

**Federal Court of Appeal**



**Cour d'appel fédérale**

**Date: 20160906**

**Docket: A-379-14**

**Citation: 2016 FCA 216**

**CORAM: WEBB J.A.  
BOIVIN J.A.  
DE MONTIGNY J.A.**

**BETWEEN:**

**NOVA CHEMICALS CORPORATION**

**Appellant**

**and**

**THE DOW CHEMICAL COMPANY,  
DOW GLOBAL TECHNOLOGIES INC. AND  
DOW CHEMICAL CANADA ULC**

**Respondents**

Heard at Toronto, Ontario, on December 7 and 8, 2015.

Judgment delivered at Ottawa, Ontario, on September 6, 2016.

**REASONS FOR JUDGMENT BY:**

**DE MONTIGNY J.A.**

**CONCURRED IN BY:**

**WEBB J.A.  
BOIVIN J.A.**

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**REASONS FOR JUDGMENT**

**DE MONTIGNY J.A.**

[1] This is an appeal from a decision of Justice O'Keefe (the Judge) granting an action for patent infringement brought by the Dow Chemical Company, its subsidiary Dow Global Technologies Inc. and its licensee Dow Chemical Canada ULC (collectively Dow, or the respondents) against the Nova Chemicals Corporation (Nova or the appellant) in respect of its

product SURPASS. The parties are both manufacturers of polyethylene film-grade copolymers for use in, amongst other things, packaging applications. The Dow Chemical Company is the owner of Canadian Patent 2,160,705 (the ‘705 Patent) for “Fabricated Articles Made from Ethylene Polymer Blends”.

[2] The Judge confirmed the validity of the ‘705 Patent, which was challenged on the grounds of utility, over-claiming, anticipation, obviousness, double-patenting and insufficiency of the specification. The Judge also construed six disputed terms in the patent claims, which led him to conclude that Nova had infringed the patent. In coming to his conclusions, the Judge largely preferred Dow’s experts and fact witnesses over Nova’s own expert witnesses.

[3] Before this Court, Nova appeals all of the Judge’s findings regarding validity and also contests the construction of four terms in the ‘705 Patent, as well as the corresponding infringement findings. Having carefully considered the oral and written arguments of the parties, I am of the view that the appeal ought to be dismissed; the appellant has failed to demonstrate any error of law, and it is not the role of this Court to second-guess the Judge’s assessment of the evidence that was put to him.

#### I. The Patent at Issue

[4] The ‘705 Patent was filed in Canada on April 19, 1994. It claims priority from US patent application US08/054,379 dated April 28, 1993. It was published on November 10, 1994, and expired on April 19, 2014.

[5] The patent is directed primarily to polyethylene used to make “film” products, i.e. sheets of plastic, like plastic garbage bags and food wrapping. Some film applications do not have demanding strength requirements, but others do. One solution for these demanding applications was to make thicker “films” so that they are stronger. That requires the use of more plastic, however, leading to higher costs and more waste when the plastic film is disposed of.

[6] The patent identifies the need to develop polymers that can be formed into thinner films with improved strength properties:

There is a continuing need to develop polymers which can be formed into fabricated articles having these combinations of properties (e.g., improved modulus, yield strength, impact strength and tear strength, preferably greater dart impact for a given yield strength in the case of films and greater IZOD impact for molded parts). The need is especially great for polymers which can be made into film which can also be down gauged without loss of strength properties, resulting in savings for film manufacturers and consumers, as well as protecting the environment by source reduction.

‘705 Patent, p. 1, lines 22-31

[7] The person skilled in the art (POSITA) would have appreciated that there was often a trade-off between film properties such as yield strength, impact strength, and toughness. The POSITA would also have known that there is a trade-off with polymer materials, including film, between strength and toughness. Efforts to modify a polymer material to improve strength often resulted in reduction of toughness, as mentioned in the ‘705 Patent:

Previous attempts were made to optimize film tensile strength and yield strength by blending various heterogeneous polymers together on theoretical basis. While such blends exhibited a synergistic response to increase the film yield strength, the film impact strength followed the rule of mixing, often resulting in a “destructive synergism” (i.e., the film impact strength was actually lower than film made from one of the two components used to make the blend).

‘705 Patent, p. 1, lines 10-17

[8] The claimed invention and Dow's commercial embodiment of it (ELITE) allows for source reduction to make thicker films thinner, but just as strong. Whereas prior art efforts to create improved polymers and polymer blends were largely trial and error, Dr. Lai (one of the inventors) testified at trial that Dow's researchers took a different approach to identify the optimal blend based on polymer density, molecular weight, and strain hardening (the latter being a property wherein a material becomes harder as it is stretched). This work is disclosed in the '705 Patent, including the creation of the slope of strain hardening coefficient (SHC) to identify polymers of interest. The '705 Patent describes the invention in the following terms:

Surprisingly, we have now discovered compositions useful in films and molded parts having synergistically enhanced physical properties, which compositions comprise a blend of at least one homogeneously branched ethylene/ $\alpha$ -olefin interpolymer and at least one heterogeneously branched ethylene/ $\alpha$ -olefin interpolymer.

In particular, formulated ethylene/ $\alpha$ -olefin compositions have now been discovered to have improved physical and mechanical strength and are useful in making fabricated articles. Films made from these novel compositions exhibit surprisingly good impact and tensile properties, and an especially good combination of modulus yield, ultimate tensile, and toughness (e.g. dart impact).

'705 Patent, p.1, line 32 to p. 2, line 6

[9] Each of the 46 claims of the '705 Patent is directed to a blend having at least these two components, with each component having certain requirements, depending on the particular claim. While the claims recite several limitations, the major disputes in the case revolve around just two of them. For Component A, the dispute is over the claim term "slope of strain hardening coefficient". For Component B, the main dispute is over the claim term "heterogeneously branched". All the asserted claims include these terms.

[10] Dow filed a Statement of Claim on December 9, 2010, alleging that Nova was infringing their '705 Patent. Nova counterclaimed on the grounds of invalidity and unjust enrichment, but eventually dropped its unjust enrichment claims. In its opening statement at trial, Dow restricted the litigation to only eight composition claims, being claims 11, 29, 30, 33, 35, 36, 41 and 42; Nova similarly restricted its invalidity counterclaim to these same claims. As a result, the Judge erred in holding that Claim 15 was valid and infringed; Dow dropped its allegations in relation to that claim, and reference to it in paragraph 1 of the Judgment should be deleted.

[11] The trial began on September 9, 2013 and lasted for 32 days. Nova called three expert witnesses (Dr. Charles Stanley Speed, Dr. Francis Mirabella and Dr. Mukerrem Cakmak) and three fact witnesses, while Dow called three expert witnesses (Dr. Joao Soares, Dr. Robert Young, and Dr. Christopher Scott) and one fact witness. The Judgment was released on May 7, 2014 and the Reasons for Judgment were issued on September 5, 2014. The Judge found that all the claims at issue were valid, and that Nova infringed these claims by manufacturing in Canada and distributing, offering for sale, selling or otherwise making available film-grade polymers under the name SURPASS.

## II. Issues

[12] Nova contends that the Judge made a number of reviewable errors. I believe these issues can be narrowed down as follows:

As for the validity of the '705 Patent:

- 1) Did the Judge err in deciding that there was no promise of synergistic utility?
- 2) Did the Judge err in finding that the invention was not obvious?

- 3) Did the Judge err in finding that the claims were not broader than the invention made or disclosed?

As for infringement:

- 4) Did the Judge err in inferring that SHC is determined using a load/elongation curve?
- 5) Did the Judge err in construing “heterogeneously branched”?
- 6) Did the Judge err in construing “comprising”?
- 7) Did the Judge err in deciding that the high density (HD) fraction was at least 5% by weight of the composition?

### III. Analysis

[13] There is no dispute between the parties as to the applicable standard of review. Pursuant to the decision of the Supreme Court in *Housen v. Nikolaisen*, 2002 SCC 33, [2002] 2 S.C.R. 235, the standard of review for findings of fact is palpable and overriding error, and correctness for errors of law. The standard is also palpable and overriding error for findings of mixed fact and law, unless there is an extricable question of law, which will be reviewed on a correctness standard.

[14] It is worth emphasizing at this stage that a trial judge is entitled to deference in its appreciation of the evidence, particularly the expert evidence that affects the construction of a patent. In particular, the judge is entitled to weigh the evidence and to prefer certain evidence. It is certainly not the role of an appeal court to retry the case or to second-guess the trial judge’s assessment of the factual record and of the evidence. An appellant will consequently bear a

heavy burden on matters of fact. As this Court held in *Canada v. South Yukon Forest Corporation*, 2012 FCA 165 at para. 46, 431 N.R. 286, “it is not enough to pull at leaves and branches and leave the tree standing” when arguing palpable and overriding error; “[t]he entire tree must fall”.

[15] On the other hand, the construction of the patent is to be reviewed on the basis of correctness. As the Supreme Court has stated in *Whirlpool Corp. v. Camco Inc.*, 2000 SCC 67 at para. 61, [2000] 2 S.C.R. 1067, “claims construction is a matter of law”. That being said, I share the concerns of my colleague Justice Stratas that it will often be difficult, if not unrealistic and artificial, to distinguish between those aspects of claim construction that flow from the trial judge’s assessment of expert evidence from the words of the claim themselves (see *Cobalt Pharmaceuticals Company v. Bayer Inc.*, 2015 FCA 116 at paras. 16-24, [2015] F.C.J. No. 555). After all, the construction of a patent is heavily dependent on the evidence given by persons skilled in the art, and that evidence will bear heavily on the judge’s findings. For that reason, I accept (as I must) that the construction of a patent is a question of law to be reviewed on a standard of correctness, but trial judges are nevertheless entitled to some leeway as they are often in a much better position than appellate judges to understand the intricacies of the art underlying the invention disclosed in a patent.

1) *Did the Judge err in deciding there was no promise of synergistic utility?*

[16] Section 2 of the *Patent Act*, R.S.C. 1985, c. P-4, defines an invention as “any new and useful art, process, machine, manufacture or composition of matter, or any new and useful improvement in any art, process, machine, manufacture or composition of matter”. As a result, a



patent holder must be able to demonstrate the utility of the invention or to show that it could be soundly predicted at the time the patent was applied for (see *Apotex Inc. v. Wellcome Foundation Ltd.*, 2002 SCC 77 at para. 46, [2002] 4 S.C.R. 153, cited by this Court in *Apotex Inc. v. Sanofi Aventis*, 2013 FCA 186 at para. 46, [2015] 2 F.C.R. 644 [*Apotex & Sanofi FCA*]). An inventor does not need to describe the utility of his/her invention, in which case a “mere scintilla” of utility will be sufficient. If, however, an inventor does make an explicit promise of a specific result, utility will have to meet that promise; it will be, in the words of the Supreme Court in *Free World Trust v. Électro Santé Inc.*, 2000 SCC 66 at para. 51, [2000] 2 S.C.R. 1024, a “self-inflicted wound” (see also *Apotex & Sanofi FCA* at paras. 54 and 65-67).

[17] The Judge also clearly set out the process whereby the existence and scope of any promise is to be determined: 1) one must first look for the elevated promise or claimed utility in the claims of the patent; and 2) then consider any statement found elsewhere in the disclosure, which should be taken as “mere statement of advantage” unless the inventor “clearly and unequivocally” states that it is part of the promised utility of the invention (Reasons for Judgment, para. 183).

[18] This approach is broadly consistent with the most recent jurisprudence of this Court and of the Federal Court, and Nova did not challenge the soundness of the Judge’s reasons in this respect (see *Apotex & Mylan v. Pfizer*, 2014 FCA 250 at paras. 65-66 and 76, 465 N.R. 306 [*Apotex & Mylan*]; *Fournier Pharma Inc. v. Canada*, 2012 FC 741 at para. 126, [2012] F.C.J. No. 901; *Bauer Hockey Corp. v. Easton Sports Canada Inc.*, 2010 FC 361 at para. 290, [2010] F.C.J. No. 431, aff’d 2011 FCA 83, 414 N.R. 69, quoting, at para. 182, H.G. Fox, *Canadian*

*Patent Law and Practice*, 4<sup>th</sup> ed. (Toronto: Carswell, 1969) at pp. 152-154). The Judge's task was therefore to construe the patent to determine if a POSITA would understand it to contain an explicit promise that the invention will achieve a specific result.

[19] There is some ambiguity as to what Nova considers to be the promise made by the patent. At trial, Nova relied on one of its experts, Dr. Speed, whose position was understood by the Judge to be that “all the blends contemplated by the Patent and every property of all the blends must exhibit a synergistically enhanced physical property” (see Reasons for Judgment, para. 186). It is true that on cross-examination, when pushed on that question, Dr. Speed answered that “at least some of those properties” would show particularly good performance (Cross-Examination of Dr. Speed, Appeal Book Vol. 19, Tab 355 at p. 18429). This is not, however, how Dr. Scott understood Dr. Speed's expert report (see Expert Report of Dr. Scott, Appeal Book Vol. 35, p. 6033 at para. 78), and the Judge cannot be faulted for having read Dr. Speed's report the same way Dr. Scott did.

[20] In its written closing submissions, counsel for Nova summarized the promise of the patent as being that “at least impact strength will be better than the rule of mixing when other properties like tensile strength, yield and modulus are surprisingly improved in the newly discovered compositions”. And on appeal, Nova framed the promise in a slightly different manner, speaking of compositions having “improved properties”, “impact and tensile properties at a level above the rule of mixing”, and “synergistically enhanced physical properties, surprisingly good tensile and impact properties, or any improvement in the properties” (see Memorandum of Fact and Law of Nova at paras. 28, 40 and 45). Needless to say, such variations

in the formulation of the impugned promise detract from the requirement that the promise be specific and clear.

[21] Be that as it may, and however the alleged promise is interpreted, the main problem with Nova's position is that it rests exclusively on the use of the words "synergistically enhanced properties" used on two occasions at page 1 of the patent, previously quoted in paragraphs 7 and 8 of these reasons.

[22] After quoting from both Dr. Speed's and Dr. Scott's expert reports, the Judge found that the inventors had not made an explicit promise of a specific result, and that the '705 Patent had rather been shown to be concerned with particular compositions that were useful. He came to that conclusion essentially for two reasons. First, he found no reference in the claims of the patent to an elevated promise of "synergistically enhanced physical properties", nor to any specified level of improvement; in the Judge's view, the claims simply speak of the compositions having improved properties. Second, he preferred Dr. Scott's testimony over that of Dr. Speed, because the former addressed the patent as a whole, while the latter ignored the parenthesized words in the patent defining "destructive synergism" as well as the examples given in the patent.

[23] Nova challenges those findings on a number of bases. It asserts that the Judge gave too much weight to the presumption that a statement of utility found elsewhere than in the claims of the patent was a mere statement of advantage, and not a promise. I disagree. The Judge did not rely on such a presumption, and there was indeed no need to rely on that expediency.

[24] However one looks at the '705 Patent, two crucial facts stand out: there is not a single statement of utility in Dow's claims, as acknowledged by Nova, and there is only one reference elsewhere in the specification to support an argument of enhanced utility. I agree with Dow that the Court should be wary of using a stray phrase on page 1 of the patent to define the promise of the patent. Such an approach would clearly be inconsistent with another presumption that an inventor should only be held to an elevated standard where a clear and unambiguous promise has been made. As this Court stated in *Apotex & Mylan* at paragraph 66, "[w]here the validity of a patent is challenged on the basis of an alleged unfulfilled promise, the patent will be construed in favour of the patentee where it can reasonably be read by the skilled person as excluding this promise".

[25] The Judge did not make a palpable and overriding error in finding that the first reference to "destructive synergism" found in the second paragraph of page 1 of the patent does not relate to the construction put forward by Dr. Speed that the patent promises an elevated level of utility. This passage is clearly descriptive of prior attempts at blending various heterogeneous polymers and the trade-off problem encountered.

[26] As for the second reference to "destructive synergism" at page 1 of the patent (the only relevant one for the purpose of identifying an explicit promise of a specific result), I am also of the view that the Judge could properly find that it is far from sufficient to infer any specified level of improvement. It does not refer to any particular blends, to any particular properties or to any particular applications.

[27] It is worth noting that the expression “synergistically enhanced” is nowhere defined in the patent. This is no doubt an important clue as to the significance of those words, as one would have expected them to be defined somehow, if they were to be taken as an explicit promise of a specific result. Indeed, Nova faults the Judge for not having construed those terms, and for not having adopted the definition provided by Dr. Speed in his expert report and in his oral testimony.

[28] The common understanding of the “rule of mixing” is that the properties of a blend are comparable to, and predictable from, the weight average ratios of the component polymers. According to Dr. Speed, a “synergistic response” means that a blend property is higher than, and a “destructive synergism” is lower than, the rule of mixing. To borrow his own words:

A skilled person would understand “synergistically enhanced” to mean that a property of a blend is better than predicted by the rule of mixing and “destructive synergy” to mean the property is worse than predicted by the rule.

Expert Report of Dr. Speed, Appeal Book Vol. 43, Tab 300 at para. 100

[29] There are a number of problems with this interpretation, not the least of which being that it is inconsistent with the wording of the patent itself. In the parenthesis following the first use of the words “destructive synergism”, the meaning ascribed to that expression is rather that of a blend value that is lower than either of the two pure components used to make the blend. It is true, as pointed out by counsel for Nova, that Dr. Speed was cognizant of that definition; but he dismisses it in a footnote on the basis that a skilled person would not adopt this “literal meaning” (see Expert Report of Dr. Speed, Appeal Book Vol. 43, Tab 300, p. 9231, para. 115, footnote 2).

[30] Whatever the merits of the construction put forward by Dr. Speed, the Judge was entitled to prefer the testimony of Dr. Scott on that issue. The Judge quoted at length from Dr. Speed's and Dr. Scott's expert reports, and came to the conclusion that Dr. Scott considered the patent as a whole instead of focusing on two passages from the first page of the patent. In particular, Dr. Scott looked at the examples outlined at pages 16 to 26 of the patent, which show that the compositions defined by the claims have improved properties, as compared to the primary type of polymers previously used for film applications and the comparative heterogeneous polymer blends. In summing up these comparisons, the patent speaks at page 26 of "good combination" of properties, "improvements", and "higher values". According to Dr. Scott, this is not the hallmark of an explicit promise of specific results, but rather a statement that the compositions of the '705 Patent have improved on the prior art based polymers and polymer compositions (see also the first paragraph of page 2 of the patent, quoted at paragraph 8 of these reasons).

[31] Dr. Scott also testified that the terms "synergy" and "synergistic" are open to various definitions in the art and will take their colour from the context into which they are used. Dr. Speed's analysis of "synergistic enhancement" (i.e. a property of a blend is better than predicted by the rule of mixing) is only one possible meaning, and according to Dr. Scott would usually be referred to as "positive deviation from the rule of mixing". As a result of his underlying assumption that the patent is directed to his own definition of "synergistic enhancement", Dr. Speed was led not only to disregard the parenthesis at the end of the second paragraph at page 1 of the patent, but also to mischaracterize the data from Table 3. The purpose of that Table was to compare blends of the invention with the film properties of a heterogeneously branched interpolymers equivalent, with comparable density and in some cases comparable melt index. Dr.

Speed states that incorrect comparisons have been made because the examples in the patent are not directed at showing whether there is synergistic enhancement. However, the '705 Patent was not directed to such synergistic enhancement. The comparison is only meant to emphasize improvements in specific properties, not in all properties and for all blends.

[32] Such a reading is consistent with the trade-off problem alluded to in the patent, according to which prior efforts to improve one property of a polymer often resulted in another property being negatively affected. The objective would therefore be to achieve a good balance of properties, and to improve only those properties important to the particular use contemplated. It should also be noted that nowhere does the patent compare the properties of the inventive examples to the properties of the component polymers of a blend, as would be required to demonstrate synergistic enhancement as the term is defined by Dr. Speed; instead, the examples and the Tables in the patent are meant to compare the inventive examples with polymers having similar density and melt index (the two most important parameters in evaluating the mechanical properties of polymers).

[33] Dr. Scott's construction of the patent was certainly as credible and cogent as that of Dr. Speed, and the Judge could certainly prefer his testimony over that of Dr. Speed. Moreover, Dr. Scott's construction of the patent is consistent with that put forward by Dr. Soares, who is also of the view that there is no standard definition of the word "synergism"; in his Rebuttal Report, he stated that "[t]here is not a single 'rule of mixing' that applies to all properties of polyolefin blends and the 705 Patent makes no promise regarding such behaviour" (Rebuttal Report of Dr. Soares, Appeal Book Vol. 36, Tab 194, at para. 103). On cross-examination, he did not demur

from that position (Cross-Examination of Dr. Soares, Appeal Book Vol. 22, Tab 362, pp. 19755 to 19758).

[34] As mentioned above, the Judge is entitled to deference when assessing the evidence, and this is true for expert evidence as much as for any other type of evidence: *Bell Helicopter Textron Canada Limitée v. Eurocopter, société par actions simplifiée*, 2013 FCA 219 at paras. 73-74, 449 N.R. 111; *Corlac Inc. v. Weatherford Canada Inc.*, 2011 FCA 228 at para. 24, 422 N.R. 49; *Mylan Pharmaceuticals ULC v. AstraZeneca Canada Inc.*, 2012 FCA 109 at para. 20, 432 N.R. 292; *Wenzel Downhole Tools Ltd. v. National-Oilwell Canada Ltd.*, 2012 FCA 333 at para. 44, [2014] 2 F.C.R. 459; *Zero Spill Systems (Int'l) v. Heide*, 2015 FCA 115 at para. 43, [2015] F.C.J. No. 554. The Judge was clearly alive to the conflicting views of the experts with respect to the promise (or lack thereof) made by the inventors in the patent, and he provided reasons for preferring the interpretation given by Dow's experts over that of Nova's experts. Such a finding is unassailable.

[35] In a last-ditch effort to convince the Court that the '705 Patent must be read as identifying a specific promise that was described as being that "at least impact strength will be better than the rule of mixing when other properties like tensile strength, yield and modulus are surprisingly improved in the newly discovered compositions", Nova submitted that the patent should be treated as a selection patent. For such a patent, it is necessary for the specification to define in clear terms the nature of the characteristic which the patentee alleges to be possessed by the selection for which he claims a monopoly (*Apotex Inc. v. Sanofi-Synthelabo Canada Inc.*, 2008 SCC 61 at para. 114, [2008] 3 S.C.R. 265).



[36] The problem with this theory is that there is no evidence that this is how a skilled person would construe the patent. More importantly, the Judge found that the '705 Patent was neither taught nor anticipated by any of the two patents referenced by Nova. Since Nova has not appealed this finding, it has no basis to argue that the patent is a selection patent and therefore no basis to contend that an elevated promise of utility is required to support the patent.

[37] On the basis of the foregoing, I am therefore of the view that the Judge could find that the inventors did not make an explicit promise of a specific result, and that the patent did meet the test of a "mere scintilla" of utility. Nova has not seriously challenged that finding, and one of its own experts acknowledged that the invention solved the "trade-off problem" (Cross-Examination of Dr. Brown, Appeal Book Vol. 15, Tab 347 at pp. 17015-17016). This ground of appeal is therefore dismissed.

2) *Did the Judge err in finding that the invention was not obvious?*

[38] Nova argues that the Judge erred in dismissing the allegation of obviousness. According to Nova, the patent discloses no technical advance because blending all types of ethylene polymers was known and common and therefore a claim to a new composition could not be inventive. This argument was not pursued strenuously at the hearing, and rightly so.

[39] First of all, it bears repeating that factual findings made in applying the test for obviousness should not be reversed absent a palpable and overriding error. In the case at bar, Nova does not question the Judge's identification of the applicable legal principles, and must

therefore meet this heavy onus of satisfying the Court that the Judge made obvious and crucial errors in applying the law to the facts. Nova failed to do so.

[40] I pause to note that Nova's argument is somewhat disingenuous since Nova's own patent application for its SURPASS product, filed in 2002, asserts that blending different types of polymers is not free from errors; the Judge quoted from that patent at paragraph 248 of his reasons. Moreover, Nova's own expert acknowledged the technical advance of the Dow invention, stating that Dow's invention overcame the "trade-off" problem recognized in the prior art (see Cross-Examination of Dr. Brown, Appeal Book Vol. 15, Tab 347 at pp. 17009 to 17013). One could stop there and dismiss Nova's argument on that sole basis. But there is more.

[41] The Judge aptly pointed out that Dr. Speed approached the obviousness issue from the wrong perspective. It is well established since the decision of this Court in *Beloit Canada Ltd. v. Valmet OY* (1986), 8 C.P.R. (3d) 289 at p. 294, 64 N.R. 287 that the reference for the test of obviousness is not the competent inventor, but rather the technician skilled in the art "having no scintilla of inventiveness or imagination". On cross-examination, Dr. Speed made it clear that he approached the question of obviousness from the perspective of a skilled person who has both inductive reasoning and imagination, an error that the Judge identified and which accordingly undermined his analysis.

[42] The Judge also refused to consider another patent (the "Garza Patent"), published in April 1994, for the purpose of determining the obviousness of the '705 Patent, or more specifically, the obviousness of Claim 11 of the '705 Patent. As previously mentioned, the '705 Patent has a

filing date of April 19, 1994 but claims priority from a US patent application filed on April 28, 1993. Counsel for Nova submitted that the US patent does not disclose the full density range stated in part (a) of Claim 11, so that its claim date is therefore the filing date of the '705 Patent. If that be the case, the Garza Patent should have been considered for obviousness purposes with respect to Claim 11.

[43] The Judge refused to decide the priority date of Claim 11, however, for lack of evidence. He found that Nova failed to establish that Dow could not claim the benefit of its April 1993 priority date for Claim 11. This is a pure finding of fact, and Nova cannot succeed on appeal by merely restating the argument made at trial and rejected by the Judge without showing a palpable and overriding error.

[44] As a result, Nova's submission must be dismissed.

- 3) *Did the Judge err in finding that the claims were not broader than the invention made or disclosed?*

[45] Nova submits that the Judge erred in finding that the claims of the patent are not broader than the invention made or than the invention disclosed in the specification. These are two well established limitations on the extent of the monopoly which an inventor may validly claim (see *Farbwerke Hoechst A.G. v. Formals Meister Lucius & Bruning v. Canada (Commissioner of Patents)*, [1966] Ex. C.R. 91 at para. 20, 31 Fox Pat. C. 64 (Ex. Ct.), aff'd [1966] S.C.R. 604, 50 C.P.R. 220 (S.C.C.)). The first limitation is a question of fact, whereas the second is a question of construction.

[46] In his report, Dr. Speed suggested that he could not find in the inventor's documents any work showing that they made, or even contemplated, compositions with more than one homogeneously branched interpolymer or more than one heterogeneously branched interpolymer. Yet there was evidence before the Judge that the inventors did contemplate compositions with more than one Component A or B polymer. In any event, the Judge also accepted Dr. Lai's testimony that the invention only required Components A and B, and that people were free to add other components to make further improvements (Cross-Examination of Dr. Lai, Appeal Book Vol. 12, Tab 341 at pp. 15992-15994). In his expert report, Dr. Scott also stated that persons skilled in the art would not require testing with other components as they would appreciate from the experiments conducted on blends of Component A and Component B polymers that additional polymers of this type could be included in the blends without detracting from the overall benefit that the blend provides (Expert Report of Dr. Scott, Appeal Book Vol. 35, Tab 192 at p. 6054, para. 168). That view is consistent with the testimony given by Dr. Soares, according to whom the POSITA would understand that other polymers in addition to the specific claimed Component A and Component B could be included in the blends, provided they do not adversely affect the properties of the composition (see the Rebuttal Expert Report of Dr. Soares, Appeal Book Vol. 36, Tab 194 at para. 44; Examination in Chief of Dr. Soares, Appeal Book Vol. 22, Tab 361 at pp. 19581 to 19582). The Judge was entitled to prefer that evidence to that of Dr. Speed.

[47] It is also clear that Dr. Speed's view with respect to the claims being broader than the invention disclosed was premised on his theory that the '705 Patent promised an enhanced level of utility or "synergistically enhanced properties" for all compositions. On that basis, he

concluded that all claims are missing at least one feature that the patent says is required of the interpolymers that are useful for the claimed compositions. Having rejected that construction of the patent and of its promise, however, the Judge was inexorably led to the conclusion that Dr. Speed's determination of what is essential and missing from the claims was flawed. I see no error in such a finding.

[48] It is no doubt true a claim may be too broad if it gives the patentee a wider protection than his discovery entitles him to receive. As President Thorson stated in *Radio Corp. of America v. Raytheon Manufacturing Co.* (1957), 27 C.P.R. 1 at p. 22, [1956-60] Ex. C.R. 98 (Ex. Ct.):

It is, I think, consistent with principle to say that when a specification discloses the invention of a process for the manufacture of an article in which the use of a special feature of the invention is essential to the success of the invented process the inventor is not entitled to claim a process for the manufacture of the article in which the special feature is not used. He is not entitled to claim a monopoly more extensive than is necessary to protect that which he has invented...

[49] In the case at bar, Nova contends that Dow's claims are overbroad because they are missing defined limits as to "usefulness" in the patent. One such limit is that "the homogeneously branched ethylene/ $\alpha$ -olefin interpolymers do not contain a polymer fraction with a degree of branching less than or equal to 2 methyls/1000 carbons". Another is that "the homogeneously branched ethylene/ $\alpha$ -olefin interpolymers do not contain a polymer fraction with a degree of branching equal to or more than 30 methyls/1000 carbons". Since Claims 41 and 43 do not contain the first limitation and no claims contain the second limitation, it is said that all the claims at issue are invalid for being broader than the invention disclosed.

[50] The Judge rejected that argument, not only because it is tied to Dr. Speed's flawed argument on an alleged promise of synergy, but also because no evidence was presented that the person skilled in the art would have considered any of these missing elements to be essential. The fact that a feature is discussed in the specifications does not necessarily mean that such a feature is of the essence of the patent (*Whirlpool Corp. v. Camco Inc.* (1997), 76 C.P.R. (3d) 150 at p. 166, [1997] F.C.J. No. 1086 (F.C.T.D.); *Lovell Manufacturing Co. v. Beatty Brothers Ltd.* (1962), 41 C.P.R. 18 at p. 66, 23 Fox Pat. C. 112 (Ex. Ct.)). Yet, Dr. Speed seems to assume that every feature of Components A and B referenced in the disclosure is essential.

[51] Both Dr. Soares and Dr. Scott opined that a person skilled in the art would infer from the description that every preferred range discussed is essential to both the making of the invention and their understanding of how to make the blends of the invention. The Judge preferred their evidence and accepted that the properties of the blend of polymers must be looked at as a whole and not in isolation. This construction is bolstered by the fact that some embodiments disclosed in the patent do not include the allegedly essential features missing from some or all of the claims, which tend to confirm Dr. Soares' and Dr. Scott's opinion that a person skilled in the art would not consider these features as being essential. As a result, I can see no palpable and overriding error in the Judge's findings.

- 4) *Did the Judge err in inferring that SHC is determined using a load/elongation curve?*

[52] In its Amended Statement of Claim, Dow argued that the polyethylene film-grade copolymers manufactured and sold by Nova under the SURPASS name met the limitations of

Component A of all of the asserted claims to the extent that they had an SHC greater than or equal to 1.3, thereby infringing the '705 Patent. Critical to that argument is the procedure to calculate the SHC. Nova asserts that the Judge erred in accepting Dow's submission that the SHC is to be determined by using load/elongation curves, since the patent teaches that it must be done by using a stress/strain curve.

[53] The patent teaches that improvements in the desired properties of Component A can be predicted on the basis of the slope of strain hardening coefficient. It adds that for the interpolymers used in the invention, the SHC "is greater than 1.3, preferably greater than 1.5", and that it will typically be "less than 10, more typically less than 4, and most typically less than 2.5".

[54] There is no dispute between the experts that the skilled person with the common general knowledge as of 1994 would understand the terms "strain hardening coefficient" in the context of the '705 Patent to be a quantity related to the rate of change in load with respect to elongation in the strain-hardening region, and the melt index, which is a constant for a given polymer. The exact nature of that relationship is set out at page 10 (lines 10-13) of the patent as: "SHC=(slope of strain hardening) \* (I2)<sup>0.25</sup>, where I2 = melt index in grams/10 minutes".

[55] The patent also teaches how the slope of strain hardening is measured and the protocol for doing so. In particular, it states:

The tensile properties of the test sample is tested on an Instron Tensile Tester at a crosshead speed of 1 inch/minute (2.5 cm/minute). The slope of strain hardening is calculated from the resulting tensile curve by drawing a line parallel to the strain hardening region of the resulting stress/strain curve. The strain hardening

region occurs after the sample has pulled its initial load (i.e., stress) usually with little or no elongation during the initial load) and after the sample has gone through a slight drawing stage (usually with little or no increase in load, but with increasing elongation (i.e., strain)). In the strain hardening region, the load and the elongation of the sample both continue to increase. The load increases in the strain hardening region at a much lower rate than during the initial load region and the elongation also increase, again at a rate lower than that experienced in the drawing region. Figure 1 shows the various stages of the stress/strain curve used to calculate the slope of strain hardening. The slope of the parallel line in the strain hardening region is then determined.

‘705 Patent, p. 9, line 29 to p. 10, line 9

[56] As noted by the Judge, the main dispute between the parties on this issue boils down to the type of tensile curve that should be used. Nova claims that the type of tensile curve to be used is an engineering stress/strain curve, while Dow asserts that the type of tensile curve to be used is a plot of the default load/elongation data from the Instron Tensile Tester. Obviously, these two types of curve would yield different numerical values.

[57] Nova submits that the Judge erred by not construing “stress/strain curve” with its plain meaning as established in the common general knowledge on November 10, 1994. Having considered the experts’ evidence and arguments of counsel, the Judge found in favour of Dow and adopted its proposed construction of the patent that SHC is measured using a load/elongation curve.

[58] On appeal, Nova put forward much of the same arguments submitted at trial. For example, Nova submitted that the Judge erred by not construing the patent as a whole and by disregarding Example 3. According to one of Nova’s experts (Dr. Cakmak), who undertook tensile tests using the same apparatus referred to in the patent on various samples of Dow’s



products, no load/elongation curve would yield an SHC of 1.5, but some stress/strain curves could. In Nova's view, Example 3 should have informed the meaning of "stress/strain curve", and the Judge erred in ignoring this point.

[59] First of all, the Judge did not ignore that submission but explicitly referred to it in his reasons (see Reasons for Judgment, para. 93). The fact that he chose ultimately to prefer the evidence of Dr. Young cannot be taken to mean that he forgot or misconceived Nova's argument. Both in his expert and rebuttal reports, Dr. Young makes it clear that a skilled person would not undergo the sort of complex and lengthy analysis performed by Dr. Cakmak, because the patent is self-contained and directs a POSITA to do a load/elongation curve of a specimen of a particular geometry. There would be no need to confirm this with an example, and Dr. Young further provides in his report a number of reasons why a POSITA would understand that example to be wrong.

[60] Indeed, Dr. Cakmak himself acknowledged in his report that a skilled person would not attempt to re-work Example 3 in an attempt to construe the patent. He arrived at his construction of stress/strain curve on other bases, and he appears to have considered that example mostly for other purposes that are immaterial to this appeal.

[61] Of more relevance, as noted by the Judge, is the wording of the patent itself. In the excerpt reproduced above at paragraph 55, the terminology of "load" and "elongation" is used repeatedly. I agree with Nova that counting is no substitute for construing words. However, I disagree with Nova's contention that relating load to stress and elongation to strain (when the

patent says “load (i.e. stress)” and “elongation (i.e. strain)” would necessarily be a mere pleonasm if a load/elongation curve is to be used, since a skilled person knows that stress increases proportionately to load and that strain increases proportionately to elongation. As explained by Dr. Young, when associating load with stress and elongation with strain, the patent could simply be defining “load” and “elongation” as the specific types of “stress” and “strain” to be used. Nova clearly did not demonstrate that the Judge made a palpable and overriding error in choosing that construction over that suggested by Nova’s expert.

[62] Such a reading would be consistent with Dr. Young’s assertion that “stress/strain curve” is often used generically to refer both to load versus elongation, stress versus strain (or engineering stress versus engineering strain), and true stress versus true strain, the evidence of which the Judge accepted. On appeal, Nova submitted that this was an error because it was not the accepted meaning of those terms at the date of the patent’s publication. I accept that Dr. Young did not provide as many examples in the literature as he could have of the generic use of “stress/strain curve”, but he did affirm categorically more than once that such examples abound.

[63] Moreover, Dr. Cakmak also accepted (after initially denying) that the term “stress/strain curve” could refer to other types of curves than an engineering stress/engineering strain curve, after having been taken to a number of examples on cross-examination where the term was used for other types of curves. This wavering was noted by the Judge in his reasons (Reasons for Judgment, para. 87). It is no answer to say, as Dr. Cakmak claimed, that such use of “stress/strain” to refer to a load/elongation curve is a misuse of that expression.

[64] The Judge did not make much of Dr. Lai's evidence in his reasons, but he did mention that just like Dr. Young, Dr. Lai uses the term "stress/strain curve" in a generic way to cover different types of tensile curves including load/elongation curves. Nova submits that this was improper, because Dr. Lai was not an expert witness and could not give opinion on the construction of the patent. But the Judge was clearly aware of Dr. Lai's status, and the fact that he relied on both Dr. Young and Dr. Lai in the same sentence is not sufficient to blur that distinction; he clearly refers to Dr. Lai's evidence to show that the generic use of "stress/strain" curve was known and accepted by skilled persons at the relevant period of time.

[65] A further reason given by the Judge to accept that the stress/strain curve is to be measured using a load/elongation curve is that the output from the Instron Tensile Testing machine (which the patent teaches is to be used to do the tensile testing) is load/elongation data and the default output is a load/elongation curve. Nova counters that such an inference could not be drawn since the method to convert load/elongation to stress/strain was common general knowledge. This may well be so, and the Judge acknowledges that such conversion is possible. However, that does not detract from Dr. Young's opinion that a skilled person would understand the patent to refer to a load/elongation curve when stating that the slope of strain hardening is calculated from the "resulting tensile curve" (see '705 Patent at p. 9, lines 31-33), in view of the fact that the output of the Instron machine is load and elongation data and a load/elongation curve. The Judge clearly did not make a palpable and overriding error in adopting that interpretation.

[66] The last reason given by the Judge to accept that the slope of strain hardening is to be measured using a load/elongation curve in the context of the patent is the fact that no gauge length or cross-sectional area is provided for converting load/elongation data to engineering stress/strain values. That finding is supported by Dr. Young's evidence, according to which a standard gauge length would need to be specified to create an engineering stress/strain curve. In the absence of such specification, a skilled person would have many options in selecting a gauge length to use for a specimen of the patent, and the gauge length chosen would have a significant impact on the calculated engineering stress/strain values. Nova's own expert, Dr. Cakmak, did indeed consider two possible gauge lengths for his experiments with Example 3 of the patent.

[67] On appeal, Nova contends that a gauge length would also be required for load/elongation measurements, and that Dr. Young inferred what gauge length a skilled person would use from the specimen geometry. I agree with counsel for Dow that this is a mischaracterization of the evidence given by Dr. Young. Not only did he assert on a number of occasions that gauge length is not required for load/elongation measurements, but the value that he inferred from sample specifications described in the patent were the grip separation and not the gauge length. While not explicitly making that distinction in his reasons, the Judge defines "gauge length" (at para. 89) in the portion of his reasons dealing with Nova's argument in this respect, and refers to "grip separation" elsewhere in his reasons (see paras. 140 to 146, in particular). I am therefore satisfied that the Judge appreciated the difference between the two notions and did not make a palpable and overriding error in coming to the conclusion, based on Dr. Young's evidence, that the absence of a gauge length value in the patent is further proof that the slope of strain hardening is meant to be calculated using a load/elongation curve.

[68] Nova's last argument with respect to the construction of the stress/strain curve is that the Judge ignored the evidence of Drs. Cakmak and Speed that the common practice was to convert load/elongation data to stress/strain to neutralize effects of dimensional differences, and did not pay attention to Dr. Young's use of a polynomial correction formula to account for those differences. Indeed, Dr. Young acknowledged that a skilled person would have known that the slope of strain hardening should increase with specimen thickness (in other words, a thicker specimen will require more force to elongate the same distance as a thinner one). Consistently with his overall construction of the patent, however, he chose to account for the differences in the specimen thickness by using a mathematical formula instead of converting load/elongation data to stress/strain.

[69] It bears emphasizing that Dr. Young did not use his correction formula to construe the patent, but only to determine whether the tensile testing performed on Nova samples of its product substantiates an infringement of the patent. In fact, and contrary to Nova's submission, the Judge deals with that correction formula in his reasons (at para. 139) as part of his discussion relating to infringement. It also appears from the evidence that Dr. Cakmak himself did in the past use a similar formula to fit data, and that in appropriate circumstances it is a proper and reasonable approach. Accordingly, I fail to see how the Judge made a palpable and overriding error in accepting Dr. Young's approach.

[70] For all of the foregoing reasons, I find that the Judge did not err in construing the patent and in inferring that SHC is determined by using a load/elongation curve. Moreover, Nova does not contest infringement of the SHC limitations if it is construed to refer to the load/elongation

curve. As a result, the Judge's finding that the claims at issue in the patent have been infringed by Nova's Component A polymers of its SURPASS product, as they all have an SHC value equal to 1.3 or greater, must be upheld.

5) *Did the Judge err in construing "heterogeneously branched"?*

[71] In his reasons, the Judge adopted Dow's proposed construction of the terms "heterogeneously branched", which is an essential descriptor of Component B in all claims, and defined that expression in the negative (i.e. not homogeneously branched). He quoted the patent's definition of "homogeneously branched" and then held "heterogeneously branched" to mean "a polymer having a distribution of branching different from and broader than the homogeneously branched [polymer] at similar molecular weight and SCB [short chain branching] averages".

[72] On appeal, Nova contends that the Judge erred by assimilating the definition of "homogeneously branched" found in the patent to the definition of "homogeneous polymer" given by Dr. Soares, without appreciating that these are different terms. As a result, the Judge erroneously found that Nova's products have a "heterogeneously branched" Component B and therefore infringed all of the claims of the patent.

[73] The parties agree that a polyethylene copolymer is either homogeneously branched or heterogeneously branched. Since the definition of "heterogeneously branched" provided in the patent is dependent on the notion of "homogeneously branched" (to the extent that it refers to a polymer having a distribution of branching "different from and broader" than the homogeneously

branched polymer), the definition of “homogeneously branched” will obviously have a direct impact on what is required of a polymer to be characterized as “heterogeneously branched”.

[74] According to Nova, the Judge misconstrued the patent’s definition of “homogeneously branched” polymer and adopted too narrow a definition of those terms as a result of equating the term “homogeneously branched” polymer with Dr. Soares’ definition of “homogeneous polymer” without appreciating the differences between those terms. In his expert report, Dr. Soares defines a “homogeneous polymer” as one made in the uniform polymerization conditions of a single-site catalyst in an ideal CSTR (continuous stirred-tank reactor) that is perfectly well-mixed (see Expert Report of Dr. Soares, Appeal Book Vol. 25, Tab 28 at paras. 37-41, 55-59, 75, 82-92 and 111-115). He added that such a polymer will display the narrowest theoretically possible statistical distributions of molecular weight and branching and will have an independent relationship between average branching and molecular weight. While not disagreeing with that definition, counsel for Nova submits that a “homogeneous polymer” may be homogeneous in a number of ways, and that the claims only refer to “homogeneously branched” polymers, not to the narrower category of “homogeneous polymer”.

[75] In my opinion, this argument must fail. First, I note that this construction of the patent was not put forward at trial. Instead, Nova proposed that a Composition Distribution Branch Index (CDBI) measurement should be used as a bright line test for distinguishing the two types of polymers. The Judge easily rejected that proposal on the basis that Nova’s own experts did not seem to agree as to where the bright line should be drawn, and Nova did not challenge that finding on appeal.

[76] Moreover, a careful reading of the patent indicates that the two expressions are used interchangeably and that the use of one as opposed to the other is of no critical import. It is also of some interest that the patent, at page 12, mentions that heterogeneously branched polymers differ from homogeneously branched polymers “primarily” in their branching distribution, which seems to imply that they also differ on the basis of other characteristics. In any event, the Judge was entitled to prefer Dr. Soares’ construction over that of Dr. Mirabella in this respect.

[77] Finally, Nova submits that the patent’s teaching is inconsistent with the narrow definition of the words “homogeneously branched” espoused by the Judge. First, the patent refers to various ranges of molecular weight distribution (MWD) for a homogeneously branched polymer and all the claims specify the broadest of these ranges; these go beyond the narrowest possible MWD one would expect for a polymer made in the ideal conditions described by Dr. Soares and commonly known as a “Flory distribution”. Second, the patent does not require a homogeneously branched polymer to have the narrowest branching distribution. And third, the patent does not mention an independent relationship between average branching and molecular weight, which characterizes a polymer made in the uniform conditions of a single-site catalyst in a well-mixed reactor.

[78] I need not address those arguments since the Judge did not understand the words “homogeneously branched” to mean a polymer made with a single-site catalyst in a perfectly well-mixed reactor with the narrowest molecular weight and branching distributions. Far from treating polymers made in those conditions as the benchmark or the only polymers that can be considered “homogeneously branched”, the Judge adopted the definition found in the patent



itself and applied it to the claims. It is true that a quote from Dr. Soares reproduced by the Judge at paragraph 62 of his reasons may leave the impression that he is using such a benchmark for comparison purposes; but the Judge did not rely on this passage as providing a definition of “homogeneously branched”.

[79] Contrary to Nova’s submission, however, the patent does mention an independent relationship between average branching and molecular weight. The patent defines “homogeneously branched” interpolymers as those “wherein substantially all of the interpolymer molecules have the same ethylene/comonomer ratio within that interpolymer”. In other words, the average branching frequency (which is a measure of the ethylene/comonomer ratio) does not change across the molecular weight distribution for a homogeneously branched polymer. The relationship between branching and molecular weight is therefore one of the criteria for distinguishing homogeneous and heterogeneous polymers, and the Judge’s finding that this was well known before 1994 is supported by the evidence and even by Nova’s own witnesses (see Expert Report of Dr. Soares, Appeal Book Vol. 25, Tab 28 at paras. 124-126; Cross-Examination of Dr. Kelusky, Appeal Book Vol. 14, Tab 345 at pp. 16557-8 and 16566-7; Cross-Examination of Dr. Mirabella, Appeal Book Vol. 17, Tab 351 at p. 17788).

[80] On the basis of the foregoing, I am therefore of the view that the Judge made no palpable and overriding error in construing the terms “heterogeneously branched” in the patent. It follows that the Judge did not use the wrong test for finding that Nova’s products have a “heterogeneously branched” Component B.

6) *Did the Judge err in construing “comprising”?*

[81] Nova submits that the Judge erred in construing the word “comprising” (found in all the asserted claims) to mean “including, but not limited to”. According to Nova, such a construction would mean that the claims of the patent would be infringed by a composition consisting of as much as 85% of unclaimed polymer(s), since the claimed minimums of Components A and B are respectively 10% and 5%. This is apparently the case of Nova’s SURPASS products, 50% of which allegedly consist of unclaimed polymer. The construction of “comprising” put forward by Nova is that the compositions consist “essentially” of Components A and B, with “perhaps” small amounts of additives as referred to in the patent at lines 14 to 20 on page 8. Nova finds support for that construction from the fact that the examples provided in the patent comprise only Components A and B, and that the outside limits in the claims are set to total 100% of the compositions.

[82] The problem with this reading of the patent is that it is inconsistent with the ordinary meaning of the word “comprising”. As noted by the Judge, there is a presumption of claim consistency, according to which the same words must be given the same meaning throughout the claims and within any claim of a patent (see, for example, *Burton Parsons v. Hewlett-Packard (Canada)* (1972), 7 C.P.R. (2d) 198 at pp. 225-226, 1972 CarswellNat 531 (F.C.T.D.), rev’d 10 C.P.R. (2d) 126, [1973] F.C. 405 (F.C.A.), aff’d [1976] 1 S.C.R. 555, 17 C.P.R. (2d) 97 (S.C.C.); *Johnson & Johnson Inc. v. Boston Scientific Ltd.*, 2008 FC 552 at paras. 208 and 213, 71 C.P.R. (4th) 123). In the case at bar, Nova’s own expert (Dr. Speed) not only acknowledges that the traditional meaning of the word “comprising” is “including but not limited thereto”, but he also

uses this traditional meaning in his construction of that word as it appears within Claim 41 ('705 Patent, p. 36, line 14), though not in the first paragraph of that Claim ('705 Patent, p. 35, line 17). The Judge was certainly allowed to rely on that unorthodox submission in preferring Dow's more traditional interpretation of the word "comprising".

[83] Of course, Nova is correct to state that a presumption should not be applied inflexibly as a rule, and that words must take the colour of the context wherein they are used. That being said, I do not think the Judge erred in rejecting Nova's submission that in the context of the '705 Patent, "comprising" means that the compositions must consist essentially of Components A and B, and perhaps the small amounts of additives referred to at lines 14 to 20 on page 8 of the patent. There was credible evidence from Dow's expert witnesses to the contrary.

[84] In his Rebuttal Report, Dr. Soares stated that a skilled person would infer from the use of the word "comprising" that the claims are not limited to Components A and B, but could include additional polymers as long as those additional polymers do not deprive the compositions of their desired benefits, either because of their nature, amount or type. According to Dr. Soares, a skilled person would "very easily" arrive at that conclusion on the basis of his/her knowledge of polymer blending and the intended use of the polymer blend disclosed in the '705 Patent (Rebuttal Report of Dr. Soares, Appeal Book Vol. 36, Tab 194 at para. 44). Dr. Scott was of the exact same view (Expert Report of Dr. Scott, Appeal Book Vol. 35, Tab 192 at para. 115). Indeed, Dr. Speed himself equivocated on that issue and accepted at one point that a composition containing Components A and B plus another Component C would infringe the patent (Cross-Examination of Dr., Speed, Appeal Book Vol. 19, Tab 354 at pp. 18359-18360).

[85] As for the Judge's finding that at the very least, Claim 11 is infringed irrespective of the definition given to the word "comprising", there was expert evidence supporting that finding. It is not in dispute that Component B of Claim 11 depends on Claim 10 and must therefore be 5 to 90 percent (by weight of the total composition), have a density between 0.91 g/cc and 0.965 g/cc (as opposed to 0.93 to 0.965 for the other asserted claims), and be heterogeneously branched. It is not in dispute either that the material in Reactor 2 meets the first and second characteristics of Claim 11. The only point of contention between the parties is with respect to the third requirement, that Component B must be heterogeneously branched.

[86] On appeal, Nova contends that its SURPASS products do not infringe the specifications of Component B in Claim 11, because the polymers in Reactor 2 are not heterogeneously branched. The Judge accepted Dr. Soares' testimony that the material in Reactor 2 is poorly mixed and results in a continuum of materials which, taken as a whole, are heterogeneously branched. Relying on its own expert, Dr. Mirabella, Nova asserts that Dr. Soares does not take into account that there are two distinct components in Reactor 2.

[87] Once again, I am of the view that Nova has not established a palpable and overriding error in the Judge's finding. This is yet another instance where this Court is asked to retry the case and second-guess the Judge's assessment of the evidence that was before him. Of course, a different judge could have taken a different view and come to a different conclusion on the basis of the same evidence; but this is not the test on appeal.

- 7) *Did the Judge err in deciding that the HD fraction was at least 5% by weight of the composition?*

[88] Nova also argues that the Judge erred in finding an infringement of part B of all the claims. Dow had submitted that Nova's SURPASS polymers infringe all of the asserted claims of the '705 Patent if one accepts Nova's submission that the HD component made in the poorly mixed region of its Reactor 2 as a distinct polymer. After noting that the parties initially had three areas of disagreement in that respect (whether the HD component by itself is heterogeneously branched, whether it is about 5% or more by weight of the total SURPASS composition, and whether the HD component has a density from 0.93 g/cc to 0.965 g/cc), the Judge indicated that the third one was no longer disputed in Nova's closing submission but then dealt exclusively with the first one without addressing whether the HD component met the second requirement.

[89] This was clearly an oversight on the part of the Judge, but it does not amount to a palpable and overriding error. While the Judge should have dealt with this "area of disagreement", it was clearly not the most important one and there is sufficient evidence to support a finding in favour of Dow on this narrow point.

[90] The experts agree that it is not possible to clearly separate the HD component from the other components found in Reactor 2. A mathematical correction is therefore needed to separate the HD component for each of the grades of SURPASS to determine whether they infringe the patent. The disagreement between Dr. Soares and Dr. Mirabella relates to the correction process required to obtain a cleaner separation between the higher density peak (and the corresponding

weight percent) and the contamination of the lower density fraction. Dr. Mirabella testified that Dr. Soares did not follow his own instructions and did not drop his correction line at the same place on graphs showing the chemical composition distributions and profiles of the polymers made in Dow's ELITE product and Nova's SURPASS products (at the left of the "the valley between the two peaks" for SURPASS products and "as close as possible to the valley" for Dow's ELITE product). As a result, it is submitted that Dr. Soares overestimated the weight percentage of the HD component in Nova's SURPASS polymers.

[91] Dow counters that Nova's internal testing and productions indicated that the HD component was above 5% by weight for each of the representative product grades at issue, as required by the claims at issue in the patent (see Expert Report of Dr. Soares, Appeal Book Vol. 25, Tab 28 at paras. 212-216). Nova also admitted on discovery that the majority of the resins had an HD component making up about 5% by weight of the product (see Discovery transcript of Nova, Appeal Book Vol. 29, Tab 108 at pp. 2374 and 2382). Finally, I note that Dr. Soares requested samples of all fractions collected at Nova's facilities for the fractionation experiments to test their contents but Nova refused to provide them. We are therefore left with Dr. Soares' explanation as to why Dr. Mirabella's results with respect to the weight proportion of the HD component are lower than 5%, which is that the high density fractions that he used for his experiments did not in fact include all of the HD components.

[92] In light of this unchallenged evidence from Dow, I am of the view that the failure of the Judge to address this issue was of no consequence and does not undermine his overall finding that even if we only consider the higher density component of Reactor 2, it still satisfies part B of

Claims 11, 29, 30, 33, 35, 36, 41 and 42. And in any event, as previously discussed, the Judge did not make a palpable and overriding error in finding that the whole polymer made in Reactor 2 satisfies part B of Claim 11.

IV. Conclusion

[93] For all of the foregoing reasons, I would dismiss the appeal with costs. All of the arguments raised by the appellant amount to no more than mere disagreements with the Judge's factual findings and assessment of the expert evidence. The Judge did not err in law, and was entitled to prefer the evidence of some of the experts over that of others; indeed, this is precisely the task he was called upon to fulfil, and the appellant has not established that he made any palpable and overriding error in doing so.

“Yves de Montigny”

---

J.A.

“I agree  
Wyman W. Webb J.A.”

“I agree  
Richard Boivin J.A.”

**FEDERAL COURT OF APPEAL**

**NAMES OF COUNSEL AND SOLICITORS OF RECORD**

**DOCKET:** A-379-14

**STYLE OF CAUSE:** NOVA CHEMICALS  
CORPORATION v. THE DOW  
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AND DOW CHEMICAL CANADA  
ULC

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**CONCURRED IN BY:** WEBB J.A.  
BOIVIN J.A.

**DATED:** SEPTEMBER 6, 2016

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