Commissioner’s Decision #1359
Décision du commissaire # 1359

TOPIC: B20, B21, B22, C00
SUJET : B20, B21, B22, C00

Application No.: 2,519,192
Demande n^{o} :2,519,192

Commissioner's Decision Summary

The purpose of this review is to determine, among other things, whether and under what circumstances it is acceptable to claim a composition defined by known elements and a desired physical property.

The subject application was rejected in a Final Action since certain claims were considered as: being directed to an "obviously desired result"; omitting an essential feature; and claiming more than what had been invented.

The Panel found that the central question to be answered in order to address the issues raised by the Examiner is whether the claims are enabled across their full scope. As such, the present review focuses on this central question.

Enablement of claims 1-29 across their full scope

Decision: Claims 1-18 and 20-29 are refused on the ground that they are not enabled across their full scope.

The specification does not provide an enabling disclosure for preparing the catalytic compositions defined in these claims. Furthermore, a person skilled in the art would not be able to achieve the claimed result based only on the specification and his or her common general knowledge. As a result, these claims are not considered to be enabled across their full scope.

To be allowable, claims 1-18, 20-22 and 24-29 must be amended to recite the specific surface area that could be achieved based on the specification and the common general knowledge of the person skilled in the art. In this case, the specific surface area of the catalytic composition, after calcination at the recited temperature, is at most equal to the specific surface area of the composition that has actually been made and described in the description. Claims 11 and 23 must be amended to state that the proportion by weight of cerium oxide relative to the overall composition is at least 58%.

Decision: Claim 19 is allowed on the ground that it is enabled across its full scope.

This claim encompasses a catalytic composition defined by a) known chemical and structural elements and b) a physical property (specific surface area at a given elevated temperature) that distinguishes the composition from other compositions. The specification provides an enabling disclosure across the full scope of this claim which defines a composition having a specific surface

area defined by an upper and lower limit, the upper limit being at least equal to the specific surface area of the composition that has actually been made by the inventors and described in the description. The lower limit can be justified because it is described in the specification and could be obtained by a person skilled in the art. Accordingly, we concluded that this claim is enabled across its full scope.

The following decisions with respect to the desired result flow from the above decisions:

1) Rejection of claim 19 on this ground is reversed.

For the same reasons given above, we have concluded that this claim is enabled across its full scope. As a result, this claim is not directed to a desired result but to an achieved result since it encompasses only the catalytic compositions that have actually been made and described by the inventors or which could be made by a person skilled in the art based on the specification and his or her common general knowledge.

2) Rejection of claims 20-29 on this ground is held.

For the same reasons given above, we have concluded that these claims, which include, among other elements, a statement of desired result, are not enabled across their full scope. As a result, they are not directed to an achieved result but to a desired result. However, if these claims are amended as recommended by the Panel, they will be considered allowable.

CANADIAN PATENT OFFICE

DECISION OF THE COMMISSIONER OF PATENTS

Patent application No. 2,519,192, having been rejected pursuant to subsection 30(3) of the *Patent Rules*, has been reviewed in compliance with paragraph 30(6)(c) of the *Patent Rules* by the Patent Appeal Board and the Commissioner of Patents. The findings of the Board and the ruling of the Commissioner are as follows:

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INTRODUCTION

[1] Pursuant to paragraph 30(6)(c) of the *Patent Rules*, this decision deals with a review of the rejected patent application No. 2,519,192.

[2] The Applicant is Rhodia Electronics and Catalysis and the invention is entitled "Compositions Based on Cerium Oxide, Zirconium Oxide and, optionally, another Rare Earth Oxide, having a Specific Raised Surface at 1100°C, Method for the Production and Use Thereof as a Catalyst." The inventors are Olivier Larcher and Emmanuel Rohart.

HISTORY OF THE APPLICATION

[3] The subject application was filed on March 17, 2004 and the Examiner in charge of the application issued a Final Action on December 3, 2010 in which claims 19-38 were rejected under the provisions of section 84 of the *Patent Rules* for the following reasons: 1) being directed solely to an "obviously desired" (desired) result, they are merely a restatement of the problem facing the inventors; 2) they omit an essential feature; and 3) they claim more than what has been invented. Claims 21 and 28-29 were rejected under the provisions of section 27(4) of the *Patent Act* for depending on claims upon which they should not depend.

[4] On May 30, 2011, the Applicant replied to the Final Action and submitted a new set of claims. The submission of the new claims resulted in the cancellation of claims 19-38 and their replacement with new claims 19-29. The Applicant maintained that the application now on file is in allowable form.

[5] While the Examiner found that the defects relating to subsection 27(4) had been overcome, as indicated in the Summary of Reasons, he found that the defects relating to section 84 of the *Patent Rules* had not been overcome. Accordingly, the rejection was referred to the Patent Appeal Board and a panel was tasked to review the application. Following an initial review of the application, by a letter dated July 23, 2013, the Panel invited the Applicant to provide clarifications with respect to enablement of the claims across their full scope. The Applicant requested a hearing, which was held on October 23, 2013.

[6] Prior to the hearing, on October 15, 2013, the Applicant submitted a letter to the Board accompanied by proposed amendments to the claims as well as further submissions relating to the outstanding issues. These submissions and the proposed new claims will also be

considered in our analysis of the claims currently on file.

[7] At the hearing, the Applicant was represented by Nathalie Jodoin, Laurence Bourget-Merle and Jason Moscovici of the firm Robic and by Philippe Dubruc and Julien Hernandez from Rhodia. Pierre Cuerrier, the Examiner in charge of the application, also attended the hearing.

[8] During the hearing, the Examiner presented his arguments and made some comments which the Applicant was not fully prepared to address at that time. Owing to the impact the Applicant's response could have on the outcome of the review, it was agreed that the Examiner would provide his comments in writing and that the Applicant would reply in writing. Submissions received by the Board on October 30, 2013, in response to the Examiner's comments, will also be taken into account in our analysis.

BACKGROUND TO THE INVENTION

[9] Before addressing the issues raised in the Final Action, it is important to understand the nature and the purpose of the invention.

[10] The "three-way" catalysts based on zirconium oxide and cerium oxide were well known before the filing of the present application. Specifically, this type of catalyst had useful properties in the treatment of internal combustion engine exhaust gases.

[11] To be effective, these catalysts - catalytic compositions – must have a very stable specific surface area. In other words, they must have a high specific surface area at elevated temperatures. Thus the problem facing the inventors was to make catalysts that had the largest possible specific surface area at the highest possible temperature.

[12] In this case, the Applicant developed a new process to make catalytic compositions based on zirconium oxide and cerium oxide that have, at a given elevated temperature, a larger specific surface area than that of compositions of the prior art.

[13] The Examiner does not dispute that the Applicant had developed a new, inventive process to make new catalytic compositions having the desired features, but rather the appropriateness of claiming these catalytic compositions independently of their process.

[14] As it will be shown below, this review focuses the issues raised by the Examiner by determining whether the claims are enabled across their full scope and are, as a result, in

compliance with the provisions of section 84 *Patent Rules* and subsection 27(3) of the *Patent Act*.

The claims in dispute

[15] Claims 1-29 are in dispute. It should be noted that claims 1-18, which were not initially at issue, were added in line with the point raised by the Panel with respect to enablement across the full scope of the claims.

[16] For ease of reading, we have decided to present claims 1-29 in detail in the analysis. Each of these claims encompasses catalytic compositions defined by known chemical elements and structure and by a physical property, namely their specific surface area at a given elevated temperature. Claims 1-29 are presented briefly as follows:

- Claims 1-5 are directed to a process for preparing catalytic compositions;
- Claims 6-16 are directed to catalytic compositions made by the process of claims 1-5;
- Claims 17 and 18 are directed to a catalytic system and a process for treating internal combustion engine exhaust gases, respectively, and encompass the catalytic composition of claims 11-16;
- Claims 19-27 are directed to catalytic compositions *per se*; and
- Claims 28-29 are directed to a catalytic system and a process for treating internal combustion engine exhaust gases, respectively, and encompass the catalytic compositions of claims 19-27.

ISSUES RAISED BY THE EXAMINER

[17] The Examiner raised the following three issues:

- Are claims 19-29 directed to an "obviously desired" result and therefore do not comply with the provisions of section 84 of the *Patent Rules*?
- Do claims 19-29 omit an essential feature of the alleged invention and therefore do not

comply with the provisions of section 84 of the *Patent Rules*?

- Do claims 20, 21 and 24 claim more than what has been invented and are, therefore, not in compliance with the provisions of section 84 *Patent Rules*?

ISSUE RAISED BY THE PANEL

[18] The issue raised by the Panel in its letter of July 23, 2013, relates to the question of whether claims 1-29 are enabled across their full scope.

PURPOSIVE CONSTRUCTION OF THE CLAIMS

[19] As taught by the case law, before considering the issue of validity, the claims in dispute must be interpreted from a purposive construction standpoint. This construction will help identify essential and non-essential elements of the claims in order to clarify their meaning. The principles regarding the construction of claims have been established in numerous court cases, including *Free World Trust v. Électro Santé Inc*, 2000 SCC 66 [*Free World Trust*] and *Whirlpool Corp v. Camco Inc*, 2000 SCC 67 [*Whirlpool*]. In the latter case Justice Binnie wrote:

> 45 The key to purposive construction is therefore the identification by the court, with the assistance of the skilled reader, of the particular words or phrases in the claims that describe what the inventor considered to be the "essential" elements of his invention.
> ...
> 53 […] the patent specification is not addressed to grammarians, etymologists or to the public generally, but to skilled individuals sufficiently versed in the art to which the patent relates to enable them on a technical level to appreciate the nature and description of the invention […].

[20] It should be noted that we construed all the claims purposively before the analysis. However, for ease of reading, the construction of the claims will be presented in detail during the analysis.

[21] It must be noted that in the instant case, neither the Applicant nor the Examiner provided a definition of the person skilled in the art. It appears that this person is a chemist having experience in the field of ceramics, and specifically in catalysts of the type disclosed in the present application. In this case, we find this definition sufficient for addressing the issues in dispute. The Applicant's view in regard to what was known by the person skilled in the art,

which is expressed in the specification as well as in the Applicant's submissions, is not disputed in our analysis.

ISSUE RELATING TO THE ALLOWABILITY OF CLAIMS THAT INCLUDE A STATEMENT OF DESIRED RESULT

Position of the Examiner

[22] The position of the Examiner, expressed in the Final Action, in the Summary of Reasons and during the hearing, can be summarized as follows:

- claims 19-29 are directed to a catalytic composition that is distinguished from other compositions exclusively by the result that the inventors had hoped to achieve at the start of their research;

- while acknowledging that it is permitted to include a statement of desired result in a claim and to define a composition by its physical and chemical properties, the Examiner found that it should not be permitted to claim this composition in such a way that it is distinguished from other known compositions exclusively by the desired result;

- by reference to the paragraphs on page 1 of the description - see text below - the Examiner recalled that the inventors' desired result was to obtain catalytic compositions – based on cerium oxide and zirconium oxide – which have a large specific surface area at an elevated temperature.

The following appears on page 1 of the description:

> [TRANSLATION] Currently the so-called multifunctional catalysts are used for the treatment of internal combustion engine exhaust gases (automobile postcombustion catalysis). Multifunctional catalysts are understood to mean those capable of not only oxidizing, in particular carbon monoxide and the hydrocarbons present in exhaust gases, but also reducing, in particular of nitrogen oxides also present in these gases ("three-way" catalysts). Today, zirconium oxide and cerium oxide appear to be two particularly important and advantageous constituents for this type of catalyst. To be effective, these catalysts must have a high specific surface area even at high temperature.

> There is a need for catalysts capable of being used at increasingly high temperatures and, for this to be so, having a specific surface area that is very stable. [underlining added]

- the Examiner does not dispute that the case law teaches that it is permitted to include a statement of desired result in a claim. He notes that, in *Burton Parsons Chemicals Inc v. Hewlett-Packard (Canada) Ltd* (1974), [1976] 1 SCR 555 [*Burton Parsons*] and in other decisions on which the Applicant based its arguments - see below – the claims that were in dispute included the solution to the problem, and the statement of desired result in those claims served only to further supplement the claim;

- the Examiner takes the view that, in this case, the specific surface area of the catalytic composition – the physical property – did not represent the solution to the problem facing the inventors. He argues that the "solution" or "the inventive aspect" i.e. the aspect that distinguishes the composition from any other known catalytic composition and which is responsible for the desired result, is absent from the claim.

[23] The Examiner concluded that the claims were not in compliance with the provisions of section 84 of the *Patent Rules*. He based his arguments on section 9.02.05 of the Manual of Patent Office Practice, December 2010 and *Free World Trust*, *supra*, wherein Justice Binnie said:

> 32. As stated, the ingenuity of the patent lies not in the identification of a desirable result but in teaching one particular means to achieve it. The claims cannot be stretched to allow the patentee to monopolize anything that achieves the desirable result. It is not legitimate, for example, to obtain a patent for a particular method that grows hair on bald men and thereafter claim that anything that grows hair on bald men infringes.

[24] The Examiner also based his conclusion on *Pfizer Canada Inc v. Novopharm Ltd*, 2005 FC 1299, paragraphs 82 to 93 [*Pfizer*] wherein claim 23, which was directed to a dosage form that was distinguished from prior forms only by its function, was found to have been stretched to improperly cover any dosage form of azithromycin that has the desired function.

[25] In *Pfizer*, claim 23 reads:

> 23. Use of a therapeutically effective amount of azithromycin for the preparation of a pharmaceutical dosage form which does not exhibit an adverse food effect for

> administration, in the treatment of antimicrobial infection, to a patient that has eaten. [underlining added]

The Court commented in paragraph 88:

> Claim 23 does not claim a particular formulation of a dosage form, it claims any "preparation" of an oral dosage form that may exhibit no adverse food effects. In other words, claim 23 is claiming the desired result. This is the same desired result expressed differently by the inventors in the "History of the Invention" in the disclosure, where it is stated: "It would accordingly be useful if azithromycin could be administered to patients that have eaten recently and also if a dosage form for azithromycin were available which could be administered to patients that have eaten, as well as patients in a fasted state". [underlining added]

[26] The Examiner considered that the "solution" or "the inventive aspect" lies within the steps of the process for preparing the compositions, insofar as they make it possible to achieve the desired result.

[27] The Examiner suggested that in order to overcome the defect relating to overbreadth of the claims in dispute, the claims must define the catalytic compositions in terms of the process by which they are prepared, i.e., they must be drafted in the form of product-by-process claims.

Position of the Applicant

[28] The position of the Applicant was expressed in its response to the Final Action and in the submissions made during and after the hearing. It can be summarized as follows:

- the Applicant believes that the claims are not solely directed to an "obviously desired" result;

- the catalytic compositions claimed are not defined solely by their physical property (their specific surface area after calcination at an elevated temperature), but by this property in combination with chemical and structural elements;

- the claims have not been rejected for lack of novelty. This must mean that the combination of elements that define the claimed composition is considered sufficient to determine that this composition is novel;

- the specific surface area (after calcination) is a physical property that can be measured following procedures well established in the art of catalytic compositions. The measured value of the specific surface area represents an intrinsic structural feature of the product [catalytic composition] and is a real and measurable physical property that distinguishes the claimed composition from all earlier catalytic compositions;

- it would suffice for a person skilled in the art to measure the specific surface area according to procedures set out in the application to determine whether there is anticipation and/or infringement of the claim; and

- the Applicant takes the view that the facts in *Pfizer*, *supra*, are not relevant given that the feature distinguishing the product in claim 23 in that case was purely qualitative, whereas, in the instant case, the specific surface area recited in the independent claims (claims 19 and 23) is a measurable quantitative feature and falls within a range defined by upper and lower limits.

[29] The Applicant also based its arguments on decisions rendered in *Schering-Plough Canada Inc v. Pharmascience Inc*, 2009 FC 1128 [*Schering-Plough*] and in *Chu v. University of Houston* (2010), 112 CPR (4th) 41 (PAB and Com'r Pat) CD 1303 [*Chu*] in which cases it had been argued that the claims in dispute were overly broad and stretched so as to improperly encompass all ways of achieving the desired result, and where the issue was decided to the contrary.

[30] The Applicant also made arguments concerning sound prediction and utility of the claimed invention. However, we find it is not necessary to consider such arguments for the following reasons:

[31] The test for assessing the utility of claims that encompass untested embodiments is whether a person skilled in the art would have been able or not to soundly predict that all of the claimed embodiments would have the desired utility. The issue of utility has not been raised in the instant case.

[32] The issue that has been raised in the instant case is whether all of the claimed embodiments can be made by a person skilled in the art based on the teaching of the specification and on his or her common general knowledge. Therefore, the issue is whether the specification

provides an enabling disclosure across the full scope of the claims.

Legal principles

[33] The claims were rejected pursuant to section 84 of the *Patent Rules* which states the following:

> The claims shall be clear and concise and shall be fully supported by the description independently of any document referred to in the description. [underlining added]

[34] In *Re Geron Corp* (2011), 93 CPR (4th) 384 (PAB and Com'r Pat), CD 1309 [*Geron*], the Patent Appeal Board wrote the following concerning section 84:

> [53] Since section 84 of the Rules is a subordinate form of legislation that cannot operate outside its enabling statute it should be read in conjunction with subsection 27(3) of the Act, the relevant portions of which read:
>
> > The specification of an invention must:
> >
> > (a) correctly and fully describe the invention and its operation or use as contemplated by the inventor;
> >
> > (b) set out clearly the various steps in a process, or the method of constructing, making, compounding or using a machine, manufacture or composition of matter, in such full, clear, concise and exact terms as to enable any person skilled in the art or science to which it pertains, or with which it is most likely connected, to make, construct, compound or use it; [...]
>
> [54] The equivalent of subsection 27(3) has been interpreted in *Consolboard Inc. v. MacMillan Bloedel (Sask.) Ltd.*, [1981] S.C.R. 504, par. 27, 6 C.P.R. (2d) 146:
>
> > Section 36(1) seeks an answer to the questions: "What is your invention? How does it work?" With respect to each question the description must be correct and full in order that, as Thorson P. said in *Minerals Separation North American Corporation v. Noranda Mines, Limited*:
> >
> > > [. . .] When the period of monopoly 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. [at p. 316]
>
> [55] Compliance with subsections 27(3)(a) and (b) therefore requires that the specification

> provide a correct and full written description of the invention and must disclose how the invention actually was, or at least how it can be, put into practice: it must be enabling.

[35] To the above-mentioned requirements we would add some further guidance established by the jurisprudence that we consider relevant to the issues raised in the present case.

[36] In *Minerals Separation North American Corp v Noranda Mines Ltd* (1947), 12 CPR 99 (Ex Ct), Thorson P stated, at pp 112-113:

> [W]hen it is said that a specification should be so written that after the period of monopoly has expired the public will be able, with only the specification, to put the invention to the same successful use as the inventor himself could do, it must be remembered that the public means persons skilled in the art to which the invention relates, for a patent specification is addressed to such persons. It should, therefore, be looked at through their eyes and read in the light of the common knowledge which they should possess. But it is important to note that such common knowledge must be limited to that which existed at the date of the specification. [underlining added]

[37] In *Ernest Scragg & Sons Ltd v Leesona Corp* (1964), 45 CPR 1 (Ex Ct), Thorson P once again considered the issue of sufficiency of the specification. The Judge stated at p 99:

> It is settled law that a patent specification is not insufficient by reason of the fact that a competent workman of ordinary skill in the art to which the invention relates may have to make trials or experiments in order to accomplish the result of the invention, if such trials or experiments are not themselves inventions and the competent workman can accomplish the desired result by following the teaching of the specification. The specification is sufficient if it enables him to put the invention into practice and sufficient directions are given to him to enable him to know what trials or experiments he may have to make and how to make them. [underlining added]

and found at p 101, having regard to the facts of the case:

> The fact that he must make trials and experiments in order to accomplish the desired result does not set a problem for him that would invalidate the claims, for the specification prescribes the limits within which the trials and experiments may be made and contains sufficient instructions on how to make them. [underlining added]

before concluding at p 103:

> By following the teachings of the specification the addressee of the patent can put the invention into practice as easily and effectively as the inventors could do themselves.

[38] And finally, in *Sanofi-Aventis Canada Inc v Apotex Inc*, 2009 FC 676, at paras 223, 227, Snider J considered a sufficient specification requires that there be an enabling disclosure across the breadth of the claimed invention.

[39] As framed by the examiner, the claims are defective for claiming a desired result, namely catalytic compositions that exhibit a higher specific area at higher temperatures than prior catalysts. This raises the questions: Are claims that include a statement of desired result always improper? And if not, under what circumstances are they acceptable?

[40] We did not find, either in the case law cited by the Examiner or in our own searches, anything that would indicate that a claim would not be allowable should it include what might be considered as a statement of desired result. Of course, if a claim defined only a desired result, namely if the claim recites solely a statement of means, without further setting forth a practical embodiment capable of achieving that result, the claim could not be considered acceptable as it would amount to a mere restatement of the problem to be solved. However, this is not the case of the claims of the present application.

[41] In the instant application, we must determine whether claims that include, among other elements, what might be considered to be a statement of desired result (in this case, a physical property) are allowable. In making this determination, the test that we consider determinative of the issues raised in the present case is the test for sufficiency of the specification.

[42] Consistent with the statements from the above-mentioned case law, we consider that a claim that includes a statement of desired result will be acceptable (assuming all other criteria of patentability are met) provided that the specification provides a person skilled in the art with the means of achieving the desired result across the full scope of the claim. If trials and experiments are required in order to accomplish the desired result, the test of sufficiency of the specification is met if these trials and experiments are not themselves inventions and if the specification gives sufficient directions to the person skilled in the art to enable him or her to identify what trials or experiments he or she may have to perform and how to conduct them. If the specification contains gaps with respect to this required information, it can nonetheless be considered sufficient provided the gaps are filled by the common general knowledge.

Analysis

[43] In compliance with the above and as stated by the Panel in its letter to the Applicant dated 23 July, 2013 and during the hearing, the question with respect to all of the claims (1-29) is whether the specification provides an enabling disclosure across the full scope of the claimed invention.

[44] In the following section, we will purposively construe each of the claims before determining whether the specification is sufficient and the claims are enabled across their full scope.

Claims directed to a process for preparing a composition (claims 1-5)

[45] Claims 1-5 are directed to a process for preparing a binary catalytic composition defined by known chemical and structural elements and by a specific surface area of at least 15 m^2/g after calcination for 4 hours at 1100°C.

[46] Claim 1 is written as follows (the terms that require clarification are underlined):

> [TRANSLATION]
>
> 1. Process for preparing a composition consisting essentially of a cerium oxide and a zirconium oxide in a Ce/Zr atomic ratio of at least 1, said composition having a specific surface area of at least 15 m^2/g, after calcination for 4 hours at 1100°C, said process comprising the following steps:
>
> (a) forming a mixture comprising compounds of cerium, zirconium and, optionally,

compounds of a rare earth;

(b) bringing said mixture into contact with a basic compound, to obtain a precipitate;

(c) heating said precipitate to a temperature of at least 100°C in an aqueous medium;

(d) adding an additive selected from anionic surfactants, non-ionic surfactants, polyethylene glycols and carboxylic acids and their salts, to the precipitate obtained in the previous step; and

(e) calcining the resulting precipitate.

"composition consisting essentially of a cerium oxide and a zirconium oxide"

[47] The expression "composition consisting essentially of a cerium oxide and a zirconium oxide" would be understood by a person skilled in the art as being a binary catalytic composition, comprising two well-known chemical constituents: cerium oxide and zirconium oxide. Indeed, the last sentence on page 2 of the description suggests that "essentially consisting of" is used in this expression to indicate that the composition does not contain an oxide of any other element – in the form of a rare earth other than cerium – which can be a surface stabilizer for the catalytic composition.

[48] Having regard to the above, it appears that claim 1 lacks clarity in that the end product of the process is a binary catalytic composition whereas step (a) of the process mentions rare earth compounds that are only present in compositions of three or more oxides. The problem of lack of clarity will be resolved by amending the claims as indicated at the end of the analysis. In particular, the amendments proposed by the Applicant in its letter of October 15, 2013, to clearly and separately claim the process for preparing binary compositions and the process for preparing compositions with three or more oxides, will be taken into account. Accordingly, in the following analysis, claims 1-10 will be considered as though they encompass only binary catalytic compositions, whereas claims 11-16 will be considered as though they encompass only catalytic compositions with three or more oxides.

"Ce/Zr atomic ratio of at least 1"

[49] The Ce/Zr atomic ratio of at least 1 is defined on pages 3 and 4 of the description. It is indicated on page 3, lines 1-4, that the Ce/Zr atomic ratio of at least 1 corresponds to the proportion by weight of cerium oxide relative to the overall composition (i.e. cerium oxide and zirconium oxide – see page 2, last paragraph) of at least 58%.

[50] We have verified this by making the following calculation to determine the proportion by weight of cerium oxide relative to the overall composition for a Ce/Zr atomic ratio of 1:

$$\frac{CeO_2}{CeO_2 + ZrO_2}$$

[51] By replacing the atomic weights for the respective elements, we obtain:

$$\frac{140.116 + (2)(15.999)}{140.116 + (2)(15.999) + 91.224 + (2)(15.999)} = 0.583 = 58\%$$

Using this formula, the calculation of the proportion by weight of cerium oxide relative to the overall composition for a Ce/Zr atomic ratio of 2, 3 and 4 gives 74%, 81% and 85%, respectively.

"*calcination for 4 hours at 1100°C"*

[52] Calcination for 4 hours at 1100°C indicates that the catalytic composition obtained is calcined [heated] at high temperature, in air (as mentioned, for example, on page 2 of the description) for 4 hours at the elevated temperature of 1100°C.

"specific surface area of at least 15 m^2/g"

[53] The specific surface area is defined on page 2, lines 17-21 of the description, as being the B.E.T. surface. The surface is established using the **B**runauer–**E**mmett–**T**eller method, known and used for over 70 years. In general, a person skilled in the art would know that the specific surface area of a material is its surface area per unit of mass - for example, it can be expressed in m^2/g. Moreover, the larger the specific surface area of a porous material, the finer the pores.

[54] Accordingly, the expression "composition...characterized in that it has a specific surface area of at least 15 m^2/g after calcination for 4 hours at 1100°C", would be interpreted as relating to a composition that has been calcined at a temperature of 1100°C for 4 hours and whose specific surface area is at least 15 m^2/g. As currently drafted, the claim does not define an upper limit for the specific surface area.

"compounds of cerium and zirconium"

[55] As defined on page 5 of the description, compounds of cerium and zirconium would be understood by a person skilled in the art as being ceric ammonium nitrates, sulfates, acetates or chlorides of cerium and zirconium.

"an additive, selected from anionic surfactants, non-ionic surfactants, polyethylene glycols and carboxylic acids and their salts"

[56] The term "additive" in the expression "an additive, selected from anionic surfactants, non-ionic surfactants, polyethylene glycols and carboxylic acids and their salts" would be understood by a person skilled in the art as being a compound that can be selected from among a very large number of possible compounds, i.e. the anionic surfactants, non-ionic surfactants, polyethylene glycols and carboxylic acids and their salts recited at pages 7-9 of the description."

"calcining the precipitate"

[57] The expression "calcining the precipitate" would be understood by a person skilled in the art as being the fact of calcining the precipitate at a temperature of between 300°C and 1000°C. The skilled worker would further understand that this calcination allows the crystallinity of the product formed to be increased and may be adjusted depending on the temperature at which the composition is used subsequently, taking into account the fact that the specific surface area of the product is lower as the calcination temperature employed increases.

[58] Since many of the terms and elements above are the same as or similar to those in claims 2-29, it will not be necessary to interpret them again.

[59] Aside from the lack of clarity mentioned above with respect to the use of a rare earth in step (a) of the process, we consider that the terms and expressions used in claim 1 would be understood by a person skilled in the art. Collectively, they define the limits of the claim in such a way that a person skilled in the art would be able to understand whether or not a given catalytic composition was within or outside its scope. In other words, the claim is clear and concise, as required by subsection 27(4) of the *Patent Act* and section 84 of *the Patent Rules*.

[60] As indicated above, in order to determine whether this claim is acceptable, we must determine whether there is an enabling disclosure across the full scope of this claim. Specifically, we must determine whether, by following the steps of the process described in

the instant application, it is possible for the skilled person to make a binary catalytic composition that has a specific surface area equal to or higher than 15 m^2/g after calcination for 4 hours at 1100°C.

[61] The specification discloses only two examples for preparing a catalytic composition that has a given specific surface area at an elevated temperature. The following table summarizes the values of the specific surface areas of the binary catalytic composition of example 1 and the three-oxide catalytic composition of example 2:

T°	**specific surface area***	
	Example 1 binary catalyst	**Example 2** Four-oxide catalyst
900°C	49 m^2/g	65 m^2/g
1000°C	31 m^2/g	42 m^2/g
1100°C	15 m^2/g	23 m^2/g
1200°C	4 m^2/g	4 m^2/g

*specific surface area after calcination for 4 hours at temperature T° (10 hours if T° = 1200°C)

[62] Example 1 of the description is the only example that describes a process for preparing a binary catalytic composition as defined in claim 1, but wherein the Ce/Zr atomic ratio is 1. After calcination for 4 hours at 1100°C, this catalytic composition has a specific surface area of 15 m^2/g.

[63] The description does not disclose an example of a binary catalytic composition that has a specific surface area higher than 15 m^2/g after calcination for 4 hours at 1100°C. We thereby deduce that a person skilled in the art must conduct trials and experiments to make such a composition.

[64] However, the specification does not disclose sufficient directions to enable a person skilled in the art to identify the trials and experiments he or she would have to perform in order to make this catalytic composition and how to conduct them.

[65] There is nothing in the description that indicates how the specific surface area of the

catalytic composition varies as the parameters of the process of claim 1, such as the heating temperature in step (c), the surfactant in step (d) or the Ce/Zr atomic ratio, are changed.

[66] In order to determine whether the gaps of the specification can be filled by the common general knowledge of a person skilled in the art, the Panel, in its letter dated July 23, 2013 and at the hearing, invited the Applicant to provide clarifications with respect to the relationship that exists between the parameters of the process, and in particular the relationship between the Ce/Zr atomic ratio and the specific surface area of the catalytic composition.

[67] The Applicant provided us with no evidence or affidavits to show how a person skilled in the art, based on the common general knowledge, could identify from among the process parameters, such as the heating temperature in step (c) or the surfactant of step (d), those that would allow one to prepare a catalytic composition that has, at the recited elevated temperature, a different specific surface area, let alone a larger specific surface area, than that obtained in the examples described in the description.

[68] This leads us to conclude that based on the specification and the common general knowledge, a person skilled in the art would not be able to determine how to vary the heating temperature in step (c) or the surfactant in step (d) of the process in claim 1 so as to obtain a binary catalytic composition that has a specific surface area higher than 15 m^2/g.

[69] The only indication we have available concerns the relationship between the Ce/Zr atomic ratio and the specific surface area of the composition. In its letter of March 20, 2008, the Applicant affirmed that it is well known in the art that increasing the content of cerium results in a decrease of the stability of the composition's surface area. This was also confirmed at the hearing by the Applicant. In the absence of any evidence to the contrary, we accept that this is part of the common general knowledge of the person skilled in the art.

[70] Knowing that the person skilled in the art would expect that the specific surface area decreases as the content of cerium increases, we consider that, all things being equal, the highest specific surface area, within the claimed range of Ce/Zr atomic ratio of 1 or more, should be that of the catalytic composition for which the Ce/Zr atomic ratio is 1. However, this catalytic composition is that which is obtained by following the steps of the process described in example 1 and its specific surface area, after calcination for 4 hours at 1100°C, is equal to 15 m^2/g.

[71] In light of the above, we conclude that the description does not include an enabling disclosure across the full scope of claim 1. The specification contains gaps as to the information required to make a catalytic composition that has a specific surface area higher than 15 m^2/g. Furthermore, in the absence of any evidence to the country, nothing allows us to conclude that these gaps could be filled by the common general knowledge of the person skilled in the art. Accordingly, claim 1 is not enabled across its full scope and therefore does not comply with section 84 of the *Patent Rules* and subsection 27(3) of *the Patent Act*.

[72] Dependent claims 2-5 have the same defects as claim 1, upon which they depend, and the limitations they include do not remedy these defects.

Claims directed to a catalytic composition obtained by its process of preparation (claims 6-16)

[73] Claims 6-16 are directed to a catalytic composition made by the process of claims 1-5.

[74] Independent claim 6 is written as follows:

> [TRANSLATION]
>
> 6. Composition consisting essentially of a cerium oxide and a zirconium oxide in a Ce/Zr atomic ratio of at least 1, characterized in that it has a specific surface area of at least 15 m^2/g after calcination for 4 hours at 1100°C, said composition being obtained by the process as defined in any one of claims 1 to 5.

[75] Claim 6 is directed to a binary catalytic composition, obtained by the process of claims 1-5. Since this composition is defined as in claim 1, it has the same defects for the same reasons. Accordingly, this claim does not comply with section 84 of the *Patent Rules* and subsection 27(3) of the *Patent Act*.

[76] Independent claim 7 reads:

> [TRANSLATION]
>
> 7. Composition consisting essentially of a cerium oxide and a zirconium oxide in a Ce/Zr atomic ratio of at least 1, characterized in that it has a specific surface area of at least 45 m^2/g after calcination for 4 hours at 900°C, of at least 20 m^2/g after calcination for 4 hours at 1000°C, and of at least 9 m^2/g and after calcination for 4 hours at 1100°C, said composition being obtained by the process as defined in any

> one of claims 1-5.

[77] Claim 7 is directed to a binary catalytic composition obtained by the process of claims 1-5 having, after calcination at each of the recited temperatures, a specific surface area which is defined only by a lower limit. We consider that even if the lower limit of this specific surface area is lower than the specific surface area of the composition of example 1, it is acceptable insofar as it could be obtained when the Ce/Zr atomic ratio is higher than 1. However, the absence of an upper limit implies that this claim encompasses catalytic compositions that have a specific surface area higher than that of example 1. Accordingly, and for the same reasons as outlined above for claim 1, this claim is not enabled across its full scope and therefore does not comply with section 84 of the *Patent Rules* and subsection 27(3) of the *Patent Act*.

[78] Claims 8-10 depend upon either of claims 6 and 7. Not only does each of these claims define the specific surface area of the composition at different temperatures than those recited in claims 6 and 7 to which they refer, but also these specific surface areas do not have an upper limit. It should be noted that the person skilled in the art would know that the specific surface area of a catalytic composition decreases as the temperature of calcination increases.

[79] For example, this person would know that the specific surface area of a composition calcined for 4 hours at 1100°C would be lower than the specific surface area of the composition calcined for 4 hours at 1000°C. Nonetheless, since the upper limit is not defined, the upper limit could be a value of specific surface area higher than that obtained in example 1. Accordingly, and for the same reasons as mentioned above, these claims are not enabled across their full scope and do not comply with section 84 of the *Patent Rules* and subsection 27(3) of the *Patent Act*.

[80] Independent claim 11 reads:

> [TRANSLATION]
>
> 11. Composition based on a cerium oxide and a zirconium oxide in a Ce/Zr atomic ratio of at least 1 and at least one oxide of a rare earth other than cerium, characterized in that it has a specific surface area of at least 19 m^2/g after calcination for 4 hours at 1100°C; said composition being obtained by the process as defined in any one of claims 1 to 5.

[81] It is important to note that although currently this claim refers to claims which, as mentioned

above, are interpreted in our analysis as encompassing a binary catalytic composition only, since this problem will be resolved by amending the claims as indicated at the end of the analysis, this claim will be considered, in the analysis that follows, as referring to process claims for the preparation of a composition of three or more oxides.

[82] In addition to the terms and elements that are common or similar to those in claim 1, claim 11 contains the following expressions that must be construed.

"a Ce/Zr atomic ratio of at least 1"

[83] We have already construed this term in the case of a composition that comprises only cerium oxide and zirconium oxide. In that case, we were able to calculate the proportion by weight of cerium oxide relative to the overall composition for various Ce/Zr atomic ratios of 1 or more.

[84] However, the limitations of this claim, which is directed to a composition comprising, in addition to cerium oxide and zirconium oxide, at least one other oxide of rare earth other than cerium, do not make it possible to calculate, for a Ce/Zr atomic ratio of at least 1, the specific proportion by weight of cerium oxide relative to the overall composition. In particular, not only does the claim fail to specify the nature of the oxide(s) of the one or more rare earth(s) present in the composition, but the atomic ratio between this (or these) rare earth(s) and the other known elements in the composition is also not indicated. As currently drafted, this claim is so broad as to encompass compositions in which the proportion of the oxide(s) of one or more rare earth(s) constitutes the largest portion of the composition, whereas the proportion of cerium oxide and zirconium oxide constitutes the smallest.

[85] Example 2 of the description is the only example describing a catalytic composition that comprises three or more oxides. This composition has a specific surface area of 23 m^2/g after calcination for 4 hours at 1100°C. In this example, the composition comprises four oxides in which the proportions by weight relative to the overall composition are as follows:

CeO_2 (60%) : ZrO_2 (30%) : LaO_2 (3%): PrO_2 (7%)

[86] This claim defines a composition having a specific surface area of at least 19 m^2/g after calcination for 4 hours at 1100°C. As currently defined, the surface area has no upper limit. Although this claim encompasses compositions that have been made and described, i.e.

compositions that have a specific surface area in a range of 19 m^2/g to 23 m^2/g, the specification contains gaps as to the information required to obtain the claimed catalytic compositions that have a specific surface area greater than 23 m^2/g after calcination for 4 hours at 1100°C. Further, in the absence of any evidence to the contrary, nothing enables us to conclude that these gaps are filled in the common general knowledge of the person skilled in the art. Moreover, there is nothing on file that enable us to conclude that a person skilled in the art would be able to obtain the specific surface area recited in this claim, even a specific surface area falling within the range of 19 m^2/g to 23 m^2/g, when the proportion of cerium oxide and zirconium oxide constitutes a smaller portion than that used in example 2.

[87] Accordingly, we find that the description does not include an enabling disclosure across the full scope of claim 11, in particular with respect to all of the proportions by weight of cerium oxide and zirconium oxide relative to the overall composition. This defect is found in all of the claims that encompass catalytic compositions of three or more oxides.

[88] However, we consider that it is possible to remedy this defect by specifying a proportion by weight of cerium oxide relative to the overall composition which bears some relationship to the proportion used in example 2. It is indicated on pages 3 and 4 of the description that, in compositions with three or more oxides, the proportion by weight of cerium oxide relative to the overall composition is at least 58%. If this limitation were included in the claims that encompass catalytic compositions with three or more oxides, the defect mentioned above would be overcome.

[89] We will continue our analysis of claim 11 (and all other claims encompassing catalytic compositions of three or more oxides) to determine whether this claim is enabled across its full scope on the assumption that the amendment mentioned above has been made and that this claim includes the limitation as to the proportion of cerium oxide relative to the overall composition.

"composition based on a cerium oxide, a zirconium oxide and at least one other oxide of a rare earth other than cerium"

[90] The expression "composition based on a cerium oxide, a zirconium oxide and at least one other oxide of a rare earth other than cerium" would be interpreted by a person skilled in the art as being a composition of three or more oxides, comprising, in addition to cerium oxide and zirconium oxide, at least one oxide of another rare earth. The rare earth is defined on

page 2, lines 24-26 and on page 3, lines 22-29 as being one of the elements in the group comprised of yttrium and the elements in the periodic table with an atomic number of between 57 and 71, for example, lanthanum, neodymium and praseodymium. The amount of the rare earth oxide is also clearly defined on page 3, lines 30-35.

[91] Claim 11 is directed to a catalytic composition of three or more oxides obtained by the process of claims 1-5. This composition has, after calcination at 1100°C, a given specific surface area that is defined only by a lower limit. Example 2 of the description describes a process to prepare this type of catalytic composition. We note that even if the lower limit of the claimed specific surface area is lower than the specific surface area of the composition of example 2, it is acceptable insofar as it could be obtained when the Ce/Zr atomic ratio is greater than 1 (i.e. when the proportion by weight of cerium oxide relative to the overall composition is more than 58%). However, the absence of an upper limit means that this claim encompasses catalytic compositions that exhibit a higher specific surface area than that of example 2. Furthermore, the composition of this claim contains at least one other rare earth oxide that can be selected from among several rare earths. Since there is nothing in the specification or in the common general knowledge of the person skilled in the art to indicate that there is an advantage of selecting one rare earth over another, the rare earth used in example 2 and the rare earths listed in the description will be considered equivalent to each other. Accordingly, we conclude that, for the same reasons as in the case of claim 1, this claim is not enabled across its full scope and does not comply with section 84 of the *Patent Rules* and subsection 27(3) of the *Patent Act*.

[92] Claims 12-16 include limitations that do not remedy the defects of claim 11 upon which they depend. Moreover, not only does each of the claims define the specific surface area of the composition at different temperatures than those indicated in claim 11 to which it refers, but also these specific surface areas do not have an upper limit. For the same reasons as in the case of claims 8-10, since the specific area is not defined with an upper limit, it encompasses higher values than that obtained in example 2. Accordingly, these claims are not enabled across their full scope and do not comply with section 84 of the *Patent Rules* and subsection 27(3) of the *Patent Act*. Furthermore, with regard to claim 14, the latter defines a catalytic composition that exhibits, after calcination for 4 hours at 1200°C, a specific surface area having a lower limit higher than that obtained in example 2. In example 2, the specific surface area obtained is 4 m^2/g after calcination for 10 hours at 1200°C, whereas the specific surface area recited in this claim is at least 6 m^2/g. Accordingly, and for the same reasons as mentioned above, this claim is not enabled across its full scope and does not comply with

section 84 of the *Patent Rules* and subsection 27(3) of the *Patent Act*.

Independent claims 17-18 which refer to claims 11-16

[93] Claims 17 and 18 are directed to a catalytic system and a process for treating internal combustion engine exhaust gases and encompass the catalytic composition of claims 11-16.

[94] Independent claim 17 reads:

> [TRANSLATION]
>
> 17. Catalytic system characterized in that it comprises a coating based on the composition of any one of claims 11-16.

[95] Independent claim 18 reads:

> [TRANSLATION]
>
> 18. Process for the treatment of internal combustion engine exhaust gases characterized in that it uses, as a catalyst, the catalytic system of claim 17 or the composition of any one of claims 11-16.

[96] Claims 17-18 have the same defects as claims 11-16, to which they refer, and the limitations they include do not help remedy these defects. Accordingly, these claims are not enabled across their full scope and do not comply with section 84 of the *Patent Rules* and subsection 27(3) of the *Patent Act*.

Claims directed to a catalytic composition per se (claims 19-27).

[97] Claims 19-27 are directed to a composition defined by known chemical and structural elements and by its specific surface area after calcination for 4 hours at a given elevated temperature.

[98] Independent claim 19 reads as follows:

> [TRANSLATION]
>
> 19. Composition consisting essentially of a cerium oxide and a zirconium oxide in a Ce/Zr atomic ratio of at least 1, characterized in that it has a specific surface area of between

20 m^2/g and 31 m^2/g after calcination for 4 hours at 1000°C.

[99] We applied the test of sufficiency of the description to this claim in the same way as we did for claim 1. We found this claim to be enabled across its full scope because it is directed to a binary catalytic composition the specific surface area of which, after calcination for 4 hours at 1000°C, is defined by upper and lower limits, the upper limit being the same as that obtained in example 1, i.e. 31 m^2/g. The claimed lower limit can be justified because it is described in the specification and the person skilled in the art could obtain it by increasing the content of cerium in the composition, as indicated above. Accordingly, we consider that claim 19 complies with section 84 of the *Patent Rules* and subsection 27(3) of the *Patent Act*.

[100] Claims 20-22 depend upon claim 19 and read as follows:

[TRANSLATION]

20. Composition according to claim 19, characterized in that it has a specific surface area of at least 45 m^2/g after calcination for 4 hours at 900°C, and of at least 9 m^2/g after calcination for 4 hours at 1100°C.

21. Composition according to claim 20, characterized in that it has a specific surface area of at least 15 m^2/g after calcination for 4 hours at 1100°C.

22. Composition according to any one of claims 19-21, characterized in that it has a specific surface area of between 2 m^2/g and 4 m^2/g after calcination for 4 hours at 1200°C.

[101] Claims 20 and 21 depend, directly or indirectly, upon claim 19, which we found allowable. However, since these claims define new data points that are not defined in claim 19 we must determine whether the specification provides an enabling disclosure across the full scope of these claims. Claims 20 and 21 encompass binary catalytic compositions that have a specific surface area which exhibit, after calcination for 4 hours at 900°C and at 1100°C, respectively, a higher surface area than that obtained in example 1 after calcination at these temperatures. However, the person skilled in the art, based on the specification and the common general knowledge, would not know how to make a binary catalytic composition having a higher specific surface area than that obtained in example 1 after calcination at each of the recited elevated temperatures. Accordingly, these claims are not considered to be enabled across their full scope and do not comply with section 84 of the *Patent Rules* and subsection 27(3) of the *Patent Act*.

[102] Claim 22 defines a catalytic composition having, after calcination for 4 hours at 1200°C, a specific surface area that is defined by upper and lower limits, the upper limit of which is the same as in example 1, i.e. 4 m^2/g. The lower limit can be justified because it is described in the specification and that, as indicated above, the person skilled in the art could obtain it by increasing the content of cerium in the composition. However, since this claim includes the limitations of claims 20 and 21, upon which it depends, it is not enabled across its full scope and therefore it does not comply with section 84 of the *Patent Rules* and subsection 27(3) of the *Patent Act*.

[103] Independent claim 23 reads:

> [TRANSLATION]
>
> 23. Composition based on a cerium oxide and a zirconium oxide in a Ce/Zr atomic ratio of at least 1 and of at least one oxide of a rare earth other than cerium, characterized in that it has a specific surface area of between 19 m^2/g and 23 m^2/g after calcination for 4 hours at 1100°C.

[104] We determined above that claims encompassing catalytic compositions with three or more oxides are too broad (so as to encompass compositions that are not enabled) because they do not specify the proportion by weight of cerium oxide relative to the overall composition of at least 58%. For this reason, this claim does not comply with section 84 of the *Patent Rules* and subsection 27(3) of the *Patent Act*.

[105] However, assuming that the above defect is overcome, and applying the test of sufficiency of the description to this claim in the same way as we did for claim 19, we find this claim to be enabled across its full scope since it would be directed to a composition of three or more oxides which exhibits, after calcination for 4 hours at 1100°C, a specific surface area defined by upper and lower limits, the upper limit of which is the same as that of the composition of example 2, i.e. 23 m^2/g. The lower limit can be justified because it is described in the specification and, as indicated above, the person skilled in the art could obtain it by increasing the content of cerium in the composition. Accordingly, if claim 23 is amended as mentioned above, i.e. to include the limitation as to the proportion by weight of cerium oxide relative to the overall composition being at least 58%, we consider that this claim would comply with section 84 of the *Patent Rules* and subsection 27(3) of the *Patent Act*.

[106] Claim 24 depends upon claim 23 and reads:

[TRANSLATION]

24. Composition according to claim 23, characterized in that it has a specific surface area of at least 60 m^2/g after calcination for 4 hours at 900°C, and of at least 35 m^2/g after calcination for 4 hours at 1000°C.

[107] Claim 24 depends upon claim 23, which would be allowable if it were amended as indicated above. However, because this claim defines new data points which are not defined in claim 23, we must determine whether the specification provides an enabling disclosure across the full scope of this claim. As in the case of claims 21 and 22, and by following the same reasoning, we find that the person skilled in the art would not know how to obtain the catalytic composition of three or more oxides of this claim. Accordingly, we consider that this claim is not enabled across its full scope and therefore does not comply with section 84 of the *Patent Rules* and subsection 27(3) of the *Patent Act*.

[108] Claim 25 depends upon claim 23 and reads as follows:

[TRANSLATION]

25. Composition according to claim 23 or 24, characterized in that it has a specific surface area of between 3 m^2/g and 6 m^2/g after calcination for 4 hours at 1200°C.

[109] Claim 25 defines a catalytic composition having, after calcination for 4 hours at 1200°C, a specific surface area that is defined by upper and lower limits, the upper limit of which is higher than that of example 2. In example 2, the specific surface area obtained, after calcination for 10 hours at 1200°C, is 4 m^2/g whereas the claimed upper limit of the specific surface area is 6 m^2/g. Accordingly, and for the same reasons as mentioned above, this claim is not enabled across its full scope and does not comply with section 84 of the *Patent Rules* and subsection 27(3) of the *Patent Act*. In addition, it has the same defects as claims 23 and 24, upon which it depends, and the limitations it includes do not remedy these defects. For this further reason, it is considered as not being enabled across its full scope and therefore it does not comply with section 84 of the *Patent Rules* and subsection 27(3) of the *Patent Act*.

[110] Claims 26 and 27, which depend upon claims 23-25, have the same defects as the latter and the limitations they include do not remedy these defects. Accordingly, these claims are not enabled across their full scope and do not comply with section 84 of the *Patent Rules* and subsection 27(3) of the *Patent Act*.

Independent claims 28-29 which refer to claims 19-27

[111] Claims 28 and 29 are independent claims that encompass the composition of claims 19-27 and read as follows:

> [TRANSLATION]
>
> 28. Catalytic system characterized in that it comprises a coating based on the composition of any one of claims 19-27.
>
> 29. Process for the treatment of internal combustion engine exhaust gases characterized in that it uses, as a catalyst, the catalytic system of claim 28 or the composition of any one of claims 19-27.

[112] Claims 28-29 include limitations that do not remedy the defects of claims 20-27 to which they refer. Accordingly, these claims are not enabled across their full scope and do not comply with section 84 of the *Patent Rules* and subsection 27(3) of the *Patent Act*.

Recommended Amendments

[113] As we construed above, process claim 1 lacks clarity because its preamble indicates that the end product is a binary catalytic composition whereas step (a) of the process mentions rare earth compositions which are present only in compositions of three or more oxides. This lack of clarity causes problems of lack of antecedence in certain claims (those which encompass compositions of three or more oxides) which refer to claim 1. Furthermore, as we mentioned above, the claims that encompass a catalytic composition of three or more oxides, and which do not specify the proportion by weight of cerium oxide relative to the overall composition, are too broad (so as to encompass compositions that are not enabled).

[114] We have considered the Applicant's letter of October 15, 2013 as well as the proposed amendments to the claims included therein.

[115] Appendix 5 of the letter contains proposed amendments to claims that were not rejected in the Final Action or the Summary of Reasons. These amendments have the effect of clearly and separately claiming the process for preparing binary compositions and the process for preparing compositions of three or more oxides. They also have the effect of amending the specific surface areas recited in certain claims. Otherwise, the wording of the proposed

claims is the same as or very similar to that of the claims on file.

[116] Although the proposed amendments remedy defects regarding lack of antecedence and clarity in certain claims currently on file, they do not overcome the defect regarding enablement. Indeed, for the same reasons as outlined in the analysis, the proposed claims are not enabled across their full scope. Furthermore, the proposed amendments do not remedy the defects of claims encompassing catalytic compositions of three or more oxides which are too broad in that they do not specify the proportion by weight of cerium oxide relative to the overall composition.

[117] Accordingly, in order to remedy the defects in claims 1-29 currently on file, these claims should be replaced by proposed claims 1-32. Each of the independent claims 7, 16, 17 and 27 must specify that the proportion by weight of cerium oxide relative to the overall composition is at least 58%. In addition, in the claims that define specific surface areas at given elevated temperatures, the value of these specific surface areas should correspond to the value of the corresponding specific surface areas indicated in the following table. It must be noted that the recited upper limit is acceptable since it is described in the specification and it can be achieved (in this case, it corresponds to that of the catalytic composition obtained in example 1 or 2) and the lower limit can be justified because it is described in the specification and, as indicated above, the person skilled in the art would be able to make a catalytic composition having such a specific surface area by increasing the content of cerium in the composition. Moreover, it should be noted that the lower limit is indicated in the claims on file and the search of the prior art performed by the Examiner failed to reveal any relevant document that discloses or renders obvious the claimed subject matter.

	binary catalysts	**catalysts with three or more oxides**

T°	proposed claims	specific surface area between	proposed claims	specific surface area between
900°C	1, 6, 13, 14, 25	45 m^2/g and 49 m^2/g	18, 28	60 m^2/g and 65 m^2/g
1000°C	1, 6, 13, 14, 24	20 m^2/g and 31 m^2/g	18, 28	35 m^2/g and 42 m^2/g
1100°C	1, 6, 13, 14, 25	9 m^2/g and 15 m^2/g	7, 12, 16, 17, 27	19 m^2/g and 23 m^2/g
1200°C	15, 26	2 m^2/g and 4 m^2/g	19	3 m^2/g and 4 m^2/g

[118] It must be noted that claims 6, 12, 14 and 17 would become redundant as a result of the amendments indicated above. Therefore, these claims must either be removed, in which case the remaining claims should be renumbered appropriately, or they should be amended so that the specific surface area is equal to the upper limit which corresponds to that obtained in example 1 or 2.

Comments concerning the case law cited by the Examiner and the Applicant

[119] The issue relating to overbreadth of the claims that include a statement of desired result has been addressed in the case law, but to our knowledge there is no decision in which the facts are similar to those of the instant case. Specifically, in the decisions dealing with this issue, the claims were not directed to a product distinguished solely from known products by a desired physical property. Nonetheless, we find it useful to provide some comments on the case law cited by the Examiner and the Applicant.

[120] We have taken note of the facts in *Burton Parsons*, *supra*, to which the Examiner and the Applicant referred during the hearing. We find the facts in that case to be quite different from those in the instant case. In that case, the question that was to be answered related to the utility of the claimed subject matter, namely the utility of an electrocardiograph cream containing a highly ionizable salt to provide good electrical conductivity and which was compatible with normal skin, whereas in the instant case, the issue relates to enablement across the full scope of the claims. It must be noted that, in that case, the Court found that the person skilled in the art would possess the necessary knowledge to determine which among the claimed salts were suitable and thus useful.

[121] We have read the Supreme Court of Canada decision in *Free World Trust*, *supra*, cited by

the examiner and have found nothing in it that aids our analysis of the issue before us, namely the question of whether the claims are enabled across their full scope. The particular excerpt cited by the examiner, at paragraph 32 of the decision, merely states that when a patent is issued with claims to a particular method for achieving a certain result, it cannot be successfully contended that any method achieving the same result falls within the claims. As stated by the Court: "The claims cannot be stretched to allow the patentee to monopolize anything that achieves the desired result." The Court then applied this principle to the facts of the case, and found that the claimed element "circuit means" could not be stretched to include the microcontroller feature of the device marketed by the alleged infringer, Électro Santé, and thus Électro Santé's device fell outside the claimed monopoly.

[122] The decision rendered in Free World Trust indicates nothing about the allowability of claims that include a statement of desired result. As we indicated above, in our opinion, if a claim defines only a desired result, namely a claim comprising solely a statement of means without any indication of a practical embodiment capable of achieving the desired result, the claim could not be considered acceptable since it would only amount to a restatement of the problem to be solved. However, as we showed in our analysis, this is not the case for the claims at issue.

[123] In *Pfizer, supra*, cited by the Examiner, claim 23 at issue was directed to the use of azithromycin for the preparation of an oral dosage form having no interaction with food. The result that the inventors hoped to obtain was an oral dosage form of azithromycin that would have the desired function or effect. The dosage form was the means to achieve the desired result, but it was not defined in such a way as to indicate a practical embodiment enabling one to achieve the desired result. In other words, claim 23 did not claim the form that was actually made, but encompassed any possible oral dosage form of azithromycin providing it had the desired effect, namely, no interaction with food. However, this is not the case here. This would have been the case if, for example, the instant catalytic composition had been defined by known elements and structure, i.e. cerium oxide and zirconium oxide in a Ce/Zr atomic ratio of at least 1, and as exhibiting a "specific surface area that has a high stability" at a given elevated temperature.

[124] In *Schering-Plough*, *supra*, which was cited by both the Examiner and the Applicant, the issue of overbreadth of the claims was addressed in two patents relating to pharmaceutical compositions in which the descarboethoxyloratadine (DCL) is stable. In one of the patents, the description indicated that the stability of the DCL was due to the fact that the composition was "anhydrous". However, the definition of the term "anhydrous", as it was

construed based on the description and on the common general knowledge, did not set out any absolute limit of water content that would meet the requirement of being "anhydrous" (see paragraphs 54 and 55). These claims were found to be overly broad as they were directed to "every stable DCL…composition, no matter how or why it is stable" (see paragraph 136). In our opinion, this case is similar to *Pfizer*, *supra*, and therefore differs from the instant case for the same reasons.

[125] However, in the case of the second patent of *Schering-Plough*, *supra*, it was argued that the claims at issue were overbroad because they encompassed any amount of a basic salt so long as it protects the DCL from degradation. However, these claims were found not to be overly broad because the means of achieving the result of reducing degradation of DCL lay in the use (presence) of the basic salt together with the avoidance of acidic excipients and not on the precise quantity of the salt. Further, in this case, the judge found that a person skilled in the art would have sufficient knowledge to determine the stability of any particular basic salt to DCL ratio (see paragraph 213).

[126] Furthermore, in reading the above-mentioned cases, we noted that, similar to the instant case, in each of the cases where the Court found that the claims were overly broad (claiming solely a desired result) the specification did not provide an enabling disclosure across the full scope of these claims. In addition, the gaps of the specification could not be filled by the common general knowledge of the person skilled in the art.

[127] We would also like to make a few comments regarding two decisions of the Commissioner of Patents to which the Applicant referred.

[128] In *Chu*, *supra*, the claims in issue were directed to a product defined by a nominal formula $M^*_aA^*_bO_y$ and by a desired property - its superconductivity at a temperature of 77°C. It appears that in this case, the combination of the nominal formula and its superconducting property was sufficient to distinguish the product from any other known product. However, this decision, which referred to *Burton Parsons*, *supra*, and in which it was found that the claims in issue were not directed to a desired result, does not help us in our analysis since the question relating to enablement across the full scope of the claims was not addressed.

[129] Lastly, the analysis in *Geron*, *supra*, is pertinent in that, similar to our analysis in the instant case, the claims, which were directed to a telomerase extract and included a statement of desired result, i.e. the purity level of telomerase, were found to be allowable provided that

the scope of each claim was not so broad as to encompass a telomerase extract having a purity level exceeding that which could be achieved by the person skilled in the art based on the teachings of the description.

OTHER ISSUES RAISED BY THE EXAMINER

[130] The Examiner also raised the following issues:

- *Do claims 19-29 omit an essential feature and must they therefore be drafted in the form of product-by-the process?*

- *Do claims 20, 21 and 24 claim more than what has been invented?*

[131] In this case, we find that the test that is determinative of the issues above is the test of enablement across the full scope of the claims.

[132] The question of whether the claims, including the above claims, are enabled across their full scope has already been addressed and it is not necessary to address it again. We have already determined that only claim 19 is enabled across its full scope.

[133] In the case of a claim that is enabled across its full scope, we see no problem with it being directed to a product *per se*, independently of its process of preparation.

[134] As for the other claims, if they are amended as indicated at the end of the analysis they will be considered allowable and will comply with section 84 of the *Patent Rules* and subsection 27(3) of the *Patent Act*.

PANEL'S RECOMMENDATIONS

[135] In summary, we recommend that the Commissioner informs the Applicant that:

1) claims 1-18 and 20-29 do not comply with the provisions of section 84 of the *Patent Rules* and subsection 27(3) of the *Patent Act*;

2) claim 19 complies with the provisions of section 84 of the *Patent Rules* and subsection 27(3) of the *Patent Act*,

and that the Commissioner informs the Applicant that the following amendments are necessary to bring the application into conformance with the Act and the Rules:

3) replacement of claims 1-29 on file by claims 1-32 proposed on October 15, 2013, while ensuring that:

- each of claims 7, 16, 17 and 27 includes a limitation specifying that the proportion by weight of cerium oxide relative to the overall composition is at least 58%;

- in the claims that define specific surface areas at a given elevated temperature, the value of these specific surface areas is that indicated in the table appearing at the end of the analysis; and

- the redundancy of claims 6, 12, 14 and 17, which results from these amendments is avoided by proceeding as indicated in the last paragraph of the analysis.

Assia Semra	Mark Couture	Paul Fitzner
Member	Member	Member

COMMISSIONER'S DECISION

[136] I concur with the findings and recommendations of the Patent Appeal Board and hereby inform the Applicant that:

1) claims 1-18 and 20-29 do not comply with the provisions of section 84 of the *Patent Rules* and subsection 27(3) of the *Patent Act*;

2) Claim 19 is in compliance with the provisions of section 84 of the *Patent Rules* and subsection 27(3) of the *Patent Act*;

and in accordance with paragraph 31*(b*) of the *Patent Rules*, I inform the Applicant that the following amendments are required for compliance with the Act and the Rules:

3) replacement of claims 1-29 on file by claims 1-32 proposed on October 15, 2013, while ensuring that: a) each of claims 7, 16, 17 and 27 states that the proportion by weight of cerium oxide with respect to the total composition is at least 58%; b) in the claims that define specific surface areas at a given elevated temperature, the value of these specific surface areas is that indicated in the table appearing at the end of analysis; and c) the redundancy of claims 6, 12, 14 and 17, which results from these amendments, is avoided by proceeding as indicated in the last paragraph of the analysis.

[137] I invite the Applicant to make the above amendments, and only the above amendments, within three months from the date of this decision, failing which I intend to reject the application. If these amendments are made within three months from the date of this decision, I will consider the outstanding issues as having been addressed.

Sylvain Laporte
Commissioner of Patents

Signed in Gatineau (Quebec)
this 26th day of February, 2014