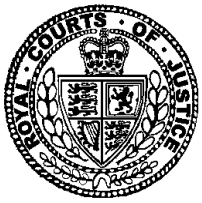

Neutral Citation [2020] EWHC 1068 (Pat)

Appeal No: CH-2019-000166

IN THE HIGH COURT OF JUSTICE
BUSINESS AND PROPERTY COURTS OF ENGLAND AND WALES
PATENTS COURT (ChD)

Royal Courts of Justice
Rolls Building
7 Rolls Buildings
Fetter Lane
London EC4A 1NL

Date: 7 May 2020

Before:
THE HONOURABLE MR JUSTICE MARCUS SMITH

- -

In the matter of the UK Patents Act 1977

And in the matter of UK Patent Nos 2451719 and 2496951 in the name of Knauf Insulation Limited and an application for revocation thereof by Rockwool International A/S

And in the matter of an appeal from the decision of the Comptroller-General of Patents dated 28 May 2019

BETWEEN

ROCKWOOL INTERNATIONAL A/S

Appellant (Claimant for Revocation)

-and-

KNAUF INSULATION LIMITED

Respondent (Patentee)

- -

- -

Mr Jonathan Moss (instructed by **Gill Jennings and Every LLP**) for the **Appellant**
Mr James Abrahams, QC (instructed by **DLA Piper UK LLP**) for the **Respondent**

Hearing date: 4 February 2020

- -

Approved Judgment

I direct that pursuant to CPR PD 39A para 6.1 no official shorthand note shall be taken of this Judgment and that copies of this version as handed down may be treated as authentic. The

judgment was handed down remotely by email to the parties and release to BAILII. The deemed time for handing down is 10:00am on Thursday 7 May 2020.

Mr Justice Marcus Smith:

A. INTRODUCTION

1. By a decision dated 28 May 2019, Mr Huw Jones, Hearing Officer acting for the Comptroller-General, rejected applications made by the Appellant, Rockwool International A/S (**Rockwool**), for the revocation of two patents owned by the Respondent, Knauf Insulation Limited (**Knauf**). The patents in issue are:

   (1) Patent number GB2451719 (the **'719 Patent**).

   (2) Patent number GB2496951 (the **'951 Patent**).

   I shall, together, refer to the '719 Patent and the '951 Patent as the **Patents**.

2. Rockwool appealed the Decision on seven grounds, although at the hearing of the appeal, one ground (Ground 5) was not pursued. I describe these grounds in Section C below. Before I do so, however, it is necessary to describe the Patents and the relevant technical facts. I do so in Section B below.

B. THE PATENTS AND THE TECHNICAL BACKGROUND

3. The application for the '719 Patent (the **Application**) has a priority date of 3 August 2007. The Patents concern the manufacture of **binders**, that is substances for binding non- or loosely assembled matter. Binders are used, most usefully, to bind together mineral wool to form a useful material for the insulation of houses and other buildings.

4. The opening paragraphs of the Application state:

   "This invention relates to binders, particularly for the manufacture of mineral wool insulation (for example glass wool or stone wool insulation).

   WO 2007/014236 (incorporated herein by reference) relates to binders, including binders comprising Maillard reactants. One particular binder disclosed is based on a triammonium citrate – dextrose system derived from mixing dextrose monohydrate, anhydrous citric acid, water and aqueous ammonia. One of the many advantages of this binder system is that it is formaldehyde free.

   One aspect of the present invention provides a binder in accordance with claim 1; further aspects of the inventions are defined in other independent claims. The dependent claims define alternative and/or preferred embodiments.

   Binder solution in accordance with the present invention may be "substantially formaldehyde free", that is to say that they liberate less than 5 ppm[1] formaldehyde as a result of drying and/or curing (or appropriate tests simulating drying and/or curing). Such binder solutions are preferably "formaldehyde free", that is to say they liberate less than 1 ppm formaldehyde in such conditions.

   Products in accordance with the invention which incorporate binders (for example insulation materials) may be "substantially formaldehyde free", that is to say they comprise less than 5 ppm

[1] I.e. "parts per million".

> or less than detectable limits of free formaldehyde and/or consist of materials which together comprise less than these amounts of free formaldehyde and/or release levels of formaldehyde in standardised tests adapted to simulate their ordinary use which allows them to be classified as having no or undetectable levels of formaldehyde release.
>
> It has been found that binders according to the present invention may have at least equivalent and indeed improved properties compared to, for example, the triammonium citrate – dextrose system of WO 2007/014236. WO 2007/014236 teaches binder systems based, inter alia, on a combination of a carbohydrate (for example a reducing sugar), ammonia and a carboxylic acid and suggests that a Maillard type reaction may form the basis of the curing chemistry. It would have been thought that the nature of the acid used would have a significant effect upon the properties of the cured binder, particularly if the acid precursor and/or derivative therefrom is incorporated into the structure of the cured binder. It is thus surprising that an acid precursor derivable from an inorganic salt should prove a suitable acid precursor in an otherwise apparently similar binder system.
>
> An acid precursor derivable from an inorganic salt may have significant advantages in terms of cost, availability and ease of handling. A particular advantage can be achieved by use of one or more inorganic ammonium salts, for example, an ammonium sulphate or ammonium phosphate. An ammonium salt may provide the or part of the acid precursor and/or the or part of the source of nitrogen and/or the or part of the pH control system. An ammonium nitrate may also work; however, ammonium nitrate may oxidise aldehyde groups of the carbohydrate (for example in the case of dextrose) and/or require precautions to avoid explosions."

5. There are a number of aspects of this that require explanation in order to be comprehensible to the layman:

(1) There is considerable emphasis on binders that are substantially formaldehyde free. Prior to the priority date of the '719 Patent, there were significant concerns that binders that were not or not substantially formaldehyde free had both environment and health issues.[2]

(2) The references to WO 2007/014236 are references to an international application for a patent published under the Patent Cooperation Treaty under this number. Before the Hearing Officer, this application was referred to as **D3** (which, I understand, was a reference to tab 3 of bundle D before the Hearing Officer). I shall adopt the reference D3. Rockwool relied upon D3 as part of the prior art in relation to the Patents, and it will be necessary to describe D3 in greater detail below.

(3) The "Maillard reactants" and the "Maillard type reaction" referenced refer to a chemical reaction between amino acids and sugars, which reaction gives browned food its distinctive flavour.[3] Seared steaks and many other foods undergo this reaction, which I shall refer to as the **Maillard reaction**. The Maillard reaction causes **melanoidins** – brown, high molecular weight heterogeneous polymers – to form. As is clear from the foregoing description, there are two reactants involved in a Maillard reaction:

(a) A sugar; and

[2] See, for example, paragraphs 31 to 32 of the expert report Ms Johansson, adduced before the Hearing Officer on behalf of Rockwool (**Johansson 1**).

[3] "Maillard" is a reference to the French chemist, Louis-Camille Maillard, who described the reaction in 1912.

(b) An amino acid – sometimes referred to as the amine component. Amino acids are organic compounds that contain amine and carboxyl. They are part of a broader ground of acids – also organic compounds – known as carboxylic acids.

(4) An "acid precursor" is simply a reference to a compound – here, an acid – that participates in a chemical reaction that produces another compound – here, the melanoidins. The acid precursor will be derived from a salt.

(5) Salts and acids can be "organic" or "inorganic", terms used both in the Application set out above and in the foregoing paragraphs. A basic distinction in chemistry is between organic and inorganic materials: the distinction is that organic materials have carbon hydrogen bonds, whereas inorganic materials do not. Acids and salts can be either inorganic (lacking carbon hydrogen bonds) or organic (having carbon hydrogen bonds).

(6) D3 teaches that the Maillard reaction creates a binder that is formaldehyde free or substantially so. It was Rockwool's contention on appeal – which was disputed by Knauf – that D3 taught that both organic and inorganic acids/salts, reacting with a sugar, could produce such a binder. Knauf contended that D3 only taught that organic acids/salts, reacting with a sugar, could produce such a binder and that the inventive step in the Application – and so in the '719 Patent – was the "surprising" discovery that an acid precursor derivable from an inorganic salt should provide a suitable acid precursor in an otherwise apparently similar binder system.

6. The '719 Patent was granted to Knauf on 26 December 2012. During the course of the application for the '719 Patent, the '951 Patent was divided from the '719 Patent and was granted to Knauf on 17 July 2013.

7. During the course of the proceedings before the Hearing Officer, Knauf sought to amend claim 1 in both the '719 Patent and the '951 Patent. The nature of these proposed amendments are helpfully set out in paragraphs 11 and 12 of the Decision:[4]

(1) The proposed amendments to claim 1 of the '719 Patent were as follows:

"A method of manufacturing a mineral wool insulation product comprising:

a) providing a substantially formaldehyde free binder solution having a pH of greater than 6 comprising:

- a carbohydrate selected from a monosaccharide, a monosaccharide in its aldose or ketose form, a reducing sugar and a carbohydrate having a reducing aldehyde;

- an acid precursor derivable from an inorganic salt, in which the acid precursor comprises a species selected from the group consisting of sulphates, phosphates and nitrates;

- a source of nitrogen; and

[4] The Hearing Officer helpfully identified the changes proposed by the use of underlining and ~~strike-through~~.

- water;

in which the acid precursor makes up at least 5% by dry weight of the uncured binder solution; and

in which the binder comprises between 5%-25% by dry weight of acid precursor to carbohydrate;

b) spraying the binder solution on to the mineral fibres between formation of the fibres and collection of the fibres to form a batt;[5] and

c) curing the binder to form a thermoset binder, in which the curing of the binder occurs in a curing oven using forced hot air circulation."

(2) The proposed amendments to claim 1 of the '951 Patent were as follows:

"A method of manufacturing ~~a product selected from: a thermal insulation material~~ a mineral fibre product~~; a wood board product including chip board, oriented strand board, particle board, medium density fibreboard, wood facing products; and foundry sands~~ in which the mineral fibre product is a mineral wool insulation product, comprising the steps of:

providing a collection of loose matter comprising non-woven ~~material~~ mineral fibres;

applying a binder solution to the collection of loose matter by spraying the binder solution on to the mineral fibres between formation of the fibres and collection of the fibres to form a batt, the binder solution being a substantially formaldehyde free binder solution having a pH of greater than 6 comprising: a carbohydrate, an acid precursor derivable from an inorganic salt which makes up at least 5% by dry weight of the uncured binder solution, a source of nitrogen and water, and in which the acid precursor comprises one or more inorganic ammonium salts; and

curing the binder to form a thermoset binder in which the curing of the binder occurs in a curing oven using forced hot air circulation;

and in which the quantity of binder in the finished material wool insulation is greater than 1% and less than 20% measured by dry weight of the finished mineral wool insulation product."

8. Like the Hearing Officer, I consider the issues in this appeal on the basis of these amended claims.

C. THE GROUNDS OF APPEAL

9. As I have noted, there were six grounds of appeal live before me.[6] The grounds of appeal were pleaded in Rockwool's grounds of appeal (the **Grounds of Appeal**) and expanded upon by Rockwool in its written appeal submissions. In summary, they are as follow:

[5] A "batt" is a pre-formed block of fibres.

[6] Ground 5 not having been pursued at the appeal hearing: see paragraph 2 above.

(1) *Ground 1: the Hearing Officer erred in relation to the level of knowledge of the Maillard reaction.* **Ground 1** is based upon paragraphs 2 and 4 of the Grounds of Appeal,[7] which provide as follows:

> "2. The Hearing Officer erred in holding at §35 of the Decision that [Rockwool's] evidence (and case) was that a detailed knowledge of the Maillard reaction was part of the [common general knowledge]. This error is repeated in §70.
>
> …
>
> 4. At §68 and §69, the Hearing Officer erred by ignoring that the teaching of D3 includes the detailed cross-reference material on the Maillard reaction, and as such, the Skilled Person, when reading D3, would know more than the proposed mechanism set out on page 17 of D3."

(2) *Ground 2: failure to distinguish that the '951 Patent is much broader than the '719 Patent.* **Ground 2** is based upon paragraph 3 of the Grounds of Appeal,[8] which provides as follows:

> "The Hearing Officer erred by failing to recognise the difference between the Patents. Specifically, he erred by holding in §50 the '951 Patent is aimed at acid precursors with sulphate, phosphate or nitrate groups, as the '951 Patent is much broader than its parent, the '719 Patent. His error in misconstruing the scope of the '951 Patent undermines his entire decision on the '951 Patent."

(3) *Ground 3: failure to consider the different motivation for the broader '951 Patent.* **Ground 3** is based upon paragraph 5 of the Grounds of Appeal,[9] which provides as follows:

> "Further, the Hearing Officer erred by holding that the '951 Patent was not obvious because there was no motivation to switch to sulphates, phosphates or nitrates. The '951 Patent is broader in scope and the Hearing Officer therefore erred by construing the claims of the '951 Patent too narrowly."

(4) *Ground 4: failure by the Hearing Officer to give any reason for the added matter and plausibility findings.* **Ground 4** is based upon paragraph 6 of the Grounds of Appeal,[10] which provides as follows:

> "The Hearing Officer erred by holding that the '951 Patent was plausible and/or that it did not contain added matter. The Hearing Officer has given no reasons for his Decision on this in §82 and it therefore must be overturned."

[7] See paragraph 45 of Rockwool's written appeal submissions. In paragraph 27 of its written appeal submissions, Knauf suggested that Rockwool's written appeal submissions were not, at all times, consistent with its Grounds of Appeal. Like Knauf, I will focus on the manner in which the point was developed in written and oral submission.

[8] See paragraph 54 of Rockwool's written appeal submissions.

[9] See paragraph 62 of Rockwool's written appeal submissions.

[10] See paragraph 66 of Rockwool's written appeal submissions.

(5) *Ground 5: added matter.* **Ground 5** is based upon paragraph 7 of the Grounds of Appeal,[11] which provides as follows:

> "Furthermore, in light of the construction of the '951 Patent held by the Hearing Officer, the '951 Patent amended claims constitute added matter as they go beyond the scope of the inventive concept and/or the subject-matter disclosed in the '951 Patent."

I appreciate that I have said that Ground 5 was not pursued. Nevertheless, for reasons that I shall come to, it is necessary to be aware of its terms.

(6) *Ground 6: no plausible invention in light of the findings on obviousness.* **Ground 6** is based upon paragraph 7 of the Grounds of Appeal,[12] which provides as follows:

> "Furthermore, in light of the construction of the '951 Patent held by the Hearing Officer, the '951 Patent amended claims constitute added matter as they go beyond the scope of the inventive concept and/or the subject matter disclosed in the '951 Patent."

(7) *Ground 7: no basis for the entirety of the amended claims of the '951 Patent.* **Ground 7** appears to be based on paragraph 8 of the Grounds of Appeal,[13] which provides as follows:

> "There is no basis in the '951 Patent to support the use of any inorganic ammonium salt. The evidence of Dr Preininger, which was relied on by the Hearing Officer, was that the Skilled Person would not know whether changing the acid would have an effect. Accordingly, the amended claims are not supported."

10. To a certain extent – as Rockwool accepted – these Grounds are related. Grounds 1 to 3 relate to the Hearing Officer's findings on obviousness. Grounds 4 to 7 relate to the Hearing Officer's findings on added matter and plausibility, although (as Rockwool also accepted) there is a link between these Grounds and Hearing Officer's findings on obviousness.[14]

11. Whilst Ground 1 relates to both Patents, Grounds 2 to 7 are confined to the '951 Patent.[15]

12. I shall consider the Grounds of Appeal in the following Sections of this judgment. Before proceeding to the various Grounds of Appeal, I should also say something about the approach to be taken in this appeal.

D. APPROACH ON APPEAL

13. In its written appeal submissions, Knauf stressed three points regarding the approach I should take on an appeal such as this:[16]

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[11] See paragraph 69 of Rockwool's written appeal submissions.

[12] I.e. the same paragraph in the Grounds of Appeal that supports Ground 5: see paragraph 73 of Rockwool's written appeal submissions.

[13] Although this is not specifically stated in Rockwool's written appeal submissions.

[14] See paragraphs 7 to 9 of Rockwool's written appeal submissions.

[15] See paragraph 10 of Rockwool's written appeal submissions.

[16] See paragraphs 24 to 26 of Knauf's written appeal submissions.

(1) First, in an appeal against a finding of non-obviousness, the court should only interfere with the decision below if there has been an error of principle.[17]

(2) Secondly, although the parties dispensed with cross-examination of witnesses before the Hearing Officer by agreement, this did not entitle me to substitute my view for that of the Hearing Officer absent: *(i)* an error of principle; *(ii)* a failure on the part of the Hearing Officer to take account of material evidence before him; or *(iii)* the Hearing Officer paying regard to immaterial evidence. That said, were I to take the view that the Decision should be varied or set aside on appeal, given the absence of cross-examination by agreement, there would be no need to remit matters to the Hearing Officer.

(3) Thirdly, I should not be unduly critical of the way in which the Decision is expressed: my starting point should be that an experienced tribunal such as the Hearing Officer in this case would know how to perform his functions and what matters he should take into account.[18]

These points were not contested by Rockwool, and they represent the approach that I propose to take.

E. GROUND 1

(1) The law

14. It was not suggested by either party that the relevant legal principles were in dispute or particularly contentious. Accordingly, I set out, in broad terms, the law relevant to findings of obviousness or non-obviousness.

(a) The "person skilled in the art"

15. The "person skilled in the art" is expressly referred to in the statutory provisions relating to obviousness and insufficiency. The correct identification of such a person (or team of persons) can have important consequences for the identification of the common general knowledge in the art, the construction of the specification, and therefore for the issues of infringement and/or validity.[19] As Jacob LJ explained in *Technip France SA's Patent*:[20]

> "The "man skilled in the art" is invoked at many critical points of patent law. The claims of a patent must be understood as if read by that notional man – in the hackneyed but convenient phrase the "court must don the mantle of the skilled man". Likewise many questions of validity (obviousness, and sufficiency for instance) depend upon trying to view matters as he would see them…"

16. As *Terrell* notes,[21] disputes as to the identity of the person skilled in the art often involve the following questions:

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[17] *Actavis Group PTC EHF v. ICOS Corporation*, [2019] UKSC 15 at [78] to [81].

[18] *Piglowska v. Piglowski*, [1999] 1 WLR 1360 at 1372.

[19] Drawing on Birss *et al*, *Terrell on Patents*, 18th ed (2016) (***Terrell***) at [8-02].

[20] [2004] RPC 32 at [37].

[21] *Terrell* at [8-23].

(1) What is the relevant art?

(2) Should the "person skilled in the art" be taken as comprising a team, each member bringing a particular skill, and if so then what is the composition of that notional team?

(3) What are the attributes and qualification, and in particular the level of skill, of the notional skilled person or team?

On all such matters, evidence is admissible (and was heard by the Hearing Officer in this case).

17. The general characteristics or attributes of a person skilled in the art were described by Lord Reid in *Technograph v. Mills & Rockley*[22] and expanded upon by Jacob LJ in *Technip France SA's Patent*:[23]

"It is settled that this man, if real, would be very boring – a nerd. Lord Reid put it this way in [*Technograph*]:

> "…the hypothetical addressee is a skilled technician who is well acquainted with workshop technique and who has carefully read the relevant literature. He is supposed to have an unlimited capacity to assimilate the contents of, it may be, scores of specifications but to be incapable of a scintilla of invention. When dealing with obviousness, unlike novelty, it is permissible to make a "mosaic" out of the relevant documents, but it must be a mosaic which can be put together by an unimaginative man with no inventive capacity."

The no-mosaic rule makes him also very forgetful. He reads all the prior art, but unless it forms part of his background technical knowledge, having read (or learnt about) one piece of prior art, he forgets it before reading the next unless it can form an uninventive mosaic or there is a sufficient cross-reference that it is justified to read the documents as one.

He does, on the other hand, have a very good background technical knowledge – the so-called common general knowledge. Our courts have long set a standard for this which is set out in the oft-quoted passage from *General Tire v. Firestone Tire & Rubber*,[24] which in turn approves what was said by Luxmoore J in *British Acoustic Films*.[25] For brevity I do not quote this in full – Luxmoore J's happy phrase "common stock of knowledge" conveys the flavour of what this notional man knows. Other countries within the European Patent Convention apply, so far as I understand matters, essentially the same standard.

The man can, in appropriate cases, be a team – an assembly of nerds of different basic skills, all unimaginative. But the skilled man is not a complete android, for it is also settled that he will share the common prejudices or conservatism which prevail in the art concerned."

[22] [1972] RPC 346 at 355.

[23] [2004] RPC 32 at [7] to [10]. Quoted in *Terrell* at [8-42].

[24] [1972] RPC 457 at 482.

[25] 53 RPC 221 at 250.

(b) Common general knowledge

18. Drawing again from *Terrell*:[26]

> "Common general knowledge means "the information which, at the date of the patent in question, is common knowledge in the art or science to which the alleged invention relates, so as to be known to duly qualified persons engaged in that art or science"; in other words, it is part of the mental equipment necessary for competency in that art or science concerned, such as every worker in the art may be expected to have as part of his technical equipment. In the context of construction, Aldous LJ explained in *Lubrizol v. Esso Petroleum*:[27]
>
> > "Patent specifications are intended to be read by persons skilled in the relevant art, but their construction is for the Court. Thus the court must adopt the mantle of the notional skilled addressee and determine, from the language used, what the notional skilled addressee would understand to be the ambit of the claim. To do that it is often necessary for the Court to be informed as to the meaning of technical words and phrases and what was, at the relevant time, the common general knowledge; the knowledge that the notional skilled man would have.""

19. In its written appeal submissions, Rockwool drew to my attention similar expositions by Aldous LJ in *Beloit Technologies Inc v. Valmet Paper Machinery Inc*[28] and Laddie J in *Raychem Corp's Patents*.[29]

(c) Obviousness

20. Section 3 of the Patents Act 1977 provides:

> "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 (and disregarding section 2(3) above."

21. The word "obvious" is an ordinary word of English usage, and the courts have resisted attempts to re-articulate the statutory requirement.[30] That said, it is clear that "obvious" includes circumstances where it is obvious to try. In *Medimmune Ltd v. Novartis Pharmaceuticals,*[31] Kitchin LJ noted:

> "90. One of the matters which it may be appropriate to take into account is whether it was obvious to try a particular route to an improved product or process. There may be no certainty of success but the skilled person might nevertheless assess the prospects of success as being sufficient to warrant a trial. In some circumstances, this may be sufficient to render an invention obvious. On the other hand, there are areas of technology such as pharmaeuticals and biotechnology which are heavily dependent on research, and where workers are faced with many possible avenues to explore, but have little idea if any one of them will prove fruitful. Nevertheless, they do pursue them in the hope that they will find new and useful products. They plainly would not carry out this work if the

[26] At [8-56].

[27] [1998] RPC 727 at 738.

[28] [1997] RPC 489 at 494-495.

[29] [1998] RPC 31 at 40.

[30] *Terrell* at [12-05].

[31] [2012] EWCA Civ 1234.

prospects of success were so low as not to make them worthwhile. But denial of patent protection in all such cases would act as a significant deterrent to research.

91. For these reasons, the judgments of the courts in England and Wales and of the Boards of Appeal of the EPO often reveal an enquiry by the tribunal into whether it was obvious to pursue a particular approach with a reasonable or fair expectation of success as opposed to a hope to succeed. Whether a route has a reasonable or fair prospect of success will depend upon all the circumstances including an ability rationally to predict a successful outcome, how long the project may take, the extent to which the field is unexplored, the complexity or otherwise of any necessary experiments, whether such experiments can be performed by routine means and whether the skilled person will have to make a series of correct decisions along the way."

(2) The Decision of the Hearing Officer

22. The Hearing Officer considered the identity of the person skilled in the art and the common general knowledge of that person in [31] to [44] of the Decision. His conclusions were as follow:

"43. The person skilled in the art is the person to whom the patent is addressed. It is through their eyes that I must read and interpret the patents before me and the prior art. Therefore, I must look to the '719 and '951 Patents and determine to whom they are addressed. Both Patents, including the claims, relate to binders, particularly for the manufacture of mineral wool insulation and to methods of manufacturing mineral wool insulation using such binders. Therefore, in my view, the person to whom the '719 and '951 Patents are addressed is one who is interested in the development of binders in the field of mineral wool insulation manufacture. Such a person would have knowledge of chemistry and detailed knowledge of binders used in mineral wool insulation.

44. In my view, the person skilled in the art would be aware of the Maillard reaction and its relevance to making formaldehyde free binders for mineral wool insulation. They are aware of this from the disclosure in D3 which shows the skilled person that it is possible to make sugar-based, formaldehyde-free binders from so-called Maillard reactants. I disagree with [Rockwool's] view that the person skilled in the art would have a detailed knowledge of the reaction simple because they have read what is in D3 and other documents to which D3 refers. Literature on the Maillard reaction has been largely confined to the field of food chemistry and its relevance to binders for mineral wool insulation is relatively new. Therefore, I think it unlikely that the person skilled in the art of binders for the manufacture of mineral wool insulation would have a detailed knowledge of the Maillard reaction as part of their common general knowledge."

23. The Hearing Officer then proceeded to consider the question of inventive step – or obviousness, to express the converse – in [57] to [71] of the Decision. His approach and conclusions were as follows:

(1) He approached the question applying the test in *Pozzoli SpA v. BDMO SA,*[32] which both parties agreed was the test to apply.[33] Essentially, having identified the notional person(s) skilled in the art and the relevant common general knowledge of that person (or those persons), the court must:

[32] [2007] EWCA Civ 588 at [23]. See [57] of the Decision.

[33] Both parties addressed the Hearing Officer on the basis of this test: see Decision at [57].

(a) Identify the inventive concept of the claim in question, if necessary construing the patent to do so;

(b) 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;

(c) Consider whether, viewed without any knowledge of the alleged invention as claimed, those differences constitute steps which would have been obvious to the person skilled in the art or (on the other hand) whether they require any degree of invention.

(2) The Hearing Officer described the inventive concept in the present case in the following terms:[34]

> "Both parties agreed that the inventive concept of the '719 and '951 Patents is the formation of a sugar-based binder characterised by the inclusion of an acid precursor derivable from an inorganic salt, and that the technical difference between D3 and the patents is the use of an organic acid (specifically triammonium citrate) in D3 compared to the use of an inorganic acid (specifically acids based on sulphate, phosphate or nitrate salts) in the patents in suit."

Thus, in this paragraph, the Hearing Officer addressed the two questions set out in paragraph 23(1)(a) and (b) above.

(3) The Hearing Officer then proceeded to consider the third question, that set out in paragraph 23(1)(c) above.[35] He specifically considered the extent to which the person skilled in the art would be motivated to try the use of different acids in order to improve upon the invention taught in D3. He accepted that the skilled person would be directed not merely to D3 (the prior art described in paragraph 5(2) above) but also to documents cross-referenced in D3. In particular, this would have included a document referred to by the parties as **D10** (which label I also use). D10 is a document specifically referenced in D3. D10 is an article in a 1953 edition of the journal *Agricultural and Food Chemistry* by a John Hodge entitled "Dehydrated Foods: Chemistry of Browning Reactions in Model Systems".

(4) The Hearing Officer concluded as follows:

> "69. As I have set out above, it is my view that the person skilled in the art is one who is interested in the development of binders in the field of mineral wool insulation manufacture. They would have knowledge of the Maillard reaction but not the detailed level of knowledge and understanding as pleaded by [Rockwool]. The inventive concept of the '719 and '951 Patents is the formation of a sugar-based binder characterised by the inclusion of an acid precursor derivable from an inorganic salt where the acid precursor comprises a sulphate, phosphate or nitrate group. The difference between this and the prior art (D3) is that the prior art binder comprises an organic acid precursor, most commonly a polycarboxylic acid (in particular a citric acid -triammonium citrate).

[34] Decision at [58].

[35] Decision at [60]*ff*.

> 70. [Rockwool] put forward well-reasoned, coherent and detailed arguments for why it would be obvious to substitute citrate with phosphate or sulphate. However, their arguments are based on the starting point that the common general knowledge includes detailed understanding of the Maillard reaction. In my view, the skilled person lacks the detailed understanding required by [Rockwool's] line of argument. Therefore, I consider it unlikely that the skilled person, in the absence of a deep and detailed knowledge of the Maillard reaction would find it obvious to try alternative acids beyond those suggested in D3 (as summarised, for example, in Figure 1). The fact that ammonium sulphates and ammonium phosphates are known to work as curing agents and that ammonium sulphate is the curing agent used in the phenolformaldehyde binders is not a convincing argument in my view because the chemistry involved in the present formaldehyde free-binders is different to that of the prior art formaldehyde containing binders.
>
> 71. Taking all of this into account, I find that the claims of the '719 and '951 Patents as they have been proposed to be amended are inventive over the disclosure of D3."

(3) Rockwool's contentions on appeal

24. On appeal it was Rockwool's contention that the Hearing Officer failed properly to understand the nature of Rockwool's case. According to Rockwool, it was not Rockwool's case that a detailed knowledge of the Maillard reaction was part of the common general knowledge of the person skilled in the art. Rather, Rockwool was contending that the person skilled in the art would have derived sufficient knowledge from the prior art – and in particular D3 and D10 – so as to render the Patents non-inventive.

25. I am in some doubt as to whether it can fairly be said that it was no part of Rockwool's case that a detailed knowledge of the Maillard reaction was part of the common general knowledge of the person skilled in the art. Rockwool's written submissions to the Hearing Officer contain detailed submissions as to what the person skilled in the art would have known, as part of his or her common general knowledge, about the Maillard reaction, as does Johansson 1.[36] It seems to me that the Hearing Officer's characterisation of the evidence and submissions of Rockwool in [35] of the Decision was fair,[37] and that he was obliged to reach a view on this evidence and these submissions, which he did at [70] of the Decision. In short, there was no error by the Hearing Officer in this regard.

26. However, the fact that the Hearing Officer was right to conclude that detailed knowledge of the Maillard reaction was not part of the common general knowledge – and this was not challenged on appeal – says nothing about what the person skilled in the art would have derived from the prior art. The essence of Ground 1 is that the Hearing Officer failed

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[36] See paragraphs 73*ff* of Johansson 1.

[37] In the Decision at [35], the Hearing Officer stated:

> "Based on Ms Johhansson's evidence, [Rockwool] argued that, at the priority date, the skilled team would have advanced knowledge of binder formulations and typical compositions. They would also have a detailed knowledge of the Maillard reaction due to it being used in the field of binders. The skilled team would be aware of the origins of the Maillard reaction in food chemistry but also of its more recent use in the formation of binders. Indeed, D3 incorporates by reference prior art documents providing detailed descriptions of the Maillard reaction."

to pay proper regard to the teaching in D3 and D10. Had he done so, *pace* Rockwool, he would have had to hold that the Patents disclosed no inventive step.[38]

27. I consider Ground 1 to be hopeless, and therefore to be dismissed, for the following reasons:

(1) It was common ground before the Hearing Officer that the inventive concept of the Patents was that whereas D3 taught that a sugar-based binder was derivable (amongst other things) from an organic acid, the Patents taught that a similar binder was derivable from an inorganic acid.[39]

(2) In these circumstances, the question must be whether this inventive concept was not, in fact, inventive, because it had in fact been disclosed by D3. Clearly, the Hearing Officer, having considered the terms of D3, concluded that the inventive concept claimed by the Patents was not taught by D3. In short, the Hearing Officer resolved the question I have set out in paragraph 5(6) above in Knauf's favour. That, at least in the first instance, is a question that I should be slow to interfere with.[40] But, moreover, this is a conclusion that is clearly correct when considering the terms of D3:

(a) I have described the Maillard reactants in paragraph 5(3) above as comprising a sugar and an amino acid. Amino acids are organic compounds.

(b) D3 refers frequently to the Maillard reactants – which is unsurprising – and to the acid element as being an "amine (i.e. amino) reactant".

(c) It is true that the summary section of D3 contains the following passage:

> "With respect to the present binder's chemical constitutents, they may include ester and/or polyester compounds. The binders may include ester and/or polyester compounds in combination with a vegetable oil, suc as soybean oil. Furthermore, te binders may include ester and/or polyester compounds in combination with sodium salts of organic acids. The binders may include solium salts of inorganic acids. The binders may also include potassium salts of organic acids. Moreover, the binders may include potassium salts of inorganic acids. The described binders may include ester and/or polyester compounds in combination with a clay additive, such as montmorillonite."

Rockwool relied on this passage, and one can see why, given the references to inorganic acids. However, it is clear from the terms of this passage that – at this point – D3 is not describing the Maillard reactants, but merely the sort of chemicals to be found in binders.

(3) Thus, considering the terms of D3 itself, the Hearing Officer had to decide whether the use of an inorganic acid – as opposed to the use of an organic acid – to produce

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[38] Knauf suggested – paragraph 30 of Knauf's written appeal submissions – that it had never been pleaded before the Hearing Officer that D10 provided sufficient material as to obviousness. I do not propose to consider such pleading points, but will focus on the substance.

[39] See, in particular, [58] of the Decision, quoted in paragraph 23(2) above.

[40] See paragraph 13(1) above.

a binder was obvious from D3. The Hearing Officer rightly concluded that it was not. The Hearing Officer specifically considered the terms of D3[41] and concluded that this was not so taught:

> "64. …The question is whether the improvement made in the '719 and '951 Patents is an obvious one or not. In [Knauf's] view, [Rockwool's] arguments for the substitution of triammonium citrate with a sulphate, phosphate or nitrate salt are driven entirely by hindsight.
>
> 65. [Knauf] argues the because the skilled person does not have detailed knowledge or understanding of the Maillard reaction, they would not consider changing the examples given in D3 and use different acids to the citric acid when they don't know if they will work. They argue that [Rockwool's] pleading relies on combining information about the Maillard reaction from prior art from the very different field of food science.
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> 66. Even if the skilled person did consider changing the reactants in the examples of D3, they would not consider a phosphate or sulphate. D3 provides alternative amine components to try, as shown in figure 1, which include proteins, peptides, amino acids and some polycarboxylates. However, D3 does not include phosphates and sulphates in the range of reactants to try. The only alternative to triammonium citrate is another polycarboxylic acid. While D3 makes mention of using inorganic salts, these are present as corrosion inhibitors at a maximum concentration of 2%, not as a reactant as is the case in the '719 and '951 Patent Claims (as proposed to be amended)."

(4) In these circumstances, it is impossible to see what D10 can add. D10 was, of course, known to D3: indeed, D10 was specifically referred to in D3. D10 clearly did not obviously disclose that inorganic as well as organic acids could be used to create binders, because D10 did not concern binders at all, but the browning reactions in food. In these circumstances, it is very difficult to see how D10 – not having influenced D3 in this regard – can support an obviousness argument in the context of the Patents.

(5) In short, the Hearing Officer reached the correct conclusion, and his decision is not one that I can or should interfere with. As Knauf put it in its written appeal submissions:[42]

> "…the biggest difficulty facing Rockwool was this. There was no suggestion in D3 whatever that an inorganic salt could be used in place of the polycarboxylate taught by D3. Therefore, for the invention to be obvious, the idea to use an inorganic salt had to come from the skilled person's [common general knowledge]".

28. Given my conclusions regarding the information imparted by D3 and D10 (and any other prior art) to the person skilled in the art, and given the uncontested findings of the Hearing Officer regarding common general knowledge, Ground 1 must be dismissed.

[41] See [60] to [62] of the Decision.

[42] At paragraph 21.

F. GROUNDS 2 AND 3

29. Grounds 2 and 3 are appropriately considered together. They both concern the breadth of the '951 Patent, and the contention that the Hearing Officer erred in failing to take this into account in the Decision. Grounds 2 and 3 are expanded upon in paragraphs 54 to 65 of Rockwool's written appeal submissions.

30. These Grounds are based upon the difference in the breadth of the claims in the two Patents. This was a difference that was not articulated by Rockwool before the Hearing Officer. At [9] of the Decision, the Hearing Officer notes:

> "At the hearing, [Rockwool] set out the view that if their case failed in relation to the '719 Patent, i.e. if I found the '719 Patent to be novel and inventive, then the same would be true of the '951 Patent. [Knauf] agreed with this view and, indeed, all of the arguments put before me at the hearing by both parties related to the '719 Patent."

Grounds 2 and 3 raise a point that is inconsistent with the way in which the case was put before the Hearing Officer. In other words, these are points that were not merely not made before the Hearing Officer, they are points which positively fly in the face of the contentions made by Rockwool. In these circumstances, I have grave doubts as to whether these are grounds of appeal that can properly be advanced by Rockwool.

31. This is not, however, a matter that I need resolve, because it is clear that the concession made by Rockwool before the Hearing Officer and recorded by him in [9] of the Decision was rightly made, and Grounds 2 and 3 are untenable.

32. It is accepted by Knauf that the claims of '951 Patent are different to, and wider than, the claims of the '719 Patent. However, Knauf contends that this is a difference of no significance and I consider that contention to be correct. The invention described in both Patents is the same, and the difference in the scope of the claims does not – on the facts of this case – signify. As Knauf put it in paragraph 38 of its written appeal submissions:

> "Rockwool had no case or argument that there were any salts, outside those upon which it relied in relation to '719, which might be obvious to use. Thus, the Hearing Officer did not need to consider obviousness of '951 separately. If Rockwool failed to show that '719 was obvious, there was no basis in Rockwool's case on which it might be said that '951 was obvious."

33. For these reasons, Grounds 2 and 3 are dismissed.

G. CONSIDERATION OF GROUND 4 POSTPONED

34. Ground 4 contends that the reasons of the Hearing Officer in certain parts of the Decision are insufficient. This insufficiency of reasons relates to the arguments that Rockwool made in relation to added matter and plausibility. Rockwool appeals (or, in the case of Ground 5, did once appeal) the substantive findings of the Hearing Officer both in relation to added matter (Ground 5) and plausibility (Grounds 6 and 7).

35. It is, in my judgment, more appropriate and clearer to consider the substance of the Hearing Officer's decisions before considering the terms in which those decisions were expressed, including in particular whether the reasons given were sufficient.

36. Although – as I have noted – Ground 5 was not pursued by Rockwool at the hearing of the appeal before me, it does seem to me that I need to consider – even if briefly – the substance of Ground 5 in order properly to be able to deal with Ground 4. Fortunately, although Ground 5 was not argued before me at the hearing, both parties addressed the point in their written appeal submissions.

H. GROUND 5

37. "Added matter" refers to new information which the person skilled in the art would learn on reading the patent, which that person would not learn from reading the application as filed.[43] As Kitchin LJ put it:[44]

> "Ultimately the key question is once again whether the amendment presents the skilled person with new information about the invention which is not directly and unambiguously apparent from the original disclosure. If it does then the amendment is not permissible."

38. Rockwool contended that the claims of the '951 Patent contained added matter. This contention appears to have been factually incorrect. Knauf's response in its written appeal submissions was as follows:[45]

> "The complaint appears to be that the claims of '951 are too broad, in as much as they claim the use of any inorganic ammonium salt. This is not new information: it is disclosed in the application (UK Patent Application 2496951A) on page 2 at lines 12-28. So there is nothing in this point."

39. Because Ground 5 was not pressed, I make no ruling in relation to it. Had it been, on the submissions that I have read and considered, I would have dismissed this Ground.

I. GROUNDS 6 AND 7

(1) Introduction

40. Grounds 6 and 7 – which are said by Rockwool to relate to "plausibility" – are appropriately considered together. I shall begin with a brief explanation of plausibility before proceeding to consider the contentions of the parties and the grounds of appeal.

(2) Plausibility

41. Both parties referred me to the law as stated by Lord Sumption in *Warner-Lambert Co LLC v. Generics (UK) Ltd*.[46] That statement of the law was elucidated by Arnold J in *Eli Lilly and Company v. Genentech Inc*.[47] For present purposes, it only necessary to set out Lord Sumption's explanation of plausibility at [37] of *Warner-Lambert*:[48]

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[43] *Nokia Corp v. IPCom GmbH & Co KG (No 3)*, [2012] EWCA Civ 567 at [46] to [60].

[44] At [60].

[45] At paragraph 41.

[46] [2018] UKSC 56.

[47] [2019] EWHC 387 (Pat) at [523] to [531].

[48] I am quoting from the passage quoted by Arnold J at [528] of *Eli Lilly*. Arnold J helpfully inserted emphases and line breaks into the passage.

"Plausibility is not a term of art, and its content is inevitably influenced by the legal context. In the present context, the following points should be made.

First, the proposition that a product is efficacious for the treatment of a given condition must be plausible.

Second , it is not made plausible by a bare assertion to that effect, and the disclosure of a mere possibility that it will work is no better than a bare assertion…

But, **third**, the claimed therapeutic effect may well be rendered plausible by a specification showing that something was worth trying for a reason, ie not just because there was an abstract possibility that it would work but because reasonable scientific grounds were disclosed for expecting that it might well work. The disclosure of those grounds marks the difference between a speculation and a contribution to the art. This is in substance what the Technical Board of Appeal has held in the context of article 56, when addressing the sufficiency of disclosure made in support of claims extending beyond the teaching of the patent. In my opinion, there is no reason to apply a lower standard of plausibility when the sufficiency of disclosure arises in the context of EPC articles 83 and 84 and their analogues in section 14 of the Patents Act. In both contexts, the test has the same purpose.

Fourth , although the disclosure need not definitively prove the assertion that the product works for the designated purpose, there must be something that would cause the skilled person to think that there was a reasonable prospect that the assertion would prove to be true.

Fifth, that reasonable prospect must be based on what the TBA in SALK (para 9) called "a direct effect on a metabolic mechanism specifically involved in the disease, this mechanism being either known from the prior art or demonstrated in the patent per se."

Sixth, in SALK, this point was made in the context of experimental data. But the effect on the disease process need not necessarily be demonstrated by experimental data. It can be demonstrated by *a priori* reasoning. For example, and it is no more than an example, the specification may point to some property of the product which would lead the skilled person to expect that it might well produce the claimed therapeutic effect; or to some unifying principle that relates the product or the proposed use to something else which would suggest as much to the skilled person.

Seventh, sufficiency is a characteristic of the disclosure, and these matters must appear from the patent. The disclosure may be supplemented or explained by the common general knowledge of the skilled person. But it is not enough that the patentee can prove that the product can reasonably be expected to work in the designated use, if the skilled person would not derive this from the teaching of the patent."

(3) The manner in which plausibility came before the Hearing Officer

42. Plausibility – and for that matter, added matter – came into the case not by way of pleading, but in a document dated 6 March 2019 entitled "Supplemental Grounds for the Revocation of [the Patents]" (the **Supplemental Grounds**). This was only days before the hearing itself, which took place on 11 March 2019. The Supplemental Grounds were, ostensibly, in response to the amendments made to the claims in the Patents, which I have described in paragraph 7 above.

43. Paragraphs 46 to 51 of the Supplemental Grounds introduce the question of plausibility,[49] which is an aspect of the sufficiency or insufficiency of a patent.[50] The point was introduced by Rockwool in the following way:[51]

> "[Rockwool] is aware that questions such as sufficiency and plausibility are something that the IPO needs to be satisfied with in light of the requirement that the IPO only grants proper amendments. [Rockwool] therefore merely raises these issues by way of assistance."

44. This was a somewhat self-serving way of seeking to bring points of objection to the Patents before the Hearing Officer without pleading them. An attempt to plead – so shortly before the hearing – would inevitably have resulted in an adjournment. Essentially, Rockwool was deploying the IPO's duty to be satisfied as to the propriety of the proposed amendments as a means of adding to its case against the Patents.

45. This, as it seems to me, is highly significant when it comes to considering Grounds 6 and 7, as well as the terms in which the Decision was ultimately framed. In my judgment, the plausibility point raised by Rockwool cannot be regarded as a properly articulated objection to the Patents or any part of them. That is for the following reasons:

(1) The point was never pleaded. This is not an idle, technical, point. The whole point of a pleading is to enable the other parties, and the court, to understand the point in issue, so that the point may be properly dealt with.

(2) Here, the plausibility point is not merely made in a very unparticular way, it was also made very late – as I have said, a matter of days before the hearing. As a result, Knauf was unable to adduce evidence in response. In its written submissions to the Hearing Officer, Knauf stated:[52]

> "…Rockwool has never pleaded any allegation of lack of plausibility against the granted patent; and a narrowing amendment cannot by its nature create any lack of plausibility. Rockwool should certainly not be allowed to advance an unpleaded plausibility objection (or any other insufficiency objection) at this late stage, after the evidence rounds have been completed."

(3) The point about the importance of evidence was made by counsel for Knauf at the hearing itself:[53]

> "…plausibility is a very low threshold. It is not fair expectation of success. That is a completely different test. All the patent needs to do is to make it credible in some way that the invention will work. The application as filed for both patents and then the patents themselves provide experimental support for the claim that the use of inorganic ammonium salts, ammonium sulphate and ammonium phosphate have at least equivalent and indeed improved properties compared to the binder of D3, so you have seen the experiments' results, both sulphate and phosphate.

[49] Paragraphs 52 to 56 are the basis for Rockwool's added matter contention, which became Ground 5 of the appeal, until abandoned.

[50] See *Terrell*, chapter 13, section 5.

[51] At paragraph 47 of the Supplemental Grounds.

[52] At paragraph 76.

[53] Transcript at pp.132-133.

> I think my friend was saying that the shell bone test should not be allowed to count for some reason. I cannot think of a better example of a point where you would have expert evidence to say that people in the field use shell bone experiments and we rely on these because they are quick and dirty and they provide a useful guide. That is absolutely the sort of thing you would provide evidence on. What you absolutely cannot do, in my respectful submission, is find against my client on that basis when they have not put in that evidence because they did not have notice of it."
>
> Without evidence, the Hearing Officer could not possibly reach any view as to the plausibility conferred by tests like the shell bone test.

46. There are two important points that need to be borne in mind when considering Grounds 6 and 7:

(1) First, that plausibility is not a particularly high standard. As Lord Sumption noted as his fourth point in *Warner-Lambert*:

> "…although the disclosure need not definitively prove the assertion that the product works for the designated purpose, there must be something that would cause the skilled person to think that there was a reasonable prospect that the assertion would prove to be true."

(2) Secondly, and relatedly, evidence is essential in order to establish whether the invention claimed in a patent is plausible or not. Whilst it is no doubt possible, in an extreme case, to ascertain whether a patent contains so little information as to be self-evidently implausible, the vast majority of cases will require the attack on plausibility to be articulated clearly and supported by evidence.

(4) The grounds of appeal

47. I turn, then, to the grounds of appeal. Ground 6 is said to be based on paragraph 7 of the Grounds of Appeal.[54] Yet paragraph 7 – which I have set out in paragraph 9(6) above – actually relates to added matter (and is said to support Ground 5 also[55]) and not plausibility. Ground 7 is similarly vague as to its relationship with the Grounds of Appeal.[56]

48. This is no mere technical point. It is clear that the lack of specificity in the grounds of appeal is directly related to the informal manner in which the question of plausibility was raised by Rockwool.

49. Rockwool's written appeal submissions are redolent with suggestions that the plausibility of the '951 Patent is unsupported by evidence. This is misdirection of the highest order. There was no evidence: none from Rockwool, because the point was raised informally, unsupported by any evidence from Rockwool, and late; and none from Knauf because, even if Knauf had wanted to put in evidence, there was not time for it to do so.

50. Knauf's written appeal submissions contend that the plausibility point should be rejected for the following reasons:

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[54] See paragraph 9(6) above.

[55] See paragraph 9(5) above.

[56] See paragraph 9(7) above.

> "45. **First**, it is entirely unpleaded. The point came into the case via a document filed by Rockwool 5 days before the hearing (and long after the evidence had closed) entitled "Supplemental Grounds". It was agreed at the hearing that the Hearing Officer would rule on the admissibility of this document within his substantive Decision. The Hearing Officer decided to admit the document at [76]; he then considered the points in it on their merits, and dismissed them.
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> 46. One can well understand why the Hearing Officer, who felt able to reject all the new points on the merits, preferred to do that, rather than send the points off on a technicality. But a point on sufficiency/plausibility requires evidence and (if the point had the slightest force) would have required evidence from the patentee to rebut it. It would certainly have been a gross procedural unfairness if the Hearing Officer had upheld the point, given the lack of opportunity for Knauf to adduce evidence on it. The Hearing Officer should therefore not have permitted the new ground to be run and Grounds 6 and 7 should be rejected on that basis.
>
> 47. **Second**, the point is meritless on the face of the Patent. The '951 Patent provides experimental support for the claim that the use of inorganic ammonium salts have at least equivalent properties compared to the binder of D3. The first series of tests and data (page 8 line 12 – top of page 11) relate to both ammonium sulphate and ammonium phosphate. The subsequent series of tests and data (page 11 line 3 – page 14 line 6) relate to ammonium sulphate. It is a fair assumption from that data that inorganic ammonium salts generally will work – no-one has ever pointed to thinking that if both ammonium sulphate and ammonium phosphate work, any other such salt will not work. This satisfies the requirement for plausibility as summarised above.
>
> 48. **Third**, there is no evidence from Rockwool, who bears the burden, to contradict the foregoing (Rockwool only came up with the point after the evidence had closed). Insufficiency is a question of fact, and in the absence of evidence in support it must fail. (If Rockwool contends that Knauf ought to bear any sort of evidential burden on this point, such contention would be fatal to any argument that it should have been allowed to advance the point before the Hearing Officer.)"

51. I substantially agree with these submissions. In my judgment, Grounds 6 and 7 must be dismissed for the following reasons:

(1) The issue of plausibility was never pleaded and was not properly before the Hearing Officer as a ground for revoking the Patents or either of them. The only proper basis for raising this issue was – as Rockwool stated in the Supplementary Grounds – in order that obviously defective amendments should not be granted.

(2) In short, the only basis on which the Hearing Officer could properly consider plausibility was to satisfy himself that, on their face, the amendments to the Patents were not so obviously defective on the ground of plausibility that they could not be permitted.

(3) In its Respondent's Notice, Knauf makes the point that the Decision can also be upheld on the basis that the Hearing Officer should not have entertained the additional points advanced by Rockpool in the Supplementary Grounds. It is not clear to me that the Hearing Officer went any further than satisfying himself that the amendments were not obviously, on their face, implausible. Certainly, that explains the brief way in which this point was addressed in the Decision, something that I consider in greater detail below in relation to Ground 4.

(4) If, however, the Hearing Officer did entertain the plausibility point as a substantive ground on which the Patents – or the amendments to them – might be revoked, then he fell into error. It would have been procedurally entirely improper for him to decide a question of plausibility that was not "open and shut" (in the sense described in paragraph 51(2) above) without ensuring that the point was properly before him and that Knauf, in particular, had had the opportunity to respond.

J. GROUND 4

52. Judgments should contain reasons for the holdings and findings that they make, and whilst it is the duty of counsel – when receiving a judgment in draft – to draw to the judge's attention any deficiency in this regard, at the end of the day the judgment is the judge's responsibility and if the judge's reasoning does not sufficiently appear from the judgment, then the judgment may (as a last resort) be set aside and the matter tried again.[57]

53. In this case, the Hearing Officer's reasoning in relation to added matter and plausibility is extremely short, even perfunctory. The operative paragraphs are [81] and [82]:

> "81. The amended claims before me have been referred to an IPO examiner for a *prima facie* view on their allowability. I have had the benefit of their reports, which confirm their *prima facie* view that the amendments do not add matter or extend the scope of protection conferred by the patents.
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> 82. Having considered all the information before me, I am satisfied that the claims as granted and as amended do not add matter nor do they extend the scope of protection conferred by the Patents. I am also satisfied that the Patents sufficiently disclose the inventions across the whole scope of the amended claims."

54. In addition to criticising the absence of reasons, Rockwool contended that the Hearing Officer relied on reports of an IPO examiner which Rockwool had had no opportunity to address.

55. Both points would have been well-made had the issues of added matter and plausibility properly been before the Hearing Officer. But, for the reasons I have given, they were not. Given that the Hearing Officer dealt clearly and fully with the points that were properly before him, in stark contrast to these paragraphs, I consider that all the Hearing Officer was doing in these paragraphs was satisfying himself as to sufficiency and plausibility. He was not dealing with points Rockwool were advancing as a litigant: he was merely doing what Rockwool had invited him to do in paragraph 47 of the Supplemental Grounds, which I have set out in paragraph 43 above: that is, to satisfy himself that the amendments were not obviously improper.

K. DISPOSITION

56. For these reasons, Rockwool's appeal is dismissed.

[57] *Simetra Global Assets Ltd v. Ikon Finance Ltd*, [2019] EWCA Civ 1413.