK notes, practicing the prior art must necessarily infringe the claim. The prior publication must contain so clear a direction that a skilled person reading and following it would in every case and without possibility of error be led to the claimed invention: *Agracity* at paras 12-13.

[201] In my view, Jempak cannot meet its burden to prove anticipation based on the expert and fact evidence it relies on. The evidence does not establish that the skilled person making the prior art detergents would necessarily make a granule falling within claims 10-12 of the 428 Patent.

[202] Dr. Mort opines that the detergent formulations of Rommel, Solvay, Le Nigen, and the Soludoz Product would contain agglomerates formed of random ingredients in the formulations that contact and adhere to each other during the manufacturing process. His evidence does not establish that those formulations would contain encapsulated percarbonate granules that infringe claims 10, 11, or 12.

[203] In Dr. Clauss's opinion, the Soludoz Product, Le Nigen, Solvay, Rommel, and Green are not anticipatory, and none of them discloses or enables the subject matter of claims 10-12. His evidence on this point did not change materially on cross-examination. Dr. Clauss explained that encapsulation is fairly predictable when a skilled person limits the ingredients to the intended coating ingredients and controls the conditions, but he stated it is much less clear that a coating would occur when the ingredients are not limited and the conditions are not controlled. He said that the skilled person would not assume, from the process and the ingredients of the prior art detergent formulations, that encapsulation had occurred.

[204] Dr. Clauss and Dr. Mort do not opine that any of the prior art references disclose the subject matter of the claims, nor do they opine that the skilled person practicing the prior art references would necessarily make a granule that falls within the scope of claims 10-12. The

evidence Jempak relies on does not establish that the Soludoz Product, Le Nigen, Solvay, Rommel, or Green anticipate the claims.

[205] While Jempak's obviousness allegation is based on the same prior art (plus Olson), obviousness is a distinct invalidity ground with a different test. The question to be asked is whether the skilled person who is not inventive would, in light of the state of the art and the common general knowledge, have come directly and without difficulty to the solution taught by the patent: *Beloit Canada Ltd et al v Valmet Oy*, 1986 CanLII 7621 (FCA) at 294.

[206] The *Sanofi* decision (at paragraph 67) sets out a framework that can be used to determine whether a claim is obvious. Generally speaking, the framework involves identifying the skilled person and their common general knowledge, identifying the inventive concept of the claim, determining if there are any differences between the inventive concept and the state of the art, and if there are differences, determining if the differences constitute steps that would have required a degree of invention.

[207] Jempak asserts that there are no differences between (i) the Soludoz Product, Le Nigen, Solvay, Rommel, Green, and/or Olson when considered in view of the skilled person's CGK, and (ii) the proper inventive concept of claims 10-12 (which Jempak says is a granule for use in a detergent composition that can be stored in PVA film packaging, the granule comprising a percarbonate and an encapsulating blend that comprises the three blend components). Alternatively, if there are differences, Jempak states that a skilled person can bridge the differences without any inventive ingenuity: *Tearlab* at para 81. Jempak says that Mr. Hinton

may have worked hard to arrive at what he considered to be an invention, but viewed objectively, his work was routine and does not support the inventiveness of the asserted claims.

[208] Jempak does not cite any expert evidence to support its position, and it is not clear to me what evidence it relies on to support its allegation that claims 10-12 are invalid for obviousness. Even if I were to accept Jempak's asserted inventive concept, I agree with GEMAK that Jempak has not met its burden on obviousness.

B. *Insufficiency, Overbreadth, Inutility*

(1) The parties' arguments

[209] Jempak argues that Mr. Hinton's evidence about the work he did to develop the invention shows that claims 10-12 of the 428 Patent are invalid for insufficiency, overbreadth, and inutility. At trial, Mr. Hinton testified that he made multiple detergent formulations that included the four claimed ingredients, which he tested for storability by placing them in PVA film pouches and checking that the pouches did not expand or degrade and that the detergent inside remained free-flowing. Some formulations worked and some did not.

[210] Insufficiency: Jempak submits that a sufficient disclosure lies at the heart of the patent bargain. An inventor is granted exclusive rights in exchange for disclosure that allows the public to make full use of the invention, having only the patent specification, after the monopoly expires: *Teva Canada Ltd v Pfizer Canada Inc*, 2012 SCC 60 at paras 31-32, 70 [*Teva v Pfizer*]. Jempak contends that Mr. Hinton gained monopoly rights under the *Patent Act* without

upholding his disclosure obligation. According to Jempak, the 428 Patent disclosure is insufficient because:

- only some of Mr. Hinton’s formulations worked and the 428 Patent specification does not say what they were—example 1 of the 428 Patent (which describes successful storability tests) does not say what formulation was tested, and there is no evidence that Mr. Hinton made the three exemplary formulations (examples 3 to 5) and found them to be stable; for the same reasons that the asserted patent was held insufficient in *Teva v Pfizer*, Mr. Hinton failed to uphold his end of the patent bargain by withholding the one formulation that worked;
- claims 10-12 include inoperative formulations and Mr. Hinton left the task of finding the working ones to the skilled person; he “hid the ball” when describing and claiming the invention and did not put the skilled person in a position to “make the same successful use of the invention” as he could (*Seedlings Life Science Ventures, LLC v Pfizer Canada ULC*, 2021 FCA 154 at paras 68, 70 [*Seedlings*]);
- using the four claimed ingredients is not enough to achieve the invention and the 428 Patent does not disclose how the skilled person could ascertain whether the invention is actually made; Dr. Clauss conceded that it would not have been possible, at the filing date, for the skilled person to know whether encapsulation was achieved; and

- the patent specification has an error in the description of how to make the granules.

[211] Overbreadth: Jempak submits that an inventor is not entitled to a monopoly on more (even a little more) than he invents: *Eli Lilly Canada Inc v Apotex Inc*, 2022 FC 1398 at para 111, citing *Radio Corporation of America v Hazeltine Corporation* (1981), 56 CPR (2d) 170 at 188, 1981 CanLII 5017 (FCA). Mr. Hinton's evidence demonstrates that the asserted patent claims are broader than what he invented. He performed crude testing that could not establish whether he had achieved an encapsulated granule and he did not limit the asserted claims to working formulations of the four claimed ingredients or to encapsulated granules that are made by the method he described in the patent.

[212] Inutility: Jempak states that, while the subject matter of claim 10 is *capable* of a practical purpose (*AstraZeneca Canada Inc v Apotex Inc*, 2017 SCC 36 at para 54 [*AstraZeneca v Apotex*]), Mr. Hinton had not demonstrated or soundly predicted the utility of the claimed invention as of the filing date. Using the four claimed ingredients is not enough to achieve the invention and Dr. Clauss conceded that it would not have been possible, at the filing date, for the skilled person to know whether encapsulation was achieved, so Mr. Hinton did not have evidence that he had created and thus demonstrated the utility of a percarbonate granule encapsulated with the claimed blend and a skilled person would have no basis to soundly predict utility. Furthermore, Mr. Hinton admitted that some formulations made according to the encapsulation process of the 428 Patent failed so the claims cover subject matter that lacks utility.

[213] GEMAK argues that Jepak's allegations of insufficiency, overbreadth, and inutility are late-breaking invalidity grounds that the Court should not entertain. Jepak pleaded insufficiency, overbreadth, and inutility as alternatives to anticipation and obviousness, and the pleaded bases for these grounds differ from what Jepak now alleges. Jepak also did not lead expert evidence to establish that claims 10-12 of the 428 Patent are invalid for the reasons now alleged. GEMAK states Jepak could have questioned Mr. Hinton on discovery, shared his discovery answers with Dr. Tremblay, and obtained an expert's opinion on whether Mr. Hinton's work raised any issues of insufficiency, overbreadth, or inutility.

[214] GEMAK says it has been ambushed, and it would be highly prejudicial and unfair to permit Jepak to advance these arguments in closing. GEMAK was not made aware of the issues through Jepak's pleadings or expert reports and had no opportunity to file expert evidence, cross-examine, or construct its case in response. The circumstances are akin to Jepak's attempt to rely on an unpleaded non-infringement theory that was not advanced by the experts, which was precluded by the Elbi Order.

[215] In any event, GEMAK states that Jepak's invalidity theories are unfounded.

[216] Insufficiency: According to GEMAK, Jepak has not established that claims 10-12 are invalid for insufficiency because:

- the exemplary formulations of examples 3-5 satisfy the disclosure obligations of the *Patent Act*; Jepak has not met its burden to establish that Mr. Hinton did not make them or find them to be stable;

- Jempak's assertion that the claims include inoperative formulations is incorrect because Drs. Clauss, Tremblay, and Mort opined that claims 10-12 only embrace formulations that do work—that is, that are *storable in PVA film packaging*;
- a patentee does not have to teach potential infringers how to assess whether they infringe (*Apotex v AstraZeneca Canada Inc*, 2017 FCA 9 at paragraph 77); infringement is a question of fact, and it can be proven with analytical chemistry techniques that would have been beyond the skilled person's abilities, or not available to the skilled person, at the filing date (*Gemak FCA* at paragraphs 46, 108);
- Jempak has not established an error in the 428 Patent; the exchange between Mr. Hinton and Jempak's counsel ended with Mr. Hinton disagreeing there was an error.

[217] Overbreadth: The premise for Jempak's overbreadth argument is that the asserted claims are not limited to working (stable) formulations. Overbreadth fails because no expert offers that construction. The experts agree that the claims, properly construed, are limited to compositions that are stable in PVA film.

[218] Inutility: Jempak acknowledges that claim 10 is capable of a practical purpose, which is sufficient to establish utility under the governing jurisprudence of *AstraZeneca v Apotex*.

GEMAK submits that utility was demonstrated because, by 1997, Mr. Hinton had made a PVA sachet containing a detergent product with sodium percarbonate granules encapsulated by a

blend of sodium sulfate, CMC, and nonionic surfactant. The product did not expand or degrade after storage or show signs of moisture absorption, and it was effective at cleaning.

(2) Analysis

[219] In my view, Jempak's pleadings of insufficiency, overbreadth, and inutility were adequate to give notice and put the issues in play. The insufficiency pleading alleges, among other things, that if the common general knowledge does not include how to encapsulate the percarbonate with coatings comprising sulfates, CMC, and nonionic surfactants, then the 428 Patent fails to provide the skilled person with sufficient guidance as to how to encapsulate the percarbonate. GEMAK joined issue, denying that the 428 Patent fails to provide the skilled person with sufficient guidance as to how to encapsulate the percarbonate. Jempak's overbreadth and inutility pleading are less specific, but in my view, the general allegations of these grounds, pleaded as alternatives to anticipation and obviousness, were adequate. Jempak pleaded that the patent claims are overbroad because they claim more than the inventor made and disclosed, and that the patent claims are invalid because they lack utility and the inventor did not conduct the work that was sufficient to demonstrate or soundly predict utility.

[220] Jempak is not attempting to introduce new evidence of its own and I do not agree this is similar to the Elbi Order. I do not see how it is prejudicial or unfair to GEMAK to permit Jempak to advance arguments of insufficiency, overbreadth, and inutility that are based on Mr. Hinton's testimony at trial. GEMAK cannot complain it is taken by surprise by invalidity arguments that are based on Mr. Hinton's evidence that GEMAK led at trial and the evidence he gave in cross-examination that went in without objection.

[221] Furthermore, Jempak asked Mr. Hinton on discovery if, in making his invention, he did any experiments to see how long the detergents could be stored in PVA film. He said that he gave detergent sachets to a company that did “long storage tests” and did not say he personally did storage tests. The evidence about his own storage tests came out at trial and it was led by GEMAK. GEMAK filed an affidavit from Mr. Hinton stating that he did tests to determine how long his detergent formulations could be stored in PVA film and describing what he did—he filled PVA film sachets with detergent formulations, placed them around his home in various locations, and observed whether the PVA film or the detergent inside degraded or decomposed over time. His cross-examination revealed that some formulations that included the four claimed ingredients worked and some did not. In my view, it would be prejudicial and unfair to Jempak to permit GEMAK to rely on Mr. Hinton’s evidence to support the invention but not allow Jempak to rely on the cross-examination to argue that the claims are invalid.

[222] Turning to my analysis of the invalidity grounds, Mr. Hinton’s evidence is the foundation for insufficiency, overbreadth, and inutility, and there is considerable overlap in Jempak’s arguments for all three. In my view, the evidence and arguments best fit the allegation that claims 10-12 are invalid for insufficiency. Jempak has met its burden on insufficiency but not on the other grounds.

[223] In *Seedlings*, the FCA stated it is not enough for a patent disclosure to teach how to make the preferred embodiment; the disclosure must teach the skilled person to put into practice all embodiments of the invention, and without exercising inventive ingenuity or undue experimentation: *Seedlings* at para 68. The FCA recognized the principle in *Consolboard* that a

patent disclosure must be correct and full in order that, when the patent has expired, the public will be able, having only the specification, to make the same successful use of the invention as the inventor could at the time of his application: *Seedlings* at para 68, citing *Consolboard* at 520.

[224] Mr. Hinton used the process for encapsulating a percarbonate granule that is described in the 428 Patent. He made and tested different formulations and had information about the ones that worked and the ones that did not. I agree with Jempak that, by withholding information about what worked and what did not, Mr. Hinton did not uphold his end of the patent bargain. The patent leaves the task of finding working formulations to the skilled person who is putting the invention into practice. Mr. Hinton did not uphold the patent bargain by putting the skilled person in a position to “make the same successful use of the invention” as he could: *Seedlings* at paras 68, 70. Jempak has established that claims 10-12 are invalid for insufficiency.

[225] I am not satisfied that Jempak has established overbreadth or inutility.

[226] Jempak alleges that claims 10-12 are overbroad because they cover more than what Mr. Hinton truly invented. The essence of the analysis is a comparison between the scope of the invention as claimed and the invention as actually made and contemplated: *McCain Foods Limited v JR Simplot Company*, 2025 FC 1078 at paras 376-377. In my view, the evidence and arguments Jempak advances do not meet its burden on overbreadth. Jempak has not addressed the scope of the claims at all—it does not address the claim limitation *storable in PVA film packaging* or explain how that limitation may affect whether the claims are broader than the

invention—and the evidence Jempak elicited from Mr. Hinton’s cross-examination is insufficient to establish that what he made and contemplated is narrower than what he claimed.

[227] On inutility, as GEMAK notes, Jempak concedes that the subject matter of the claims is capable of a practical purpose. Jempak does not argue that the test for utility set out in *AstraZeneca v Apotex* (that the claimed subject matter must be capable of a practical purpose) is not met. Rather, the crux of Jempak’s invalidity allegation relates to the patent bargain. Jempak says Mr. Hinton filed his patent application without having first demonstrated or soundly predicted the utility of the invention. It also says the claims cover subject matter that lacks utility. In my view, Jempak has not met its burden on inutility because: (i) it asserts but points to no evidence establishing there was no basis to soundly predict utility; and (ii) it does not address the claim limitation *storable in PVA film packaging* or explain how it affects whether the claims cover subject matter that lacks utility.

VII. **Gillette Defence**

[228] Jempak states that Rommel, Solvay, the Soludoz Product, and Le Nigen are prior art detergent formulations containing sodium sulfate, nonionic surfactant, CMC, and sodium percarbonate granules as ingredients, made using a standard admixing process—mixing the bulk dry ingredients, spray-addition of liquid ingredients, and then adding sensitive ingredients like coated sodium percarbonate granules. Jempak submits that its own detergent products are made using the same standard admixing process. If its own detergent products contained CMC as a separate ingredient (which they did not), the sodium percarbonate granules at the end of the process would be no different from those in the prior art detergent formulations. Consequently,

Jempak contends that GEMAK finds itself “on the horns of a dilemma” because its patent claims cannot be both valid and infringed.

[229] The *Gillette* defence permits a shortcut where a defendant can prove that the allegedly infringing product is the same as or not patentably distinct from the prior art: *Western Oilfield Equipment Rentals Ltd v M-I LLC*, 2021 FCA 24 at paras 75-77 [*Western Oilfield*]. When an allegedly infringing product is the same as or not patentably distinct from the prior art, there are only two choices: either the claims will not be infringed, or they will be invalid. In such a case it is not necessary to engage in the exercises of construing the claims, determining whether the claims are valid, and determining whether the claims are infringed.

[230] In this case, Jempak did not take the shortcut. It led evidence on and argued the issues of claim construction, non-infringement, and invalidity (as a counterclaim, not simply as a defence). I have made findings on claim construction, infringement, and validity, and in my view, the *Gillette* defence is superfluous: *Western Oilfield* at para 79. I do not see what purpose would be served by considering it.

VIII. **Conclusion**

[231] GEMAK’s action is dismissed. GEMAK has not established that the granules of the asserted products have all the essential elements of claims 10, 11, or 12.

[232] Jempak’s counterclaim is allowed in part. Jempak has established that claims 10, 11, and 12 are invalid for insufficiency. It has not established the other alleged grounds of invalidity.

[233] The parties have an agreement on the all-in costs of the trial and do not require a ruling on costs.

JUDGMENT IN T-1288-18

THIS COURT'S JUDGMENT is that:

1. The action is dismissed.
2. The counterclaim is allowed in part. Claims 10-12 of Canadian Patent number 2,276,428 titled "Detergent" are and have always been invalid for insufficiency.
3. In view of the parties' agreement, there is no ruling on costs.

"Christine M. Pallotta"

Judge

SCHEDULE A – PRIOR ART

Jempak relies on items 1-5 for anticipation and items 1-6 for obviousness.

1. **Soludoz Product:** Single dose laundry pods sold in France between 1988 and 1992. Evidence about the Soludoz Product was introduced through two witnesses and included a formulation document and television commercials.
2. **Le Nigen:** French patent number 2,666,348, “Détergent en sachet-dose pour le nettoyage du linge.” Published March 6, 1992.
3. **Solvay:** Solvay Interlox, “FB® Sodium Percarbonate, A Formulating Guide” (1993).
4. **Rommel:** E. Rommel, Natriumpercarbonat - $2\text{Na}_2\text{CO}_3 \cdot 3\text{H}_2\text{O}_2$ Herstellung, Eigenschaften und Verwendung (1977) 15:2 Seifen - Öle - Fette - Wachse 411.
Translation: E. Rommel, Sodium Percarbonate - $2\text{Na}_2\text{CO}_3 \cdot 3\text{H}_2\text{O}_2$ Preparation, Properties and Use (1977) 15:2 Soaps - Oils - Fat - Waxes 411.
5. **Green:** United States patent number 4,059,538, “Method for Preparing Granulated Detergent Formulations.” Published/granted November 22, 1977.
6. **Olson:** United States patent number 4,830,773, “Encapsulated Bleaches.” Published/granted May 16, 1989.

FEDERAL COURT
SOLICITORS OF RECORD

DOCKET: T-1288-18

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