

OPINION UNDER SECTION 74A

Patent	EP 2801443 B1
Proprietor(s)	Phibo Industries BVBA
Exclusive Licensee	
Requester	Barker Brettell LLP
Observer(s)	Harrison IP (on behalf of the proprietor)
Date Opinion issued	14 November 2018

The request

1. The comptroller has been requested by Barker Brettell (“the requester”) to issue an opinion as to whether patent EP 2801443 B1 (“the patent”) is valid. The request includes evidence E1-E14 and asks for an opinion on whether the claims are novel and involve an inventive step over E1-E14.

Observations and observations in reply

2. Observations on the request were filed by Harrison IP on behalf of Phibo Industries BVBA (“the proprietor”). Subsequently, observations in reply were filed by the requester.

Preliminary Matters

3. The request and the observations give rise to some preliminary matters that I must deal with. The requester acknowledges that they filed an earlier (separate) request for an opinion on the validity of the patent. This led to Opinion Number 02/18 (“the earlier opinion”) being issued on 29 March 2018 in which I gave my opinion that the patent was new and involved an inventive step. This raises the question whether the requester is seeking an opinion on any matter that was sufficiently considered by the earlier opinion.
4. Rule 94(1)(b) of the Patents Rules 2007 provides that:

The comptroller shall not issue an opinion if the question upon which the opinion is sought appears to him to have been sufficiently considered in any relevant proceedings.

The “relevant proceedings” are defined in rule 92 as proceedings (whether pending or concluded) before the comptroller, the court, or the European Patent Office.

5. The requester says that their present request is a bona fide new request because it is based on fresh evidence E1-E14. However, inspection of E1-E14 reveals that I was, in fact, asked to consider E2 and E8a in the earlier opinion. I considered the novelty and inventive step of the patent in light of certain pages of E2 (then labelled as “E1”). However, I disregarded most of the pages contained in E2 because the requester had omitted to include all of them in their initial request for the earlier opinion¹. I believe it is now only fair and appropriate that I consider E2 in its entirety here. In any case, I understand the requester to be raising a new question based on E2. In the earlier opinion the requester sought to use E2 as the principal basis for novelty and inventive step attacks whereas here I am asked only to consider it in combination with present E1. In my opinion, the inclusion of E2 complies with rule 94(1)(b).
6. Turning to E8a, I considered the obviousness of the patent based on the combination of E8a (then labelled as “E11”) and E2 (then labelled as “E1”) in the earlier opinion. Now, the requester asks me to consider whether the patent is obvious in light of a combination of E8a and present E1. Again, I believe this is a new question that was not considered in the earlier opinion. In my opinion, the inclusion of E8a complies with rule 94(1)(b).
7. While I believe it is appropriate for me to consider E2 and E8a, I would add that I believe there are certain other matters that were sufficiently considered in the earlier opinion. In particular I gave my opinion that E2 and E8a were made available to the public before the priority of the invention², my opinion on the identity of the relevant skilled person³ and my opinion on the construction of claim 1 of the patent⁴. I believe it would be inappropriate for me to give a ‘second’ opinion on any of these matters (if requested to do so). However, that is not the case here because neither the requester nor the proprietor has sought to reopen any of these matters.
8. Moving on to the observations, I note the proprietor makes observations on the request by proposing a set of amended claims and arguing that the proposed claims are novel and non-obvious over E1-E14. Shortly after filing their observations the proprietor went on to make an application under section 27 to amend the claims of the patent as proposed in their observations. Proceedings under section 27 are ongoing and have not been concluded. The requester says that consideration of the potential allowability of the proposed claims is outside of the remit of the opinions procedure. I agree. The allowability of the proposed amendments is solely a matter for the ongoing section 27 proceedings. For the purposes of this opinion, I shall only consider the validity of the claims that were the subject of the request, namely the claims as granted. However, I note that some of the arguments the proprietor makes in their observations are directed at certain technical features that are *common* to both the granted claims and their proposed claims. Out of fairness to the proprietor, and because I believe it may be helpful to both parties, I have considered the proprietor’s arguments in so far as they relate to technical features appearing in the claims as granted.

¹ Opinion 02/18, paragraph 4.

² Opinion 02/18, paragraphs 20, 21 and 47.

³ Opinion 02/18, paragraph 5.

⁴ Opinion 02/18, paragraphs 10-19.

The patent

9. The patent is entitled, "Processing medium for processing stainless steel or other metallic surfaces, method for processing stainless steel or other metallic surfaces using such a processing medium and nozzle arranged to be fitted on a process gun" and was filed on 7 May 2013 with no declaration of priority. The priority date of the present invention is, therefore, 7 May 2013. The patent was granted on 4 November 2015. It remains in force.
10. The patent relates to a processing medium for processing stainless steel or other metallic surfaces. The processing medium is to be ejected out of a nozzle of a gun by compressed air and may be used to clean or degrease stainless steel (or other metallic) surfaces. The invention is particularly concerned with the composition of the processing medium. It is a suspension that includes a liquid (for example, water) and a mixture of a least two different types of products consisting of chemically-inert abrasive particles. In examples described in the patent, the particles include irregularly-shaped abrasive particles and spherically-shaped abrasive particles. The irregularly-shaped particles only consist of fused alumina particles and the spherically-shaped abrasive particles may be glass beads. The patent explains that when stainless steel is treated, very pure and iron-free fused alumina particles have to be used, otherwise there is a risk of iron-inclusion in the stainless-steel surface that may cause unwanted oxidation or corrosion of the surface. Soluble chemical additives may also be added to the suspension. These may include a biocide agent for disinfecting the processed surface (especially important in the food, dairy or pharmaceutical industries), a degreasing agent for reconditioning old surfaces, a corrosion inhibitor to protect treated surfaces from rust or a passivation agent for accelerating auto passivation of stainless steel.

Claim 1

11. The patent contains claims 1-17 of which claim 1 is the sole independent claim. I shall begin by considering claim 1. It will only be necessary for me to consider any of the dependent claims if I find that claim 1 lacks novelty or an inventive step. Adopting the lettering of features used in the request, claim 1 defines the invention in the following terms:
 - a) A processing medium for processing stainless steel or other metallic surfaces,
 - b) wherein said processing medium is adapted to be ejected out of a nozzle of a process gun by compressed air,
 - c) said processing medium consists out of a suspension
 - d) comprising a liquid and mixture of at least two different types of products
 - e) consisting of chemically inert abrasive particles,
 - f) CHARACTERISED IN THAT said particles at least comprise particles having an irregular shape,
 - g) said particles being dispersible in said liquid,
 - h) said irregular shaped particles consist of fused alumina particles,
 - i) said fused alumina particles are substantially iron-free.

Construction of claim 1

12. Before proceeding I must construe claim 1. That is to say, I must interpret claim 1 in light of the description and drawings as required by Section 125(1) and take account of the Protocol on the Interpretation of Article 69 of the European Patent Convention (EPC) as required by section 125(3). In doing so, I must give the claim a purposive construction⁵ and ask what the person skilled in the art would have understood the patentee to be using the language of the claims to mean.
13. In the earlier opinion, I identified the skilled person as “a process gun designer, particularly one who utilises processing medium for processing stainless steel and other metallic surfaces”⁶. I went on to construe claim 1 as follows.
14. Feature a) and b) would be understood to mean that the processing medium is suitable for processing metallic surfaces and that it is suitable for ejection out of a nozzle of a process gun by compressed air.
15. Feature c) means that the processing medium *only* consists of a suspension. The term “suspension” takes its usual meaning in the art, i.e. a solid substance which is suspended in a liquid⁷, and is also known as a “slurry”⁸.
16. Feature d) defines that the suspension includes a liquid and a mixture of at least two different types of products, i.e. two types of products that are not the same⁹. It would also be understood¹⁰ that a “product” does not necessarily comprise, or consist of, a single compound.
17. Feature e) means that each of the at least two different types of products *only* consist of chemically inert abrasive particles. The term “chemically inert abrasive particles” means that the abrasive particles are particles which will chemically not interact with other products and which will not resolve in a liquid¹¹.
18. In feature f) the words “particles having an irregular shape” mean any form of particle which is not spherical, said particle more specifically having round or sharp angles¹².
19. Feature g) means the particles are spread within the liquid to form the suspension. This is inherent from the term “suspension” defined in feature c).
20. Feature h) means that the irregular-shaped particles *only* consist of fused alumina particles. The term “fused alumina” is a term in the art. It means substances containing aluminium obtained from the fusion of alumina and is typically used to refer to aluminium oxide (Al₂O₃).

⁵ In *Generics UK Ltd (t/a Mylan) v Yeda* [2017] EWHC 2629 (Pat), Arnold J confirmed (at 134) the continuing requirement to interpret patent specifications purposively, having considered the earlier judgment of the UK Supreme Court in *Actavis v Eli Lilly* [2017] UKSC 48.

⁶ Opinion 02/18, paragraph 9.

⁷ Paragraph [0032].

⁸ Paragraph [0036].

⁹ Paragraph [0063].

¹⁰ Paragraph [0064].

¹¹ Paragraph [0033].

¹² Paragraph [0033].

21. Feature i) specifies that the “fused alumina particles are substantially iron-free”. Paragraph [0035] describes that for processing stainless steel “it is necessary to use very pure and iron-free Al₂O₃ particles”, or as paragraph [0064] puts it, “very pure and iron-free fused alumina particles have to be used”. From this, the skilled person would understand the term “substantially iron-free” to have its normal or ordinary meaning in the art. For example, this term would be understood to mean, or at least to cover, particles of pure fused alumina, also known as virgin alumina.

The Law

22. Sections 1-3 of the act set out the relevant provisions for novelty and inventive step:

Patentable inventions

1.-(1) A patent may be granted only for an invention in respect of which the following conditions are satisfied, that is to say -

- (a) the invention is new;*
- (b) it involves an inventive step;*

...

Novelty

2.-(1) An invention shall be taken to be new if it does not form part of the state of the art.

(2) The state of the art in the case of an invention shall be taken to comprise all matter (whether a product, a process, information about either, or anything else) which has at any time before the priority date of that invention been made available to the public (whether in the United Kingdom or elsewhere) by written or oral description, by use or in any other way.

...

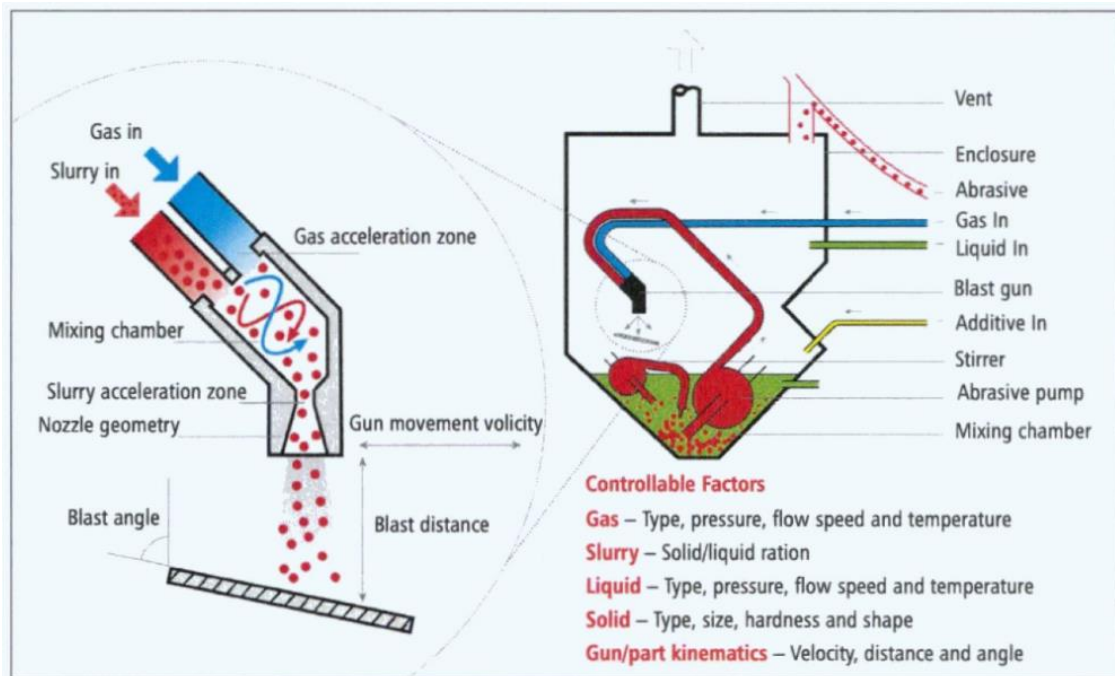
Inventive step

3. An invention shall be taken to involve an inventive step if it is not obvious to a person skilled in the art, having regard to any matter which forms part of the state of the art by virtue only of section 2(2) above ...

Novelty

23. The requester’s primary case is that claim 1 lacks novelty when compared to document E1. E1 is an article entitled “The benefits of wet-blasting” and is reproduced from Aluminium International Today (www.aluminiumtoday.com). It bears a publication date of November/December 2012 (i.e. before the priority date). I am satisfied that E1 was made available to the public before the priority date of the invention. In my opinion E1 forms part of the state of the art under section 2(2).

24. The disclosure of E1 relates to a wet-blasting system and process for cleaning, polishing and peening dies that are used for aluminium extrusion. Page 33 includes diagrams (reproduced below) of a blast gun and a circuit diagram showing “the Vapormatt wet blast process”. The requester argues that each of features a) – i) is disclosed by E1. I shall consider each feature in turn.



Feature a)

25. The requester notes that page 34 (left-hand column) of E1 discloses that “Wet blasting uses water and abrasive medium to form a slurry in the sump tank of the installed system.” The requester goes on to say that it was common general knowledge, at the priority date, to use hardened steel dies for aluminium extrusion. The proprietor agrees, admitting that “E1 references wet blasting for dies for aluminium extrusion, which are known to use hardened steel.”¹³ I also agree. In my opinion, the skilled person would understand that E1 discloses a processing medium (a slurry) suitable for processing stainless steel or other metallic surfaces (extrusion dies) as required by feature a).

Feature b)

26. I agree with the requester that page 34 (left-hand column) and the diagrams on page 33 (reproduced above) disclose that the slurry of E1 is directed through a gun head of a gun using compressed air, as required by feature b).

Feature c)

27. I agree with the requester that since E1 discloses a slurry it discloses the “suspension” of feature c) as I have construed it above. I also agree there is no suggestion in E1 that the processing medium consists of anything other than a slurry. In my opinion feature c) is disclosed by E1.

¹³ Observations, section 2.1.1

Feature d)

28. The requester notes that page 34 (left-hand column) discloses that, “The recommended abrasive used for the die cleaning application is a pre-mixed compound of both aluminium oxide and glass beads”. The requester also points out that this abrasive medium is mixed in water to form the slurry of E1. I agree. E1 discloses that the slurry includes a liquid (water) and a mixture of two different types of products (aluminium oxide and glass beads respectively), as required by feature d).

Feature e)

29. I agree with the requester that E1 explicitly refers to “aluminium oxide particles” (page 34, left-hand column) and “glass bead particles” (page 34, centre column). Moreover, the mixture of aluminium oxide and glass beads is described as “the recommended abrasive for the die cleaning application”. Thus, I agree that E1 discloses the “abrasive particles” of feature e). However, the requester does not point to an explicit disclosure of these abrasive particles being “chemically inert”. Instead, they argue it is well known in the industry that aluminium oxide and glass beads are both chemically inert. This is not challenged by the proprietor. I agree with the requester. I believe the skilled person would recognise that the aluminium oxide particles and glass bead particles disclosed by E1 are inherently “chemically inert” abrasive particles. I would add for completeness that, in my opinion, E1 only discloses abrasive particles (aluminium oxide and glass bead) that meet the claimed definition of “chemically inert”. In my opinion, feature e) is unambiguously implied by E1.

Feature f)

30. The requester does not point to an explicit disclosure of feature f) in E1. Instead, they argue the skilled person would appreciate and understand that aluminium oxide used as an abrasive has irregularly shaped particles due to its manufacturing process. I note that this is not challenged by the proprietor. I agree with the requester. The skilled person would understand that the aluminium oxide particles of the mixture disclosed in E1 are inherently irregularly shaped. In my opinion, the skilled person would understand that feature f) is unambiguously implied by E1.

Feature g)

31. I agree with the requester that the disclosure in E1 that aluminium oxide particles and glass bead particles are suspended in water to form a slurry necessarily discloses feature g).

Feature h)

32. The requester argues, consistently with my construction of feature h) above, that the term “fused alumina” of feature h) is a well-known and widely used alternative name for aluminium oxide. I agree with the requester that the aluminium oxide particles taught by E1 are “fused alumina particles” as required by feature h). I would add that, in my opinion, the only irregularly-shaped particles disclosed by E1 are aluminium oxide particles. For example, the skilled person would understand that the glass beads of E1 are not irregularly shaped particles within the meaning of feature h). In my

opinion, feature h) is disclosed by E1.

Feature i)

33. Having considered the submissions of both parties carefully, I believe it is common ground that feature i) is not explicitly disclosed by E1. I agree. I am unable to identify any explicit disclosure in E1 that the aluminium oxide particles are, in the words of feature i), “substantially iron-free”.
34. The requester argues that feature i) is implicitly disclosed by E1. The requester points to the photograph (reproduced below) contained in E1 of the so-called “EX” blend that is an abrasive mixture of glass beads and aluminium oxide. They say the skilled person would recognise that the pink colour of the blend indicates the presence of *pink* aluminium oxide that is, in turn, known to have a very small content of iron oxide (Fe_2O_3). (The requester cites E3 and E4 to support this.) Alternatively, the requester points to E7 as an example of white aluminium oxide which is known to have a very small content of iron oxide. They say the skilled person would read E1 and understand that iron-free white aluminium oxide could be used.



35. The proprietor¹⁴ disputes this. They say that the pink colour of the photograph does not unambiguously disclose that the aluminium oxide is pink aluminium oxide. For example, the proprietor says the pink colour could also be the result of an additive being present in the blend. The proprietor goes on to say that even if it is implied that the aluminium oxide disclosed in E1 is pink aluminium oxide then this would not unambiguously imply that the pink aluminium oxide is substantially iron free. They argue, for example, that E1’s disclosure of increased “reactiveness” of the processed dies, and the possible need for the use of a rust inhibitor, could also be the result of the use of a pink aluminium oxide that has a higher iron content than that disclosed in E3, E4 or E7. Based on the information that I have been given, I agree with the proprietor. In my opinion, the requester’s arguments push the disclosure of E1 too far. I accept, as the proprietor says, that the apparent pink colour of the abrasive mix shown in the photograph of E1 does not necessarily require or unambiguously imply the use of pink aluminium oxide. Nor does E1 necessarily require or imply that an iron-free aluminium oxide must be used. In my opinion, feature i) is not disclosed by E1.

¹⁴ See observations, 2.1.1

36. Although I consider that features a) – h) are disclosed by E1, I consider that feature i) is not disclosed by E1. In my opinion, claim 1 is novel over E1. It follows that claims 2-17 must also be novel over E1.

Inventive Step

37. The approach that must be followed to assess inventive step is the approach set out by the Court of Appeal in *Pozzoli SPA v BDMO SA* [2007] EWCA Civ 588:

- (1)(a) Identify the notional “person skilled in the art”;
- (1)(b) Identify the relevant common general knowledge of that person;
- (2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;
- (3) Identify what, if any, differences exist between the matter cited as forming part of the “state of the art” and the inventive concept of the claim or the claim as construed;
- (4) Viewed without any knowledge of the alleged invention as claimed, determine whether those differences constitute steps which would have been obvious to the person skilled in the art.

Obviousness over E1

38. The requester makes several different arguments that claim 1 is obvious. I shall begin by considering their argument that claim 1 is obvious over E1 and in doing so I shall follow the approach set out in *Pozzoli*.

Steps 1(a) & 1(b)

39. The requester refers to several documents, E3, E4, E6 and E7, to substantiate the common general knowledge of the skilled person (identified in paragraph 13).
40. E3 is a copy of a web page obtained from the internet archive, *The Wayback Machine*¹⁵ and it bears an archive date of 18 April 2012. I am satisfied E3 forms part of the state of the art under section 2(2). The page appears to be from the web site of a company called “ELFUSA” and is a technical data sheet for a product, “pink fused aluminium oxide”, with the brand name “RU”. E3 states that RU’s “high purity and self-edged reposition characteristic make RU a product for special applications where contamination is an issue to be considered”. It gives a chemical analysis for “RU” that states the Al₂O₃ (aluminium oxide) content is 99.10% and the Fe₂O₃ (iron oxide) content is 0.04%. In my opinion, the skilled person would understand from the reference to “high purity”, and the very low iron oxide content, that E3 discloses a pink fused aluminium oxide that is substantially iron free.
41. E4 is another web page from the *The Wayback Machine*. E4 has an archive date of 18 June 2012 so I am satisfied it also falls within section 2(2). The page appears to be from a company called “Greystar” and is a technical data sheet for “Pink Fused Aluminium Oxide”. It states that, “The grain shape of Pink Aluminium Oxide is sharp

¹⁵ www.archive.org

and angular". E4 lists "Applications" of pink aluminium oxide and, amongst other things, states that, "The FEPA F grades are especially suitable for the manufacture of vitrified bonded abrasives for working hardened steels and alloys with tensile strengths of over 50kg/mm²." E4 discloses the "Typical Chemical Analysis" of the product is an aluminium oxide (Al₂O₃) content of 99.52% and an iron oxide (Fe₂O₃) content of 0.05%. In my opinion, the skilled person would understand E4 to be a disclosure of pink fused aluminium oxide that is substantially iron free.

42. E6 is another web page from *The Wayback Machine*. E6 has an archive date of 15 April 2012 and I consider that it falls within section 2(2). E6 gives technical data for ELFUSA's "White Fused Aluminium Oxide" having the brand name "AL". It states that, "AL presents high purity and high capability of edge reposition. It's recommended for special applications where contamination is an issue to be considered." E6 gives a chemical analysis of "AL" that states the Al₂O₃ (aluminium oxide) content is 99.42% and the Fe₂O₃ (iron oxide) content is 0.03%. In my opinion, the skilled person would understand E6 to disclose a white fused aluminium oxide that is substantially iron free.
43. E7 is a further web page obtained from *The Wayback Machine* and it has an archive date of 18 June 2012, again before the priority date of the present invention. It is a technical data sheet for Greystar's "White Fused Aluminium Oxide Powders". It describes that, "This material is classified to exacting standards for various applications where higher purity levels and reduced iron content are required." E7 states the "Typical Chemical Analysis" of the powders is an aluminium oxide (Al₂O₃) content of 99.24% and the total iron content as Fe₂O₃ is 0.09%. The skilled person would, in my opinion, understand E7 to be a disclosure of white fused aluminium oxide that is substantially iron free.
44. I believe it is reasonable to conclude from E3, E4, E6 and E7 that the skilled person would have known that several substantially iron-free fused aluminium oxide products were commercially available at the priority date of the invention. I also accept the requester's argument that E3 and E4 show that the skilled person would have known that pink aluminium oxide has a very small content of iron oxide (Fe₂O₃) and is substantially iron free. I believe it is also reasonable to conclude (at least from E3, E6 and E7) that the skilled person would have known that iron-free fused aluminium oxide products were suitable for applications where contamination is a consideration or where a low or reduced iron content is a consideration.

Steps 2 and 3

45. The inventive concept is that set out in claim 1, as I have construed it above. Following my assessment of novelty, the relevant difference is that E1 does not disclose feature i).

Step 4

46. As I have already noted, E1 teaches the skilled person that the recommended abrasive for the die cleaning application is a mixture of aluminium oxide and glass beads (see e.g. page 34, left-hand column, and the photograph of the "EX" blend). However, I believe the skilled person would understand that E1 does not recommend or specify which sort (e.g. purity) of aluminium oxide should be used. I believe it follows that, when reading E1, the skilled person would be faced with choosing a suitable

aluminium oxide product for use with the system of E1. Based on the information I have been given, I believe it would be obvious to the skilled person, from the pink colour of the “EX” blend shown in the photograph, that a pink aluminium oxide (i.e. an aluminium oxide known to be substantially iron-free) would be suitable. In other words, I believe it would have been within the right of the skilled person, at the priority date of the invention, to work E1 using a substantially iron-free pink aluminium oxide. In my opinion, feature i) is obvious when E1 is read through the eyes of the skilled person and their common general knowledge.

47. I also accept the requester’s alternative argument that, when reading E1, the skilled person would be motivated to select an iron-free aluminium oxide because E1’s references to the “reactiveness of the newly cleaned dies [and] additives, such as rust inhibitors” (on page 35) suggest to the skilled person that contamination of newly-cleaned dies with rust (iron oxide) is potentially problematic. In my opinion, it would be obvious to the skilled person from E1 that an iron-free aluminium oxide product (such as well-known pink and white aluminium oxide products, exemplified by E3, E4, E6 or E7) would be suitable.
48. The proprietor stresses¹⁶ that the selection of iron-free alumina in the mixture of the suspension of E1 is not an obvious choice, especially when conditioning a stainless-steel surface to reduce its adhesive properties. They say that alternatives such as angular plastics grit or stainless-steel grit would be considered since they are known to have a gentler/softer abrasive effect than fused alumina. It seems to me that the proprietor’s argument is inconsistent with the teachings of E1. Firstly, E1 is not explicitly concerned with the treatment of stainless steel surfaces. As both parties agree (see paragraph 25 above), E1 is concerned with treating dies that are commonly known to be made of hardened steel. Secondly, E1 explicitly recommends that the abrasive mixture for the die cleaning application is a mixture of aluminium oxide and glass beads. I believe it is more likely, on balance of probabilities, that E1 would motivate the skilled person to select an appropriate aluminium oxide product in preference to an alternative product such as angular plastics grit or stainless-steel grit.
49. I would add that, in paragraphs 29 and 30 above, I said that features e) and f) of claim 1 were implied by E1. If I am wrong and these features are not implied then it is my opinion that features e) and f) would be obvious to the skilled person in light of their common general knowledge. At the priority date, the skilled person would have known that both aluminium oxide and glass beads are chemically inert. They would have also known that aluminium oxide, used as an abrasive, has irregularly shaped particles due to its manufacturing process (e.g. as shown in the requester’s references¹⁷ to E2 and E4).
50. In my opinion, claim 1 lacks an inventive step over E1 when read in light of the common general knowledge of the skilled person.

Obviousness over E1 and E3, or E4, or E7

51. I also accept the requester’s alternative argument that claim 1 would be obvious over

¹⁶ See observations, 2.1.3

¹⁷ See request, 6.1.1, regarding feature f) of claim 1

a combination (i.e. a 'mosaic') of E1 with one of E3 or E4 or E7. Given that E1 explicitly recommends an abrasive mixture of aluminium oxide and glass beads but is silent as to the purity of the aluminium oxide particles that should be used, I believe it would be reasonable (and obvious) for the skilled person to seek for the information about suitable aluminium oxide products in other places (e.g. E3 or E4 or E7). I believe it is reasonable to conclude that these documents (i.e. E1 and E3, or E4, or E7) are documents that the skilled person would naturally come across and consider together. Thus, it is my opinion that claim 1 lacks an inventive step over a combination of E1 and any one of E3 or E4 or E7.

Obviousness over E1 and E5

52. The requester also argues that claim 1 is obvious over a combination of E1 and E5. E5 is a patent document (US 2007/0238400 A1) that was published on 11 October 2007 (well before the priority date). It is concerned with a blasting cabinet for sandblasting. As the proprietor notes¹⁸, E5 discloses a *dry* blasting method and a general, extensive list of possible combinations of materials including white aluminium oxide and glass beads. Although I agree with the requester that the reference to white aluminium oxide would be understood as a reference to an iron-free aluminium oxide, I believe the skilled person would also recognise that E1 and E5 relate to different processes, i.e. wet-blasting and dry-blasting respectively. Moreover, I believe the skilled person would understand that E1 teaches that its wet-blasting method has numerous advantages compared to conventional dry-blasting systems¹⁹. For these reasons, I do not believe that the skilled person would seek to combine the specific teachings of E5 with those of E1. In my opinion, claim 1 involves an inventive step over the combination of E1 and E5.

Obviousness over E5 and E12

53. The requester further argues that claim 1 is obvious over a combination of E5 and E12. E12 is another patent document (GB 2065514 A) published on 1 July 1981. E12 is concerned with a blast gun for discharging a pressurised mixture of air and an abrasive in slurry form. Once again, I believe the skilled person would recognise that E5 (dry-blasting) and E12 (wet-blasting) relate to different processes and would not be motivated to combine them. In my opinion, claim 1 involves an inventive step over the combination of E5 and E12.

The dependent claims

54. Having reached the opinion that claim 1 lacks an inventive step, strictly speaking, I should now go on and consider whether the dependent claims involve an inventive step. However, I note that this would require detailed consideration of sixteen further claims (i.e. dependent claims 2-17) not only in light of the evidence I have already considered (i.e. E1-E7 and E12) but also in light of the numerous additional items of evidence that I have yet to consider (i.e. E8a, E8b, E9, E10, E11, E13a, E13b and

¹⁸ See observations, 2.1.4

¹⁹ See left-hand column, page 33

E14). Given that the Opinions service is intended to be a quick, simple and low-cost service, I do not believe it would be reasonable or practical for me to consider all of claims 2-17 fully. As I explained earlier in paragraph 8, the proprietor has made an application under section 27 to amend the claims of the patent. I note that, amongst other things, the proprietor proposes to amend claim 1 by incorporating the subject matter of claim 4 into claim 1. With this in mind, I believe it would be helpful to both parties for me to give an opinion on the inventive step of claim 4. However, in order for me to keep this opinion to a manageable size, claim 4 is the only dependent claim I shall consider for obviousness.

Claim 4

55. Claim 4 defines the average particle size of the mixture of claim 1 as follows:

4. *A processing according to any one of claims 1 to 3, CHARACTERIZED IN THAT said particles have an average particle size of between 0,9 μm and 110 μm .*

Construction of claim 4

56. Regarding the construction of claim 4, I note that claim 4 appears to contain a minor typographical error. Although claim 4 defines a “processing according to any one of claims 1 to 3”, I believe the skilled person would understand that claim 4 further defines the features of the processing *medium* according to any one of claims 1, 2 or 3. It is also relevant to note that, when read in light of claim 1 (and paragraph [0063]), I believe claim 4 would be understood to mean that the particles of *the mixture of two different types of products* of claim 1 (i.e. iron-free fused alumina particles and another type of particles) must have an (overall) average particle size in the range 0.9 – 110 μm . I would also note that claim 4 does not necessarily mean that particles of *each* type of product must have the same average particle size. This is only a requirement of claim 5 that specifies “a balanced suspension”²⁰.

Obviousness of claim 4

57. The requester refers to two groups of documents that, they argue, demonstrate relevant points of common general knowledge in respect of the size distributions of abrasives used in metal processing.

58. Firstly, the requester relies upon E4 and E7 that set out various particle sizes for fused aluminium oxide products. E4 is the technical data sheet for Greystar’s pink fused aluminium oxide product (discussed earlier in paragraph 41). E4 discloses that the product is available in FEPA F sizes F14 – F400, i.e. particles having mean diameters in the range 17.3 – 1470 μm . E7 is the technical data sheet for Greystar’s white fused aluminium oxide (discussed earlier in paragraph 43). E7 discloses that this product is available in FEPA F sizes in the range F240 – F1200, i.e. particles having mean diameters in the range 1 – 50 μm . Therefore, I believe E4 and E7 each disclose particle sizes for iron-free aluminium oxide particles falling in range defined by claim 4.

²⁰ See paragraph [0063]: “In order to preferably obtain a balanced suspension, the particles of the two different products preferably have a similar particle size.”

59. I note that, as I understand the proprietor's submissions, the proprietor does not expressly challenge the requester's argument that E4 and E7 are evidence of commonly-known particle sizes for iron-free aluminium oxide products. Based on E4 and E7, I believe it is reasonable to conclude the skilled person would have known (at the priority date) that iron-free aluminium oxide abrasive particles were commercially available in various sizes (i.e. having mean diameters) in at least the range 1 – 110 μm (i.e. sizes covering substantially the full range of particle sizes defined in claim 4).
60. Secondly, the requester relies upon E8a and E8b for particle sizes of abrasive glass beads. E8a is a performance specification entitled "GLASS BEADS: FOR CLEANING AND PEENING" and, as I explained earlier in paragraph 7, it is my opinion that E8a was made available to the public before the priority date of the invention. Page 1 of E8a explains it is a performance specification that is "approved for use by all Departments and Agencies of the Department of Defense" and that it covers "glass beads to be used with pressure/suction type blasting equipment". Section 1.2 states that "Glass beads will be of one type and 13 sizes as specified in Table 1". Table 1 is shown on page 3 of E8a and it discloses "% Passing" statistics for beads of sizes 1-13. From Table 1, it appears to me that at least bead sizes 12 and 13 would be understood as having average particle sizes corresponding to mesh sizes 140 and 170 respectively (i.e. average particle sizes of 105 μm and 90 μm respectively)²¹. Moving on, E8b is a copy of a web page obtained from The *Wayback Machine* and it bears an archive date of 26 September 2012. I am satisfied that E8b was made available to the public before the priority date of the invention. E8b appears to be a web page from a company called "Apex Abrasives Industries" and it describes the technical specification of a product called "GLASS BEADS". E8b states that glass beads are "chemically inert" and are "an acceptable method of metal cleaning or surface finishing when properly controlled". E8b goes on to say that glass beads "are available in successive granulometric range of **1 to 1000 microns**" (my emphasis). E8b also provides a table with a "TECHNICAL SPECIFICATION" that provides %-passing figures for glass beads having "PARTICULE SIZE RANGE" from "0-50" to "425-850" (i.e. corresponding to particle sizes in the range 45 – 1000 μm). From the table in E8b, I believe that at least three "particule size" ranges (i.e. "70-110", "40-70" and "0-50") would be understood as having average particle sizes falling in the claimed range of 0.9 – 110 μm .²²
61. Again, I note that, as I understand the proprietor's submissions, the proprietor does not expressly challenge the requester's argument that E8a and E8b are evidence of commonly-known particle sizes for glass bead products. Based on E8a and E8b, I believe it is reasonable to conclude that, at the priority date, the skilled person would have known that abrasive glass beads were available in several average sizes falling in the range of average particle sizes defined in claim 4.
62. Turning now to E1, I believe it is common ground between the parties that E1 does not explicitly disclose that any particle size or range of particle sizes should be used. I

²¹ For bead size 13, a figure of 95-100 % passing is quoted for screen size 170 (90 μm) while 0-5 % passing is stated for screen size 400 (37 μm). For bead size 12, a figure of 95-100 % passing is given for screen size 140 (105 μm) while a figure 0-5% is given for screen size 325 (44 μm).

²² For example, for particule size "70-110" a figure of 90-100 % passing is given for a 106 μm sieve in combination with a figure of 0-10 % passing for a 53 μm sieve. And for particule size "0-50" a figure of 90-100 % passing is given for a 63 μm sieve in combination with 0-10 % passing for a 45 μm sieve.

agree. While E1 recommends an abrasive mix of aluminium oxide and glass beads, I believe the skilled person would understand that E1 is silent upon suitable particle sizes for this abrasive mixture. Thus, E1 does not disclose the characterising feature of claim 4, i.e. that “said particles have an average particle size of between 0,9 µm and 110 µm”.

63. The requester argues that this difference would be obvious to the skilled person when reading E1 in light of their common general knowledge. They say²³ it is clear that the range of particle sizes were known to the skilled person for both aluminium oxide and glass beads. They contend that selection of particle size is trivial, is a routine matter for the skilled person, and depends upon the finish required.
64. The proprietor disagrees with the requester’s position, making several arguments in support. Firstly, the proprietor says²⁴ that the wet blast process of E1 results in increased sensitivity of the treated hardened steel die surfaces for adhesion. Thus, they argue, the increased reactivity and adhesiveness of the treated surfaces implies that at least the particle size used in E1 must have been outside the claimed range. I believe that the relevant passage of E1 to which the proprietor refers is found on page 35:

The wet blast process means the newly cleaned dies are left with extremely reactive surfaces. Experience has shown the surfaces to be very adhesive should they require nitriding prior to extrusion.

As a response to the reactivity of the newly cleaned dies, additives, such as rust inhibitors, can be mixed into the sump tank to help preserve the nascent surface; larger systems can also be designed to include drying systems, removing yet another process that will save extruders more time.

65. It seems to me that the skilled person would understand that this passage implies a link between the “reactive” and “adhesive” surfaces of newly-cleaned dies and an optional “nitriding” process that may be required before the dies are used for extrusion. For example, I believe that the skilled person would know that the success of certain nitriding processes would depend upon the surface condition of a treated die. In any case, based on the information I have been given, I do not believe that the skilled person would understand this passage to be necessarily implying anything about the choice of particle size. I am unable to accept the proprietor’s argument that this passage unambiguously implies that any particular range of particle sizes must be used.
66. Secondly, the proprietor argues²⁵ that, even though the broad ranges of particle sizes for fused alumina disclosed in E4 and E7, and the particle sizes for glass beads in E8a, are seen to overlap with the claimed narrow range of particle size, there is no specific disclosure in these documents of a *processing medium* (i.e. a mixture of products) in which *both* the aluminium oxide *and* the glass beads have a particle size falling within the specifically-claimed narrow particle size. I understand the proprietor to be saying that, whilst E4 and E7 disclose particle sizes for iron-free fused alumina particles on one hand, and E8a and E8b disclose particle sizes for glass beads on the

²³ See observations in reply, paragraph spanning p. 2-3

²⁴ See observations, 2.1.1 on page 6

²⁵ See observations, 2.1.2 on pages 7-8

other, none of these documents explicitly disclose a *mixture* of fused alumina particles and glass beads. The requester counters this by arguing²⁶ that the choice of particle size (presented to the skilled person by E1) does not extend beyond an arbitrary choice of a single particle size to suit the intended use, and then selecting this size for both particles. I have to say that I agree with the requester. Although I accept the proprietor's point that E4, E7, E8a and E8b do not disclose a mixture of products, I am not persuaded of its relevance because E1 recommends explicitly that a *mixture* of both aluminium oxide particles and glass beads may be used. Accordingly, to work the system of E1, the skilled person would be faced with choosing appropriate particle sizes for both the aluminium oxide particles and the glass bead particles of the recommended mixture. They would have known from their common general knowledge (at the priority date) that both aluminium oxide particles and glass bead particles were available in various particle sizes falling in a range 0.9 – 110 µm (as evidenced by E4, E7, E8a and E8b). I accept, as the requester says, that the skilled person would understand that the selection of particle size for E1 would depend upon the surface finish desired after treating the dies. In my opinion, it would not require any inventive ingenuity on the part of the skilled person to select an average particle size in a range 0.9 – 100 µm for the mixture of aluminium oxide and glass beads disclosed in E1 because it was common general knowledge that both products were available with average sizes falling in this range (as evidenced by E4, E7, E8a and E8b).

67. Finally, the proprietor argues that the invention “is able to achieve the unexpected advantageous effect of achieving a hydrophobic surface, such as for example detailed in paragraphs [0050] and [0087]-[0088] of the Patent.”²⁷ In order to assess this argument I believe it is necessary for me to consider these paragraphs in more detail. Paragraph [0050] of the patent describes that:

Furthermore, the method results in a hydrophobic surface partially due to the polishing effect. This hydrophobic surface also is obtained because of the suspension used.

68. I note that the “polishing effect” mentioned in paragraph [0050] appears to be a reference to the previous paragraph, paragraph [0049]:

*Because the method is a wet method using a suspension, **a polishing effect** of the treated surface is obtained. The liquid in the suspension furthermore forms a liquid buffer that takes care that there is no direct impact of the particles of the suspension into the treated surface, through which the risk of damaging the surface and impregnation of particles in the surface is seriously reduced. Also, no dust formation is obtained. Furthermore, very small particles can be used. (My emphasis.)*

69. Moving on, paragraph [0087] describes Fig. 9a and Fig. 9b (reproduced below) that are said to illustrate the behaviour of water on a stainless-steel surface treated with the process according to the invention (Fig. 9b) versus a stainless-steel surface treated with a conventional dry bead blasting method (Fig. 9a). Fig. 9b is said to show

²⁶ See observations in reply, page 3

²⁷ See observations, 2.1.2 on page 8



FIG. 9a

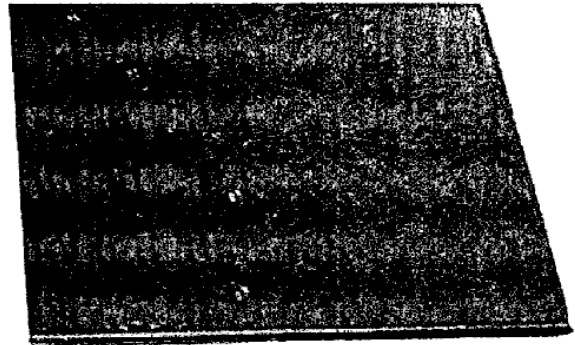


FIG. 9b

a hydrophobic (stainless-steel) surface with a surface energy repelling the water since few water droplets are left on the slightly inclined surface. In contrast, Fig. 9a is said to show a water film on a stainless-steel surface, i.e. the typical state of a hydrophilic surface. In conclusion, paragraph [0088] describes that:

It can thus be concluded that out of figure 9b that the method according to the invention creates a hydrophobic surface easy to reproduce, improving the surface properties of the stainless steel substrates and exhibiting a surface topography which is benefit for the cleanability of stainless steel substrates.

70. From these paragraphs, I believe the skilled person would recognise that the examples of figures 9a and 9b relate solely to *stainless-steel* surfaces. However, I believe it is important to note that claims 1 and 4 of the patent are *not* limited to the treatment of stainless-steel surfaces. As I have construed claim 1 (see paragraph 14 above), the processing medium of claim 1 is one that is *suitable* for processing *metallic* surfaces. I believe that the skilled person would understand that the examples of figures 9a and 9b do not necessarily demonstrate that a hydrophobic surface would be achieved for other metallic (i.e. non-stainless-steel) surfaces. Thus, it is my opinion that the technical effect of producing a hydrophobic surface is *not* common to substantially everything covered by claims 1 and 4. I would also add that I believe the skilled person would understand that the results for the stainless-steel surfaces of figures 9a and 9b are intended to show the advantages of the wet-blasting process of the invention (i.e. a slurry comprising fused alumina particles and particles of another different type of product) in comparison to conventional dry bead blasting (i.e. dry blasting only using beads). In my opinion, the skilled person would understand that the results shown in figures 9a and 9b would not necessarily allow them to draw conclusions about the effect of particle size on surface finish. For example, it does not seem to me that the experiments that led to the results of figures 9a and 9b were controlled in such a way as to investigate the effect of varying particle size on surface finish. As a result, I do not believe it is plausible that the selection of the range of particle sizes defined in claim 4 leads to an unexpected technical effect (of producing a hydrophobic surface on any metallic surface) as the proprietor argues. This leads me to the inevitable conclusion that the selection of an average particle size in the range 0.9 – 100 μm for the aluminium oxide particles and the glass bead particles of the recommended mixture of E1 would be a purely arbitrary one for the skilled person.

71. Accordingly, based on the information I have been given, it is my opinion that, when

reading E1, selection of an average particle size in the range 0.9 – 100 µm for the mixture of aluminium oxide and glass beads would be an arbitrary choice not requiring any inventive ingenuity on the part of the skilled person. In my opinion, it would be obvious to the skilled person from their common general knowledge that an average particle size in the range 0.9 – 100 µm would be appropriate for the mixture of aluminium oxide particles and glass bead particles taught in E1. In my opinion, claim 4 lacks an inventive step over E1 when read in light of the common general knowledge of the skilled person.

72. I would add for completeness that, to my mind, the requester effectively makes an alternative argument that claim 4 lacks an inventive step over a combination (i.e. a 'mosaic') including E1 and either E4 or E7 and either E8a or E8b²⁸. As I have already explained, E4 and E7 each disclose average particle sizes for iron-free aluminium oxide products that fall within the range defined in claim 4. Similarly, I have also explained that E8a and E8b each disclose that glass bead particles may have average particle sizes falling within the range defined in claim 4. Given that E1 explicitly recommends an abrasive mixture of aluminium oxide and glass beads but does not specify any value for a suitable average size of these particles, I believe it would be reasonable (and obvious) for the skilled person to seek for the information about suitable particle sizes in other places (e.g. E4/E7 and E8a/E8b). I believe it is reasonable to conclude that these documents (i.e. E1 and E4/E7 and E8a/E8b) are documents that the skilled person would naturally come across and consider together. Therefore, in my opinion, claim 4 lacks an inventive step over a combination of E1 with either E4 or E7 and with either E8a or E8b.

Opinion

73. It is my opinion that claims 1-17 are novel.
74. However, it is my opinion that claims 1 and 4 lack an inventive step over E1 and the common general knowledge of the skilled person. It is also my opinion that claim 1 lacks inventive step over a combination of E1 with E3, or E4, or E7. It is further my opinion that claim 4 lacks an inventive step over a combination of E1 with either E4 or E7 and either E8a or E8b.
75. For the avoidance of doubt, I confirm that I do not give any opinion on the inventive step of claims 2, 3 and 5-17.

Application for review

76. Under section 74B and rule 98, the proprietor may, within three months of the date of issue of this opinion, apply to the comptroller for a review of the opinion.

Stephen Richardson
Examiner

²⁸ See request, 6.4 and 6.5

NOTE

This opinion is not based on the outcome of fully litigated proceedings. Rather, it is based on whatever material the persons requesting the opinion and filing observations have chosen to put before the Office.