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Datasheet for the decision of 24 June 2025

Case Number: T 2387/22 - 3.3.06

Application Number: 16751059.3

Publication Number: 3325559

IPC: C09C1/24, C09C1/62

Language of the proceedings: EN

Title of invention:
DISPERSANT EFFECT ON ALUMINUM PIGMENTS

Patent Proprietor:
Sun Chemical Corporation

Opponents:
1.Schlenk Metallic Pigments GmbH
2.ECKART GmbH

Headword:
Sun Chemical/VMP pigments

Relevant legal provisions:
EPC Art. 56, 84, 123(2)

Keyword:
Inventive step - (no)
Claims - clarity - auxiliary request (no)
Amendments - extension beyond the content of the application as filed (yes)

Decisions cited:
G 0002/88, G 0006/88, T 0728/98, T 0056/04, T 1193/18, T 0869/20, G 0001/24

Catchword:
Where a claimed invention is defined by the use of a known entity to achieve a known technical effect or purpose, and the alleged technical contribution of the invention resides in a relative improvement or enhancement of that effect or purpose, the requirement of clarity under Article 84 EPC generally demands that the feature defining such relative improvement or enhancement be expressed in objectively verifiable terms, thereby ensuring legal certainty regarding the scope of protection.

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Case Number: T 2387/22 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 24 June 2025

Appellant: (Opponent 1)	Schlenk Metallic Pigments GmbH Barnsdorfer Hauptstrasse 5 91154 Roth - Barnsdorf (DE)
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Appellant: (Opponent 2)	ECKART GmbH Güntersthal 4 91235 Hartenstein (DE)
Representative:	Strych, Sebastian Mitscherlich PartmbB Patent- und Rechtsanwälte Karlstraße 7 80333 München (DE)
Respondent: (Patent Proprietor)	Sun Chemical Corporation 35 Waterview Boulevard Parsippany, NJ 07054-1285 (US)
Representative:	Carpmaels & Ransford LLP One Southampton Row London WC1B 5HA (GB)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 5 September 2022 concerning maintenance of the European Patent No. 3325559 in amended form.**

Composition of the Board:

Chairman	J.-M. Schwaller
Members:	S. Arrojo
	O. Loizou

Summary of Facts and Submissions

I. Appeals were filed by both opponents against the decision of the opposition division to maintain European patent No. 3 325 559 in amended form on the basis of the claims according to auxiliary request 1 filed during oral proceedings on 8 June 2022, wherein claim 1 reads:

"1. *A VMP pigment slurry comprising:*
a. one or more VMP pigments,
b. one or more solvents, wherein the solvent is selected from the group consisting of esters, alcohol and blends thereof, wherein the ester solvent is selected from the group consisting of methyl acetate, ethyl acetate, n-propyl acetate, 1-propyl acetate, isopropyl acetate, n-butyl acetate, isobutyl acetate, sec-butyl acetate, tert-butyl acetate, ethyl butyrate, ethyl lactate, hexyl acetate, isoamyl acetate, methyl propionate, and mixtures and blends thereof, and wherein the alcohol solvent is selected from the group consisting of methanol, ethanol, n-propanol, 1-propanol, isopropanol, n-butanol, 1-butanol, 2-butanol, isobutanol, tert-butanol, benzyl alcohol, ethylene glycol, diethylene glycol, 2-ethylhexanol, glycerol, methyl carbitol, 2-methyl-1-butanol, 3-methyl-2-butanol, 1,2-propanediol, 1,3-propane diol, propylene glycol, propylene glycol mono-n-propyl ether, propylene glycol mono-n-butyl ether, propylene glycol mono-t-butyl ether, propylene glycol monophenyl ether, dipropylene glycol monomethyl ether, dipropylene glycol monomethyl ether acetate, dipropylene glycol dimethyl ether, dipropylene glycol mono-n-butyl ether, dipropylene glycol mono-t-butyl ether, dipropylene glycol mono-n-propyl ether, tripropylene glycol

monomethyl ether, tripropylene glycol mono-n-propyl ether, tripropylene glycol mono-n-butyl ether and mixtures and blends thereof,

c. one or more dispersing additives represented by the following equation:

$$A_lB_mX_nR_p \text{ (equation 1)}$$

where A is an optional conjugate acid to a moiety B, that has a negative charge or a lone pair of electrons; R is a tail group that aids in dispersion; X is a linker that covalently connects moiety B to tail group R; l is the number of conjugate acid A and is equal to the valency of moiety B times the number m, of moiety B divided by the valency of the conjugate acid; n is the number of linker molecules X; and p is the number of tail groups R; A is any cationic species selected from H^+, Li^+, Na^+, K^+, Rb^+, Cs^+, Ag^+, Cu^+, $NH4^+$, $(CH_3)_4N^+$, Mg^{2+}, Ca^{2+}, Sr^{2+}, Ba^{2+}, Zn^{2+}, Cd^{2+}, Co^{2+}, Cu^{2+}, Fe^{2+}, Mn^{2+}, Ni^{2+}, Sn^{2+}, Hg^{2+}, Pb^{2+}, Al^{3+}, Cr^{3+}, Fe^{3+} *or mixtures thereof; moiety B is selected from primary aliphatic amines, primary aromatic amine, secondary amines, tertiary amines, alcohol, ketone, carboxylates, phosphate, phosphite, sulfate, sulfite, hydroxyl, or nitro groups; tail group R is a linear, branched, or dendritic polymer chain with a molecular weight in the range of 100 g/mol to 5,000,000 g/mol selected from poly(ethylene), poly(propylene), poly(butylene), poly(isobutylene), poly(isoprene), poly(acetal), poly(ethylene glycol), poly(propylene glycol), poly(butylene glycol), poly(methylmethacrylate), poly(dimethylsiloxane), poly(vinylalcohol), poly(styrene), poly(maleic anhydride), poly(ethylmethacrylate), poly(isobutylmethacrylate), poly(methacrylate), poly(butylmethacrylate), poly(n-butylmethacrylate), poly(vinyl butyrate), poly(vinyl chloride), polysiloxane, and mixtures or random, block, or alternating copolymers thereof; linker X is either a*

small molecule selected from C1-C20 alkyl groups, arylene, alkylarylene, arylalkylene, alkylineamino, alkylineimino, alkyleneoxyalkylene, aryleneoxy, aryleneoxyalkylene, oxaalkylene, oxyalkylene, dioxy alkylene, oxyarylene, or heterocycle, or a polymer."

II. Opponent 1 argued that the claims as upheld by the opposition division did not meet the requirements of Articles 123(2) and 83 EPC and that their subject-matter was not inventive over D2 alone or in combination with D4, D12a or D6; D4 alone or in combination with D2, D12a or D6; D7 combined with D2, D4, D8 or D9. It also submitted documents D24 (hereinafter D24a), D25 and D26.

III. Opponent 2 argued that the claims as upheld by the opposition division did not meet the requirements of Articles 123(2) and 83 EPC and did not involve an inventive step starting from D2, D4 or D7 as the closest prior art. Furthermore, the claims according to auxiliary requests 4 to 17 (corresponding to auxiliary requests 1 to 14 at issue) extended beyond the content of the application as filed, were insufficiently disclosed and not inventive. Further, the claims according to auxiliary requests 4, 5, 7, 8, 10 to 17 filed during first instance proceedings (i.e. auxiliary requests 1, 2, 4, 5 and 7 to 14 at issue) lacked clarity and auxiliary requests 12, 15 and 16 (i.e. auxiliary requests 9, 12 and 13 at issue) lacked novelty. It also submitted documents D24, D25, D26, D27 and D28 (hereinafter D24b, D27, D28, D29 and D30).

IV. With its reply dated 23 May 2023, the proprietor and respondent requested that the appeals be dismissed (main request) or, as an auxiliary measure, that the patent be maintained in amended form on the basis of

the claims according to one of auxiliary requests 1 to 16, wherein auxiliary requests 1 to 14 correspond to auxiliary requests 4 to 17 filed during first instance proceedings and auxiliary requests 15 and 16 were filed for the first time with this reply. Furthermore, the documents filed by the opponents for the first time at the appeal stage should not be admitted into the proceedings. The respondent also submitted documents D31 and D32 as an annex to the reply.

V. With a submission dated 23 November 2023, opponent 1 requested that D31 and D32 and auxiliary requests 2 to 14 as well as the newly filed auxiliary requests 15 and 16 not be admitted into the appeal proceedings. Moreover, it raised objections under Articles 83, 84, 123(2), 54 and 56 EPC against auxiliary requests 1 to 16.

VI. On 12 December 2023, opponent 2 withdrew its appeal.

VII. In its preliminary opinion, the board argued that claim 1 of the main request and auxiliary requests 1 to 8 appeared to lack an inventive step over D2 alone, claim 1 of auxiliary request 9 was not novel over D10, claim 1 of auxiliary requests 10 and 11 was not inventive over D2 and D10, claim 1 of auxiliary request 12 was not novel over D10 and claim 1 of auxiliary requests 13 and 14 lacked an inventive step over D2 and D10. Furthermore, auxiliary requests 15 and 16 should not be admitted into the appeal proceedings.

VIII. At the oral proceedings, which took place on 24 June 2025, the proprietor withdrew auxiliary requests 15 and 16, so the final requests of the parties were as follows:

Appellant/opponent 1 requested that the decision under appeal be set aside and that the patent be revoked.

Patentee and respondent requested that the appeal be dismissed or, as an auxiliary measure, that the patent be maintained in amended form on the basis of one of auxiliary requests 1 to 14 filed with the reply.

Reasons for the Decision

1. Main request - Inventive step

The board has concluded that the requirements of Article 56 EPC are not met for the following reasons:

1.1 Closest prior art

1.1.1 Document D2 discloses (see par. [0012]) aluminium effect pigments preferably used in ink jet printing applications to provide a metallic appearance and a reduced tendency to agglomerate when prepared. Said pigments have a platelet-like form which creates a mirror-like reflection as long as the d_{50} is not reduced below 1 micron (see par. [0037]). The pigment preparations comprise an aluminium pigment, a solvent and at least a phosphorous-containing additive (see par. [0013]). The pigments can be produced by wet milling (see par. [0032]) or by Physical Vapour Deposition (hereinafter "PVD") and subsequent comminuting (i.e. milling) (see pars. [0034]-[0035]), which entails (see par. [0018]) gently mixing the different components and comminuting them in a way which prevents impairing the optical properties of the pigments. Particularly useful additives are (see par. [0113]) Disperbyk 102, 106, 111, 180, 190, 191 and 192, wherein at least Disperbyk 111 and 180 fall within the

scope of the invention, since presented as preferred additives in par. [0034] of the contested patent.

Example 2 of D2 proposes a PVD pigment obtained by mixing and milling a composition including "Metalure ® L 55700" and the additive Disperbyk 180 to a d_{100} of less than 8 microns. The solvent used in the Metalure pigment is "Methoxypropanol/Ektasolve PM acetate" (see table on page 4 of D12a), which falls within the scope of "propylene glycol monomethyl ether acetate", an alternative defined in claim 12 as granted but no longer defined in the claims at issue.

1.1.2 The opposition division argued that D2 was not a suitable starting point, because the pigments disclosed therein did not qualify as Vacuum Metallised Pigments (hereinafter "VMP") in the sense of claim 1. A VMP was namely a term that specifically referred to platelet-shaped pigments that were particularly thin (5-50 nm according to par. [0001] of the patent) and smooth. The concept of PVD was actually broader and encompassed other types of pigments (see D31). Although the "Metalure" pigment used in example 2 of D2 qualified as a VMP, it was only an intermediate product that was subsequently ball-milled, a process which would inevitably damage the surface of the pigment and its optical properties (see page 33 of D32), so the final product did not fall within the scope of a VMP pigment. Even though D2 taught (see par. [0155]) that the platelet structure of the pigment had to be preserved during the milling process, the mirror-like effects were only maintained when the d_{50} was 1 micron or higher (see par. [0037]). Since example 2 only specified that the d_{100} was smaller than 8 microns, it could not be concluded that the final product in this

example had a d_{50} larger than 1 micron and maintained the VMP properties of the initial pigment.

1.1.3 The proprietor further argued that the skilled person would not select the PVD pigment in example 2 of D2 as the closest prior art, because according to par. [0036] of D2, wet-milled or pearl-milled pigments were more preferred than PVD pigments. In any case, since it was known that effect pigments were damaged by ball mills (see page 33 of D32 and page 4 of D12a), it was clear that the final product in Example 2 of D2 had been intentionally damaged and could not provide the mirror-like properties of the invention. Moreover, even though D2 taught that the mixing step should be carried out under mild conditions (see pars. [0018] and [0155]), a difference was established between the mixing step and the milling step, and there was no indication that the milling step should also be conducted in a way that would prevent damaging the pigment. D2 furthermore related to inkjet printing inks, which diverged from the main purpose of the underlying invention to develop flexographic printing inks. In fact, inkjet printing inks were known (see page 3, lines 32-33 of D10) to be unsuitable for flexographic applications.

1.1.4 The board disagrees with the above arguments for the following reasons:

A) It is undisputed that the term "VMP" refers to a pigment obtained by PVD processes under vacuum, which are characterised by producing platelet-shaped particles that are notably thin and smooth compared to those of wet-milled pigments, and which impart mirror-like reflective optical effects. It is equally undisputed that milling is regarded as a detrimental

process for this type of pigments, as it tends to damage the optical properties of the VMP pigment.

Notwithstanding, the board is not convinced that a VMP pigment stops qualifying as such simply for being exposed to steps that may negatively affect some of its optical properties.

The pigment in Example 2 of D2 is manufactured starting from the commercial products of the line "Metalure ®", which according to D24 qualify as VMP pigments. Contrary to the proprietor's allegations, this example does not disclose separate mixing and milling steps. Rather, all components of the mixture are directly introduced into the ball mill. Thus, mixing and milling can be regarded as being carried out simultaneously during the ball-milling process. The board therefore concludes that the clear teachings in pars. [0018] and [0155] to use mild conditions during the mixing process to avoid damaging the particles would be taken into account during the ball milling process in Example 2.

In this respect, it is also noted that even if the mixing and milling processes were carried out separately, it would be technically absurd to interpret the requirement to avoid damage to the optical properties as only applying to the mixing step. Firstly, avoiding damage in the mixing step would serve no logical purpose if damage was, in any case, caused by the milling process. Furthermore, intentionally damaging the mirror effect of the VMP would be contrary to the main object in D2, which is to achieve final products in the form of aluminium effect pigments with a platelet structure and superior optical mirror-like reflecting properties (see pars. [0012] and [0037]).

Even though the use of a mild milling process and the purpose not to damage the particles may not guarantee that the optical properties of the pigment remain unaffected, this does not imply that the resulting pigment would no longer fall within the scope of a VMP pigment. The invention defined in claim 1 at issue is namely not limited by any specific properties, so the concept of VMP must be interpreted broadly.

The omission of the d_{50} in Example 2 is also irrelevant for the question of whether the pigment would be regarded as a VMP, as it is clear - in view of the instructions in par. [0037] of D2 - that the skilled person would also adjust the milling process to ensure that the d_{50} remains within the required range to provide the desired mirror-like aluminium effect. This is confirmed by comparative example 8 of D10, which explicitly concerns the pigment of Example 2 of D2 (which refers to a European patent describing an identical example) and indicates that the d_{50} of this pigment is 2 microns.

The board thus concludes that Example 2 of D2 discloses a VMP pigment.

B) The preferred application of the VMP for flexographic printing in the opposed patent is not relevant for the question of whether Example 2 of D2 represents a suitable starting point for the inventive step argumentation, since the patent itself indicates (par. [0056]) that the VMP of the invention may be used in any type of ink, including flexographic but also inkjet printing applications. Moreover, the flexographic application is not even defined in claim 1 and so does not restrict its scope.

1.1.5 The board thus concludes that the final product in Example 2 of D2 falls within the scope of a VMP and that this embodiment represents a suitable starting point for the inventive step argumentation.

Since the alternative "propylene glycol monomethyl ether acetate" - disclosed in Example 2 of D2 and defined in the claims as granted - is no longer defined in the list of possible solvents, the subject matter of claim 1 differs from Example 2 of D2 in that one of the alternatives in the list defined therein is used as a solvent.

1.2 Problem underlying the invention

1.2.1 The proprietor argued that the problem solved by the invention was to provide a pigment suitable for use in high-alcohol flexographic inks, while achieving a smoother and glossier finish. The associated technical effect was demonstrated in Example 9 of the patent, which showed that a flexographic ink formulated with the claimed pigment exhibited the advantages listed in Table 3, notably enhanced surface smoothness and a mirror-like appearance. Even though the examples in the patent did not provide a direct comparison with the closest prior disclosed in Example 2 of D2, the results in Example 9 of the patent demonstrated a beneficial effect in the context of flexographic printing, thereby supporting the conclusion that the invention achieved its stated goals. This approach was consistent with the reasoning in decision T 1193/18 (Reasons 9.2), where the board held that, even in the absence of evidence directly comparing the claimed invention with the closest prior art, the technical effects demonstrated in the examples should still be taken into account,

provided they were representative of the claimed subject-matter.

1.2.2 The board does not agree with the proprietor's formulation of the problem, as none of the effects relied upon are causally linked to the sole distinguishing feature of the invention over Example 2 of D2 — namely the selection of one or more solvent among those listed in claim 1 at issue. In fact, the solvent used in Example 2 of D2 was among the preferred solvents listed in claim 12 as granted, which further reinforces the conclusion that the invention merely provides an alternative to the pigment disclosed in Example 2 of D2.

The conclusions reached in decision T 1193/18 are not applicable to the present case because while claim 1 is directed to a VMP slurry, Example 9 concerns a flexographic ink comprising such a slurry, or the use of the slurry in a flexographic ink. Consequently, any effect observed in Example 9 cannot be relied upon in support of an argument for inventive step, as claim 1 and Example 9 relate to different subject-matters. Furthermore there is no evidence that the distinguishing feature — the specific solvent(s) recited in claim 1 at issue — contributes in any way to the effects described in Example 9 of the patent. More specifically, even if for the sake of argument it were assumed that the solvent plays a relevant role in achieving these effects, Example 9 could at most support the attainment of such an effect for the solvent mixture 3:1 ethanol:ethyl acetate (used in Examples 1–4) and for ethyl acetate alone (used in Example 6). There is however no basis for extrapolating this observation to the long list of solvents defined in claim 1 at issue.

The problem solved by the invention must therefore be reformulated less ambitiously as providing an alternative VMP slurry.

1.3 Obviousness of the proposed solution

1.3.1 Document D2 itself teaches (see par. [0028]) that the most preferred solvents for the pigments described therein are propanol, ethanol, butanol, diisobutyl-ketone, butylglycol and butyl glycol acetate; and at least propanol, ethanol and butanol fall within the scope of claim 1 at issue.

1.3.2 The proprietor argued that even if the problem solved was the provision of an alternative VMP slurry, the invention would still not be obvious in view of D2, because the solvents proposed in par. [0028] did not meet the requirements of viscosity established in par. [0024] of this same document.

1.3.3 For the board, since the sole problem solved by the invention is to provide an alternative VMP slurry, and given that D2 itself discloses preferred solvents falling within the scope of claim 1 at issue, the subject-matter of claim 1 represents an obvious alternative in view of D2 alone, specifically from Example 2 taken in combination with the preferred solvents disclosed in paragraph [0028].

Contrary to the proprietor's submissions, paragraph [0024] of D2 would not dissuade the skilled person from considering these solvents, as it merely sets out preferred embodiments. Furthermore, several of the solvents listed as preferred in paragraph [0028] of D2 appear to comply with the viscosity requirements stated in paragraph [0024]. For instance, isopropanol (2.4

mPa·s), butanol (2.0–4.2 mPa·s), and butyl glycol (2.9 mPa·s) exhibit viscosities falling within the preferred range of 2.0 to 6.0 mPa·s, or even within the most preferred sub-range of 2.6 to 3.3 mPa·s.

1.4 In view of the above considerations, the board concludes that the subject-matter of claim 1 is obvious in view of D2 alone and that consequently the requirements of Article 56 EPC are not met.

2. Auxiliary requests 1-8 - Inventive step

2.1 Claim 1 according to **auxiliary request 1** corresponds to that of the main request, with the following amendment: *"moiety B is a hard base selected from ..."*;

Claim 1 according to **auxiliary request 2** corresponds to that of auxiliary request 1, with the following amendment: *"moiety B is a hard base selected from primary aliphatic amines, ~~primary aromatic amine~~, secondary amines, tertiary amines, alcohol, ketone, carboxylates, phosphate, phosphite, sulfate, ~~sulfite~~, hydroxyl, or nitro groups"*;

Claim 1 according to **auxiliary request 3** corresponds to that of the main request with several solvent alternatives deleted from the list, the remaining defined list being: "*b. one or more solvents, wherein the solvent is selected from the group consisting of esters, alcohol and blends thereof, wherein the ester solvent is selected from the group consisting of methyl acetate, ethyl acetate, n-propyl acetate, 1-propyl acetate, isopropyl acetate, n-butyl acetate, isobutyl acetate, sec-butyl acetate, tert-butyl acetate, ethyl butyrate, ethyl lactate, hexyl acetate, isoamyl acetate, methyl propionate, and mixtures and blends*

thereof, and wherein the alcohol solvent is selected from the group consisting of methanol, ethanol, n-propanol, 1-propanol, isopropanol, n-butanol, 1-butanol, 2-butanol, isobutanol, tert-butanol, benzyl alcohol, ethylene glycol, diethylene glycol, 2-ethylhexanol, glycerol, methyl carbitol, 2-methyl-1-butanol, 3-methyl-2-butanol, 1,2-propanediol, 1,3-propanediol, propylene glycol, and mixtures and blends thereof"

Claim 1 of **auxiliary requests 4 and 5** corresponds respectively to a combination of auxiliary requests 1 and 3, and auxiliary requests 2 and 3.

Claim 1 according to **auxiliary request 6** corresponds to that of the main request, with several solvent alternatives deleted from the list, the remaining defined list being: "*b. one or more solvents, wherein the solvent is selected from the group consisting of esters, an alcohol and blends thereof, selected from the group consisting of methanol, ethanol, n-propanol, 1-propanol, isopropanol, n-butanol, 1-butanol, 2-butanol, isobutanol, tert-butanol, benzyl alcohol, ethylene glycol, diethylene glycol, 2-ethylhexanol, glycerol, methyl carbitol, 2-methyl-1-butanol, 3-methyl-2-butanol, 1,2-propanediol, 1,3-propanediol, propylene glycol and mixtures and blends thereof;*"

Claim 1 of **auxiliary requests 7 and 8** corresponds respectively to a combination of auxiliary requests 1 and 6, and auxiliary requests 2 and 6.

2.2 Since the above amendments do not establish any additional differentiating feature with respect to Example 2 of D2, the arguments and conclusions presented for the main request also apply to the

invention defined in claim 1 according to any one of auxiliary requests 1 to 8.

2.3 The board notes in particular that, even in the most restricted version of claim 1 according to auxiliary request 8, several solvents still fall within the preferred list disclosed in paragraph [0028] of D2. Accordingly, the amendments introduced in these requests do not overcome the objections previously raised with respect to lack of inventive step in the context of the main request.

2.4 The subject-matter of claim 1 according to auxiliary requests 1 to 8 does therefore not meet the requirements of Article 56 EPC.

3. Auxiliary requests 9 to 11 - Article 84 EPC

3.1 Claim 1 according to auxiliary requests 9 to 11 defines the use of a VMP pigment in a flexographic ink formulation for providing the following technical effects: "*fewer print defects, higher hiding and stronger colour and allowing a lower volume anilox*".

3.2 The proprietor argued - initially within the context of the inventive step argumentation - that according to G 2/88, when a use claim defined technical purposes or effects, these were to be interpreted as functional features restricting the scope of protection. The above mentioned effects thus rendered claim 1 novel and inventive over D2 and D10.

3.3 The opponent argued that since these functional features were defined using relative terms as well as diffusely defined concepts, they did not meet the requirement of clarity under Article 84 EPC. More

specifically, there was no way to objectively determine whether a given use met the requirement of "providing fewer printing defects", as it was not even clear how the printing defects should be identified or measured and/or what the reference was for concluding whether the relative condition "fewer" was met. The same objections applied to the additional requirements of "higher hiding", "stronger colour" and "allowing lower volume anilox".

3.4 The proprietor replied that it was a well-established practice of the Boards to allow the definition of effects or purposes in non-medical use claims using broad and/or relative terms. This was in particular the case in decision G 2/88, where the claim defined the use of a certain additive "as a friction reducing agent", without further specification as to how such effect (i.e. the relative friction reduction) was to be identified or measured. Despite the broad and relative nature of the claimed effect, no objection was raised under Article 84 EPC in that case.

3.5 The board disagrees and has concluded that claim 1 does not meet the requirement of clarity under Article 84 EPC for the following reasons:

3.5.1 It is first observed that there is no basis - be it in the case law or in the EPC - for concluding that the limiting functional features of a use claim are exempt from the clarity requirement under Article 84 EPC or somehow exposed to lower standards in this respect. It must however be emphasised that — irrespective of whether a claim is directed to a use or to any other category of subject-matter — the mere breadth of protection does not in itself imply a lack of clarity. The decisive consideration is whether the feature(s) in

question give(s) rise, or could plausibly give rise, to legal uncertainty when assessing whether a particular subject-matter falls within or outside the scope of protection conferred by the claim.

3.5.2 Use claims serve to establish patentability where the technical contribution resides in the identification of a new technical purpose or effect, irrespective of whether the entity as such is already known. In such cases, the definition of a use for that specific purpose or effect — applying the principles established in decisions G 2/88 and G 6/88 — constitutes a functional limiting feature which may, in itself, confer both novelty and inventive step.

3.5.3 Decisions G 2/88 and G 6/88, which laid down the fundamental principles for the interpretation of non-medical use claims, illustrate how the technical purpose defined in a use claim can serve to establish novelty. In the case underlying G 2/88, the claimed invention related to the use of an additive — previously known for its rust-inhibiting properties — for the new technical purpose of reducing friction. In the case underlying G 6/88, the claimed use concerned certain compounds which had previously been employed to influence plant growth, but were now used for the distinct purpose of controlling fungal infestations.

3.5.4 More specifically, in G 6/88 (Reasons 8 and 9), the Enlarged Board of Appeal clarified that a technical effect defined in a use claim can confer novelty, even if that effect may have been inherently achieved in a known use. In that case, the compounds in question had previously been used for influencing plant growth. It could therefore have been argued that their use for controlling fungi in plants was inherently disclosed,

since both uses involved essentially the same physical steps — namely applying the compounds to the surface of the plants. However, the Enlarged Board emphasised that, under the EPC, inherent effects are analogous to secret or hidden features and as such, cannot be regarded as having been made available to the public within the meaning of Article 54(2) EPC. A clear distinction should thus be drawn according this decision between (i) implicit features: those not explicitly described, but directly and unambiguously derivable by the skilled person from the disclosure in question; and (ii) inherent features: those which may, in fact, have been present in a known use, but which remained hidden or unrecognised by the skilled person.

3.5.5 In decisions G 2/88 and G 6/88, as well as in most use claims upheld by the Boards, the claimed use typically relates to a technical effect or purpose that is objectively distinct from those known in the prior art. In such cases, the effect underpinning patentability may legitimately be defined in broad terms, especially where no similar technical purpose has previously been disclosed. However, as with any claim feature, broad terminology can raise clarity concerns under Article 84 EPC, particularly if it is unclear whether the skilled person can apply objective criteria to determine the exact scope of the claim. That said - as already indicated in point 3.5.1 above - the mere breadth of a feature does not, by itself, render it unclear. Extending the scope of protection is legitimate where the invention makes a non-obvious technical contribution applicable across a correspondingly broad field. Therefore, clarity objections against broad functional or purpose-related features must be balanced against the patentee's legitimate interest in avoiding undue restriction of the scope of the claims.

3.5.6 It is within this framework that the proprietor's arguments — referring to the well-established practice of allowing broadly defined effects in use claims — should be understood. Specifically, where the invention is based on the discovery of a new technical effect of a known entity (as in G 2/88 and G 6/88), it is generally accepted in practice to define that effect in correspondingly broad terms, provided the effect is sufficiently distinct to clearly delimit the scope of protection with respect to the prior art.

3.5.7 The situation in the present case is however fundamentally different, as both claim 1 and document D10 concern the same entity for the same, or at least an analogous, technical purpose. In particular, both claim 1 and D10 define the use of a formulation containing the same additive in a flexographic ink. The only difference is that claim 1 specifies that this use improves multiple aspects of the printing quality, whereas document D10 (comparative Example 8) reports that the printing-quality parameters of the flexographic ink are comparatively inferior to other alternatives. Moreover, according to Example 2 of D2 (explicitly cited in D10), the additive in question provides the same effect as described in the opposed patent, namely the prevention of pigment agglomeration. It follows that the prior art already discloses the use of the same additive for the same, or at least very similar, technical purposes. In other words, the claimed technical effects are neither hidden nor unrecognised in D10; the only arguable distinction is that the flexographic ink in comparative Example 8 of D10 does not appear to achieve particularly favourable results in this respect.

3.5.8 The question then arises as to what the alleged new technical purpose might be, which could potentially establish patentability of the use claim over the disclosure in D10. The most plausible explanation is that, while D10 discloses the use of the additive in flexographic inks, it does so in the context of a comparative example presented as disadvantageous, resulting in comparatively poor printing quality. From this perspective, it is apparent that the use claim does not seek to define distinct technical effects, but rather relative improvements in the achievement of such effects. In other words, claim 1 at issue does not rely on the additive unexpectedly rendering an ink suitable for use in flexographic printing, but rather on the (alleged) finding that the additive provides better printing quality in this context compared with that previously recognised or reported in the prior art, i.e. in comparative Example 8 of D10. Therefore, the relative or comparative terms in the claim ("fewer print defects", "higher hiding", "stronger colour", "lower volume") constitute the key features supposed to distinguish the scope of the invention from the prior art, and establish its patentability.

3.5.9 In view of the above, the requirement of clarity can only be satisfied if the alleged relative improvements in printing-quality factors are defined in a manner that provides a clear and objectively assessable scope of protection. Otherwise, it would be impossible — contrary to the requirements of Article 84 EPC — to determine whether a particular use falls or not within the scope of the claim; for example, whether the use in comparative Example 8 of D10 is encompassed by the subject-matter of claim 1.

3.5.10 In the present case, the board concludes that no objective criteria are available for determining when the number of print defects, the degree of hiding, the colour intensity or the anilox volume may be regarded as sufficiently low or high for other uses to fall within or outside the scope of the claim. As a result, the subject-matter of claim 1 cannot be assessed objectively in relation to the prior art, which gives rise to legal uncertainty and therefore fails to meet the clarity requirement of Article 84 EPC.

3.6 The present board finds that the above discussion and conclusions regarding clarity may also apply to analogous use claims - namely those in which the alleged functional differences with respect to the prior art are not based on distinct effects, but on relative improvements in the achievement of those effects. For the sake of completeness and to avoid any misunderstandings, the board emphasises the following points:

3.6.1 It follows from the above that, where an invention concerns a use claim directed to a known entity for a clearly distinct technical purpose or effect — as in G 2/88 and G 6/88 — the purpose or effect may be defined in correspondingly broad and relative terms without necessarily infringing the clarity requirement under Article 84 EPC, provided that the definition of the effect enables a clear distinction between the scope of protection and the prior art, thereby eliminating the risk of legal uncertainty or at least confining such risk to speculative theoretical scenarios.

3.6.2 However, where a claimed invention is defined by the use of a known entity to achieve a known technical effect or purpose, and the alleged technical

contribution lies in a relative improvement or enhancement of that effect or purpose, the requirement of clarity under Article 84 EPC generally demands that the feature defining such relative improvement or enhancement be expressed in objectively verifiable terms, thereby ensuring legal certainty regarding the scope of protection. In these "relative-improvement" scenarios, any imprecise functional language can blur the distinction between claimed and known uses, giving rise to the very legal uncertainty that the clarity requirement is intended to prevent.

3.6.3 In this respect, the notion of what constitutes a "known technical effect" should not in principle be confined to effects explicitly mentioned in the prior art, but should also encompass effects that are implicitly and recognisably associated with the entity in question in the relevant technical context. Such implicit technical purposes may form part of the common general knowledge of the skilled person, even if not explicitly stated in a given document. Furthermore, as in the present case, an effect should in principle be considered known even if the prior art presents it in an unfavourable light — for example, as comparatively inferior to other alternatives — since, in such circumstances, the alleged contribution does not lie in the recognition of the effect itself, but in the relative improvement of that effect.

3.6.4 The above reasoning should not be interpreted as suggesting that the requirement of clarity under Article 84 EPC may be disregarded when the features in question are not decisive for establishing patentability over the cited prior art. As explained in more detail in decision T 869/20 by the present board in a different composition (see Reasons 2.4.2), the

underlying rationale of Article 84 EPC is to ensure legal certainty, which may be important for an objective assessment of patentability in view of the prior art, but may also become relevant in the context of infringement proceedings potentially unrelated to that prior art. Notwithstanding this, it cannot be denied that, where — as in the present case — the prior art is technically close to the claimed subject-matter, the clarity of the distinguishing features becomes all the more critical, since such proximity makes it readily apparent how vague or diffuse definitions may give rise to legal uncertainty in the assessment of patentability.

3.6.5 This position is consistent with previous decisions of the Boards, such as T 728/98 (see Point 1 of the Headnote and Reasons 3.1) and T 56/04 (see Reasons 2.7-2.8), as well as with the observations made in the recently published decision G 1/24 (see Reasons 20).

3.7 Auxiliary requests 9 to 11 are thus not allowable under Article 84 EPC.

4. Auxiliary requests 12 to 14 - Article 123(2) EPC

4.1 The first part of the subject-matter of claim 1 according to auxiliary requests 12 to 14 reads as follows:

"1. Use of a VMP pigment slurry in a high-alcohol flexographic ink formulation for providing compatibility of the VMP pigment with said formulation, wherein said high alcohol formulation contains >50% concentration of an alcoholic solvent, wherein said A VMP pigment slurry comprises ... ",

wherein the underlined features constitute the technical effect or purpose of the use claim.

4.2 According to the proprietor, this feature found support in paragraphs [0003], [0010] and [0011] of the application as filed.

4.3 The board does however not see a direct and unambiguous disclosure in the application as filed for the following reasons:

Although paragraph [0010] as filed is part of the detailed description of the invention, it is not intended to define the technical effects of the invention. Rather, it serves to highlight a known problem in the prior art — namely the general perception that the applicability of VMP is limited, as these pigments are considered incompatible with formulations containing high concentrations (>50%) of alcoholic solvents such as ethanol or n-isopropanol.

While it is apparent to the board — both from the cited paragraphs and from other parts of the description — that the invention aims to address the issue of compatibility between VMP slurries and alcoholic solvents, this does not constitute a direct and unambiguous disclosure of a use invention that produces an effect within a scope which corresponds exactly to the problem discussed in paragraph [0010]. This is particularly relevant given that the effect is defined in a use claim, and in accordance with the principles established in decisions G 2/88 and G 6/88, it is presumed to be achieved. In other words, the proprietor is wrong to assume that the mere fact that a problem in the prior art is discussed in certain terms in the original documents and addressed by the invention,

equates to a direct and unambiguous indication that the problem must be solved over the same scope.

More specifically, there is no basis to exclude that the effect achieved by the proposed use would be applicable to a different scope, for example that compatibility is only achieved up to a certain alcoholic content or for specific compositions. In fact, from paragraph [0011] as filed, the reader immediately learns that the problem of compatibility mentioned in said paragraph does not affect all high alcoholic formulations, but only those with high alcoholic and low ester concentrations. It is furthermore unclear whether the underlying problem concerns all types of alcohol or only certain ones, as ethanol and n-isopropanol are the only alcohols mentioned in paragraphs [0010] to [0012].

Additionally, the board also notes that while the subject-matter of claim 1 refers to a flexographic ink formulation containing > 50% of an alcoholic solvent, paragraphs [0010] and [0011] discuss the problem of high alcoholic contents within the context of VMP pigment slurries (rather than flexographic ink formulations). In particular, paragraph [0010] refers to a "slurry in a solvent" and paragraph [0011] describes the rheological problems taking place in the "VMP pigment slurry" or the "ethanol slurry". Moreover, the examples illustrate the problem of incompatibility (i.e. excessively high viscosity) only within the context of VMP slurries, and when these are incorporated into a flexographic ink formulation in Example 9, this is only used to illustrate the resulting effects in printing quality. Therefore, even though it is not contested that the flexographic ink formulation includes as such a high alcoholic content,

it appears that the specific reference to a concentration of > 50% actually refers to the VMP slurries rather than to the final flexographic ink formulation.

4.4 The subject-matter of claim 1 of auxiliary requests 12 to 14 thus extends beyond the content of the application as filed, and does therefore not meet the requirements of Article 123(2) EPC.

5. Since none of the requests submitted by the proprietor meet the requirements of the EPC, the patent must be revoked.

6. Since neither the documents nor the auxiliary requests filed at the appeal stage are decisive for the outcome of the proceedings, there is no need to discuss the question of their admittance.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairman:

A. Vottner J.-M. Schwaller

Decision electronically authenticated