Internal distribution code:

(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [X] To Chairmen
(D) [-] No distribution

Datasheet for the decision of 18 November 2019

Case Number: T 1285/15 - 3.2.05

Application Number: 03772406.9

Publication Number: 1567358

IPC: B41M3/14

Language of the proceedings: EN

Title of invention:
Security Device and its Production Method

Patent Proprietor:
De La Rue International Limited

Opponents:
Bundesdruckerei GmbH
BANQUE NATIONALE DE BELGIQUE
GIESECKE & DEVRIENT GmbH

Relevant legal provisions:
EPC 1973 Art. 54(1), 54(2), 56, 83, 84, 114(2)
EPC Art. 115, 123(2)
EPC R. 80
RPBA Art. 12(4), 13(1), 13(3)

Keyword:
Admission of late filed documents (yes)
Admission of a late filed attack (no)
Remittal (no)
Clarity (yes)
Sufficiency of disclosure (yes)
Added matter (yes: main request A; no: auxiliary request 0A)
Novelty (yes: auxiliary request 0A)
Inventive step (yes: auxiliary request 0A)

Decisions cited:
G 0003/14, T 0435/91, T 1002/92, T 1023/00, T 1569/11, T 1811/13, T 2007/16

Catchword:
Application of Rule 80 EPC (see point 6 of the Reasons)
Treating insufficiency objections step by step (see point 12.2.10 of the Reasons)

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 1285/15 - 3.2.05

D E C I S I O N
of Technical Board of Appeal 3.2.05
of 18 November 2019

Appellant: (Opponent 1)	Bundesdruckerei GmbH Oranienstr. 91 10969 Berlin (DE)
Representative:	Keil & Schaafhausen Patent- und Rechtsanwälte PartGmbB Friedrichstraße 2-6 60323 Frankfurt am Main (DE)
Appellant: (Opponent 2)	BANQUE NATIONALE DE BELGIQUE Boulevard de Berlaimont 14 1000 Bruxelles (BE)
Representative:	Prinz & Partner mbB Rundfunkplatz 2 80335 München (DE)
Appellant: (Opponent 3)	GIESECKE & DEVRIENT GmbH Prinzregentenstrasse 159 81677 München (DE)
Representative:	Ulrich Breit Geyer, Fehners & Partner mbB Patentanwälte Perhamerstrasse 31 80687 München (DE)
Respondent: (Patent Proprietor)	De La Rue International Limited De La Rue House, Jays Close, Viables Basingstoke, Hants RG22 4BS (GB)

Representative: Gill Jennings & Every LLP
The Broadgate Tower
20 Primrose Street
London EC2A 2ES (GB)

Decision under appeal: **Interlocutory decision of the Opposition Division of the European Patent Office posted on 27 April 2015 concerning maintenance of the European Patent No. 1567358 in amended form.**

Composition of the Board:

Chairman M. Poock
Members: O. Randl
C. Brandt

Summary of Facts and Submissions

I. Each of the three opponents filed an appeal against the decision of the opposition division on the amended form in which European patent No. 1 567 358 could be maintained.

II. The opposition division was of the opinion that the main request filed by the patent proprietor satisfied all the requirements of the EPC.

The following documents cited by the opposition division appear to be relevant to the appeal proceedings:

D1: WO 95/13597 A2;
D3: WO 99/14055 A1;
D4: EP 1 179 808 A1;
D5: WO 98/40223 A1;
D9: W0 00/78556 A1;
D10: EP 0 428 828 A2;
D12: GB 1 407 065;
E9c: photocopy of a 10 000 Escudos banknote (PT);
E9f: photocopy of a South African driving licence;
E16: CN 1117927;
E17: Translation of document E16, accompanied by a "Verified Statement on Translation" by P. Wang
E19: WO 02/068736.

With its letter dated 6 August 2019, the respondent filed another English translation of document E16, which will be referred to as document E16a.

III. The oral proceedings before the board took place on 18 November 2019.

IV. Appellants I, II (appellant II in writing) and III (opponents 1 to 3) requested that the decision under appeal be set aside and that the patent be revoked.

The respondent (patent proprietor) requested that the appeals be dismissed and the patent be maintained on the basis of main request A (as requested in the letter dated 6 August 2019), or alternatively on the basis of one of auxiliary requests 0A, 1A, 2A, 4A to 8A and 10A to 12A, all requests filed with the letter dated 6 August 2019.

V. Claims 1, 2, 6, 7, 17 and 18 of "main request A" read as follows (the reference numbers used by the board are given in square brackets):

"1. [**1-1**] A security device comprising [**1-2**] two or more regions, each region being printed with a material or combination of materials which exhibits different visible colours under different first and second viewing conditions, wherein [**1-3**] the two or more regions exhibit substantially the same visible colour under the first viewing conditions and [**1-4**] the two or more regions exhibit different visible colours under the second viewing conditions, wherein [**1-5**] the first viewing conditions means viewing under visible light, and [**1-6**] the second viewing conditions comprise a combination of
a) visible light and
b) light of substantially any UV wavelength in the range 235-380nm
wherein [**1-7**] the material or combination of materials printed in each region luminesces under UV irradiation; wherein [**1-8**] the visible colours are visible to the naked eye; and wherein [**1-9**] the regions define one or

more of graphical patterns, indicia, security patterns and images."

Claim 2 differs from claim 1 in that "substantially the same visible colour" has been replaced by "different visible colours" and "different visible colours" has been replaced by "substantially the same visible colours".

"6. A device according to claim 5, wherein at least two regions include a material or materials which is photochromic and which exhibits a colour change under UV irradiation."

"7. A device according to claim 5 or claim 6, when dependent on claims 1 and 3, wherein one region includes material(s) which are luminescent and photochromic, and at least one other region includes a luminescent material, whereby under UV and visible light illumination each region initially exhibits a different visible colour while after extended combined illumination, the photochromic material changes colour so that the visible colour of the two regions is substantially the same."

"17. A method of providing a security device, the method comprising printing materials on to two or more regions of a substrate, each region being printed with a material or combination of materials which exhibits different visible colours under different first and second viewing conditions, wherein the two or more regions exhibit substantially the same visible colour under the first viewing conditions and the two or more regions exhibit different visible colours under the second viewing conditions, wherein the first viewing

conditions means viewing under visible light and the second viewing conditions comprise a combination of
a) visible light and
b) light of substantially any UV wavelength in the range 235-380nm
wherein the material or combination of materials printed in each region luminesces under UV irradiation; wherein the visible colours are visible to the naked eye; and wherein the regions define one or more of graphical patterns, indicia, security patterns and images."

Claim 18 differs from claim 17 in that "substantially the same visible colour" has been replaced by "different visible colours" and "different visible colours" has been replaced by "substantially the same visible colour".

The claims of auxiliary request 0A differ from the claims of main request A only in that claims 6 and 7 have been deleted and the remaining claims renumbered accordingly.

VI. The parties' arguments may be summarised as follows:

(a) **Admissibility of documents E16, E16a and E16b**

(i) Appellants

The opposition division should have admitted document E16 because of its *prima facie* relevance. This document is highly relevant because it destroys the novelty of claims 1 and 17 of main request A. The opposition division has applied too strict a standard: as a rule, a certified translation is not required when prior art documents are filed.

The respondent was in possession of translation E16a in 2015 and could have filed it with their response to the statements of grounds of appeal but chose not to do so. It was filed late. The document should, therefore, not be admitted. Moreover, the qualification of its translator is unknown. The differences between translations E17 and E16a are not such that the qualification of the person who prepared translation E17 is in doubt. It is always to be expected that translations prepared by different translators will differ to some extent. The technical content conveyed by translations E16a and E17 - and in particular the subject-matter of claim 5 - is the same.

(ii) Respondent

The opposition division's decision not to admit document E16 was justified. According to decision T 1002/92, in proceedings before the boards of appeal, new facts, evidence and related arguments should only be admitted into the proceedings in exceptional circumstances, if such new material is *prima facie* highly relevant. This does not apply to document E16. Three translations of these documents have been filed, and there are significant differences between them. Translation E17 includes some odd terminology ("plastic gloss ink", "network pattern colour") and seems to be a machine translation. It is not correct that both translations E16a and E17 convey the same technical subject-matter. Claim 5 is significantly broader when interpreted according to translation E17.

The opposition division has not committed a substantial procedural violation. The third party's argument in respect of Article 114(2) EPC is wrong: it would be

absurd for a third party to have greater rights with regard to the admission of late-filed evidence, than those enjoyed by the actual parties. T 156/84 was expressly contradicted by later jurisprudence (see T 951/91 and T 390/07). Thus a third party cannot circumvent the requirements of Article 114(2) EPC. The opposition division applied the test correctly. In the present case it was impossible to ascertain *prima facie* relevance correctly. There was no time left to invite the parties to file a certified translation. Moreover, document E16 cannot be *prima facie* highly relevant because several key features of claims 1 and 2 are not disclosed therein. Therefore, document E16 should not be admitted.

Document E16a was filed as a reaction to the board's argument in its communication. The fact that the board relied on the term "uniform" in claim 5 came as a surprise to the respondent. Thus, the document should be admitted. The fact that the translation was prepared in 2015 shows that the translation was not tailored to overcome the board's objections.

(b) **Admission of prior public use evidence**

(i) Appellants

The new evidence corroborates the existence of prior public use and should therefore be admitted.

(ii) Respondent

Appellant II only filed copies of documents labelled E9a to E9h and not the document themselves. The respondent was not offered the opportunity to carry out experiments on the objects of the alleged prior public

uses, despite several requests. The newly filed evidence should not be admitted.

(c) **Admission of spectral data**

(i) Appellants

The spectral data should be admitted. They show that the pigments mentioned in document D3 can be activated over the whole claimed range of UV radiation.

(ii) Respondent

The data are not *prima facie* relevant to the case and should not be admitted.

(d) **Admission of inventive step attacks against claims 15 and 16**

(i) Appellants

These objections should be admitted because they are a reaction to the board's decision that the substrate is not part of the claimed security device, and that therefore document D3 does not destroy the novelty of claim 1. The consequence of this finding is that claims 15 and 16 are not patentable: being directed at an article carrying a security device, the claims necessarily encompass the substrate.

(ii) Respondent

The objection is completely new and was submitted incredibly late. It should therefore not be entertained. Also, as claim 1 has been found to be inventive, any claim that depends on this claim has to

be inventive too. Claim 1 excludes the fact that the colour effect is generated by the substrate. In this respect it makes no difference if the security device is provided on a substrate.

(e) **Remittal to the department of first instance**

(i) Appellants

Document E16 has been discussed since it was first filed by a third party. The proprietor had plenty of opportunities to file auxiliary requests, in particular after receiving the statements of grounds of appeal, which refer to document E16. The respondent was in possession of its own translation at that time. Thus, refusing a remittal would not put the respondent at a significant disadvantage.

(ii) Respondent

In view of the admission of document E16, the case should be remitted to the department of first instance (see chapter V.A.7.5.2 of "Case Law of the Boards of Appeal"). If the case is not remitted, the patent proprietor is at a significant disadvantage and his right to be heard is not fully ensured. In appeal proceedings, the opportunity to file auxiliary requests is restrained.

The case is of substantial commercial importance to the proprietor. The need to achieve the right decision outweighs the need for a fast decision. The admission of document E16 or the spectral data constitutes a shift in the factual framework of the case, which justifies a remittal. Otherwise, the board would be contradicting its own choice in case T 2007/16.

(f) **Main request A: Interpretation of the claims**

(i) Appellants

Features 1-1 and 1-2: The claimed security device can comprise the substrate of a security document (see paragraph [0013] of the patent: "... regions of a substrate ..." and granted claims 24 and 25). This also follows from paragraph [0023]. A security device cannot exist apart from the substrate. The presence of the word "regions" in claims 1 and 2 shows that the security device does indeed encompass the substrate. The substrate is part of the regions that create a visual impression. When banknotes are printed, the colour penetrates into the surface of the paper substrate. As a consequence, it is technically meaningful to consider that the regions are not constituted by the ink alone but also the underlying substrate. The optical appearance results from the interaction between colour and pigment. The colour contribution of the substrate plays a particularly significant role when the feature is viewed from below (i.e. through the substrate): see paragraph [0022], where transmission is mentioned.

The interpretation of feature 1-2 by the respondent, according to which the materials themselves have to exhibit the colours, is wrong. Features 1-3 and 1-4 explicitly refer to the regions. Therefore, the word "which" in feature 1-2 also refers to the region (rather than to the material). Thus, the substrate has to be taken into account (see also claim 16).

Features 1-3 and 1-4 refer to the regions and, therefore, also to the substrate.

Feature 1-6: The interpretation of the feature "substantially any UV wavelength in the range 235-280 nm" must not ignore the word "substantially".
The interpretation proposed by the opposition division of "each" rather than "one" is not acceptable.
The French and German translations of the claims are evidence of this fact.

(ii) Respondent

Feature 1-1: A "security device" is a feature that is added to a document to enable the authenticity of that document to be checked.

Feature 1-2: The wording of the feature makes clear that it is the printed material itself that has to exhibit the colour effects, and not the substrate. Even if the substrate were part of the claim (which it is not), effects based on its colour would not meet the requirements of the claims because the substrate is not a printed material. The patent never attributes any effect to the substrate other than acting as a support onto which the security device is printed. It is never suggested that it contributes to the colours. It is always the printed materials that constitute the regions (see the second sentence of paragraph [0021]). Paragraph [0016] refers to the background, not the substrate. Paragraph [0022] is irrelevant: even if the regions are viewed through the substrate, as both regions are on the same side of the substrate, it has no influence on the colour (mis)match.

The appellants' understanding of feature 1-2 (that the word "which" refers to the regions rather than to the material) is at odds with the disclosure of the patent

as a whole. A plain reading of the English makes it clear that this understanding is wrong. Also, paragraph [0021] of the patent confirms that the reference is to the material. There is no contradiction with respect to features 1-3 and 1-4. The skilled reader would understand that the regions exhibit the colour because the material in those regions does so.

Feature 1-2 requires the printed material to exhibit a visible colour. In light of the patent as a whole, the skilled person would have understood this to mean that the materials themselves have a very definite visible colour, formed for instance by colour pigments or similar materials. The skilled person also knows from the patent that this colour is also strong enough to be seen under the second viewing conditions.

Feature 1-6: "any wavelength": the term of claims 1 and 2 require the materials to be responsive to excitation radiation throughout the range.
This requirement is not met by a material which luminesces at just one wavelength within that range. However, the claims do not require the materials to be illuminated simultaneously using the whole range of wavelengths.

(g) **Main request A: Clarity**

(i) Appellants

The claims lack clarity on several counts.

- The claims are not consistent with the description, in particular with the embodiment disclosed on page 13, lines 7 to 13, of the original application (see also Fig. 5).

- By deleting the examples of white light in the description, the respondent has made the claims unclear because no definition of white light is provided. If the passage is reintroduced, another problem arises because the examples also comprise a portion of UV radiation, so that the first and second viewing conditions are indistinguishable. Furthermore, the portion of UV light comprised in the viewing conditions is not defined.
- The division failed to examine the clarity of the feature "means viewing under visible light".
- The proportion of visible light and UV light in the second viewing conditions is not given, nor is the difference between the viewing conditions.
- There is no definition of what is meant by visibility to the naked eye.

(ii) Respondent

The claims on file are clear:

- The definition of the first and second viewing conditions have not been changed in the amended claims. It was merely moved within the claim. Clarity is not a ground for opposition (G 3/14).
- Proportion of visible light and UV light: it is not clear how this gives rise to a lack of clarity.
- Different viewing conditions: the skilled person would have understood that the difference lies in the presence of UV radiation.
- Visibility to the naked eye: this basic concept does not require any definition or explanation.
- Amended description: the objection is based on a flawed interpretation of the deleted sentence.

- Difference between red shades: the skilled person does not require any explanation as to how two shades of red might differ.

(h) **Main request A: Added matter**

(i) Appellants

Several amendments lead to inadmissible extensions beyond the content of the original application:

- Claims 1 and 2: The introduction of the feature "each region being printed with" leads to an inadmissible intermediate generalisation.
  The feature is disclosed in the context of inks.
  The claims now cover situations, where luminescence is achieved with materials other than inks.
- Claims 6 and 7 are not based on claims 2 and 8 or 1 and 7 as granted respectively. Their subject-matter constitutes an *aliud*. The requirements for corrections under R 139 are not satisfied because neither the error nor the correction are obvious.
- The amendment of the penultimate sentence of the first paragraph on page 12 of the marked-up version of the description of main request A contravenes Article 123(2) EPC, because an example with two shades of red is not disclosed in the original application. The patent does not define what "different colour" is supposed to mean.
  The difficulty is apparent when two shades of the same colour (e.g. red) are considered.
- Deletion of terms in paragraph [0015] of the patent: The deletion of the examples of white light broadens the definition of the latter and thereby contravenes Article 123(2) EPC.

(ii) Respondent

The objections under Article 123(2) EPC are unfounded:

- "each being printed with": The amendment has a firm basis on page 3, lines 21 to 22 and 32 to 33, page 7, lines 31 to 33 and original independent claims 24 and 25. All these passages refer to printing materials rather than inks.
- Claims 6 and 7: The amendment is a correction of a minor clerical error. The correction is obvious and has a firm basis in the original application. Granted claim 8 was always intended to be dependent on claim 1 rather than claim 2. The subject-matter is disclosed on page 8, lines 9 to 19, and page 13, line 23 to page 14, line 22. The skilled reader would have understood that claim 8 should have been dependent on claim 1 and claim 7 on claim 2.
- Description of Figs. 5 and 6: The amendment simply amounts to deleting one of the alternatives presented in the original sentence. The appellants' interpretation is unreasonable. "One of the first two colours" is to be understood as "either of the first two colours".
- Definition of white light: The amendment simply consists of deleting characteristics which were originally indicated as being optional by virtue of the word "typically".

(i) **Main request A: Compliance with Rule 80 EPC**

(i) Appellants

The amendment of the description contravenes Rule 80 EPC.

(ii) Respondent

The last sentence of paragraph [0015] was deleted to bring the description in line with a set of claims that had been amended to meet objections made by the opponents. Thus, it complies with Rule 80 EPC.

(j) **Main request A: novelty over document D1**

(i) Appellants

Claim 1 is not new over the disclosure of document D1. This document discloses regions that exhibit fluorescence when illuminated by UV light of the near UV region (see page 10, lines 16 to 18).

Feature 1-3: If the device is viewed under visible light only, the substrate and its colour (white, grey, ..) are visible. Figs. 2 and 3 clearly indicate the colour change. Moreover, according to Figs. 15 to 24 and page 23, lines 8 to 10 ("... device 2 formed by a background ink 3 and a pattern of an ink 4 ..."), there is a monochromatic pattern on which the fluorescent ink is provided. In view of this embodiment, it is not decisive whether the substrate has a visible colour.

Feature 1-4: What is visible when only illuminated by UV light must also be visible when illuminated by both visible and UV light (see page 6, lines 12 to 25). The statement that the pattern is "invisible" refers to illumination under visible light only. The reference to the small size of the devices would not be meaningful if the devices were invisible under visible light. Moreover, the patent does not require the devices, but does require their colour, to be visible and

discernible. The fact that the patterns as such may be invisible is irrelevant.

Feature 1-6: The scanner of Fig. 26 does not require a dark room. Also, it is not true that document D1 only refers to detection by a device. The term "detectable" encompasses "visible to the naked eye". The disclosure of document D1 is not limited to the near UV range. It is clear to the skilled person that other ranges may be used as well. Claims 2, 15, 17 and 18 also lack novelty over document D1. Claim 18 discloses viewing under UV light. According to page 10, lines 13-15, near UV regions (i.e. 300-400 nm) are concerned. At least one wavelength of this range is also included in the claimed range.

(ii) Respondent

Document D1 does not disclose that either of the regions exhibits a change in its visible colour between the first and second viewing conditions. Instead, the two regions keep the same colour throughout. There is no disclosure of second viewing conditions: the device is hidden in a scanner. Moreover, document D1 does not disclose that the materials are responsive to any UV wavelength in the range 235 to 380 nm.

(k) **Main request A: Novelty over document D3**

(i) Appellants

Claim 1 lacks novelty over the disclosure of document D3.

Feature 1-3: Whether there is a change in colour depends on the image that is chosen as the first image.

Document D3 discloses that the UV inks have the same basic components as the inks used for the conventional image (see page 10, lines 12-15). Thus the three figures (apple, orange and banana) all have the same colour under visible light. There is a uniform colour impression (only the first image is visible).
The board's provisional opinion that feature 1-3 is not disclosed in document D3 is wrong. The last paragraph on page 6 discloses that "the second printed ink image [visible only under UV irradiation] may be superimposed with a printed image which is visible under white light irradiation". The printed image may be "a polychromatic image, a monochromatic image or a black image" (page 4, lines 1 and 2). Thus, a monochromatic pattern is superposed with a UV pattern. This creates coloured images under UV irradiation.

Feature 1-4: Under UV light adjacent domains have different colour, namely blue, red and green (see page 8, lines 18-21).

Feature 1-6: Document D3 refers to UV light used in dance halls (page 4, lines 14-15) and standard long wave desk-top lamps (page 10, line 17), both of which comprise near UV light and thus at least one wavelength within the claimed range. Also, the pigments disclosed in document D3 (M 327B and Lumilux CD 120) can be excited over the whole claimed wavelength domain.

(ii) Respondent

In document D3, only the ordinarily invisible fluorescent image constitutes the security device.
The "same basic components" mentioned in the context of the Example disclosed from page 9, line 10 to page 10, line 19, cannot refer to the pigments because the

fluorescent inks are said to be invisible. Claim 1 requires the two regions to exhibit a visible colour that is the same in both regions. The passage in document D3 concerning UV light does not disclose the nature of the luminescent materials. The excitation spectra submitted by appellant III are not helpful because it has not been shown that the data sheets have any connection to the materials mentioned in document D3. Moreover, they can only relate to one of the regions of the device according to document D3, whereas claims 1 and 2 require two regions to respond over the claimed range. The appellants try to relate the invisible image (the "second printed image" that is only visible under UV light, see the Abstract) to the "first printed image", which is visible. However, in document D3 no relationship is disclosed between these two regions. This could include images that are entirely different from one another, provided in completely different parts of the security document. They may be partially overlapping (see top of page 7) but no correspondence is suggested. The opposing argument is based on hindsight.

(l) **Main request A: Novelty over document D4**

(i) Appellants

Claims 1 and 17 lack novelty over the disclosure of document D4. Document D4 discloses a safety device comprising two patterns M1 and M2 which, when illuminated with visible light, have the same colour C1 (see D1, which shows a device according to claim 1 combined with claim 7). Document D4 teaches that with illumination by a first UV wavelength λ1, the fluorescent colors of the patterns M1 and M2 are identical (C2) and that in another UV wavelength λ2,

the colours of M1 and M2 are different (C3 and C4). An example of wavelength λ2 is given in claim 6 (254 nm). Thus, there is a wavelength λ2 which belongs to the wavelength range claimed under the second viewing conditions for which two patterns having identical colours under visible light exhibit two different colours.

(ii) Respondent

Document D4 does not disclose several key features of claims 1 and 2. The device according to document D4 runs counter to the requirements of those claims, which require the two regions to exhibit either different colours from one another (claim 1) or the same colour (claim 2) at substantially every UV wavelength in the claimed range. In document D4 the regions match one another in one UV wavelength and do not match in another wavelength. Also, document D4 does not disclose that both regions undergo a change in visible colour, and does not disclose the appearance in a combination of visible and UV light.

(m) **Main request A: Novelty over document D5**

(i) Appellants

Claim 1 lacks novelty over the disclosure of document D5.

Feature 1-3: The "ghostly white image" (see page 7, lines 7-12) is a white image and visible under normal room lighting. The respondent's interpretation of "non-visible image" is untenable. This image is not invisible. It means that it is not visible distinctly or is not distinguishable from the substrate. It does

have a colour: it is the same as the colour of the substrate, see also page 4, second and third paragraph and page 7, lines 15 and 16, where a "blank coloured area" is mentioned. Even more striking is the embodiment disclosed on page 11, from line 7 onwards. This passage refers to a monochromatic trademark that is overlaid with fluorescent stripes exhibiting varying colours. Thus, the disclosure of document D5 in this respect goes beyond the "ghostly white image".
It should be noted that feature 1-3 is defined in very general terms that ignore the way he colour is created. The claim does not require the image to have a solid, single colour.

Feature 1-6: The type of security documents disclosed in document D5 are usually examined under conditions that are equivalent to the second conditions of the claims under consideration. Document D5 discloses wavelength domains (page 5, lines 18-23: 300-400 nm, see also page 3, line 4) that correspond to almost 60% of the claimed range. The comparison of Figs. 1 and 2 shows that Fig.2 must correspond to a view under both UV and visible light. Thus the skilled person is aware that the disclosed colour changes are obtained under such mixed light. Moreover, the document refers to "short UV (300-350 nm) or other bands" (page 5, lines 22 to 23). If the disclosure of page 3, lines 1 to 8, is taken into account, it is clear that the 280 to 400 nm band is being referred to.

(ii) Respondent

The claimed subject-matter is clearly novel over the disclosure of document D5.

Feature 1-3: The verification feature of document D5 is a "non-visible image" and, as such, not visible under standard illumination. The "ghostly white image" is not visible to the naked eye in the sense required by the invention. It is extremely faint and only detectable on close inspection. Moreover, it has no visible colour, as required by the claims. The skilled person would not have considered such an image to be what is meant by feature 1-2. There is no suggestion in document D5 that the inks themselves would exhibit any colour. What is described on page 7 is just a scattering effect, similar to what can be seen if one part of the surface is rougher than another. The difference is not due to colour. Moreover, the feature requires the regions to have essentially the same visible colour. There is no disclosure of this at all in document D5. Some parts of the UV image might not be visible at all. Also, there is no suggestion that different parts of the "ghostly white image" appear the same as one another. They may well vary, and that is indeed what is suggested by the word "ghostly", which suggests something patchy, transient and indistinct. This is the opposite of what is described in the patent, i.e. a solid, single colour. It should be noted that claim 1 relates to a security device. In document D5, the security device is the so-called "verification feature", i.e. the non-visible image and nothing else (see page 4, lines 15 to 22, and page 6, lines 10 to 13). Other disclosed features are not relevant in this respect. The "blank coloured area" mentioned on page 7 is a completely unrelated area. There is no relationship between this region and the regions visible under UV light. The same applies to the disclosure on page 11 with respect to the monochromatic image and the set of stripes.

Feature 1-4: The requirement for the visible colours to change between the viewing conditions is not disclosed in document D5. There the colours simply appear or disappear. Also, if the materials have a visible colour, the introduction of visible light could overwhelm the fluorescent emissions, so that no colour difference would be discernible.

Feature 1-6: Document D5 does not disclose that the luminescent materials are responsive across the claimed UV range. The passage on page 5 only describes the bands that could be used for illumination. It does not suggest that the materials actually have to respond over the whole range. Page 4, lines 21 to 27, teaches the contrary, namely that the inks are excited by a single band. Page 5, lines 18 to 19, adds that the bands cover a range not exceeding 60 nm. This "teaches away" from any kind of broadband response.

(n) **Main request A: Novelty over document D9**

(i) Appellants

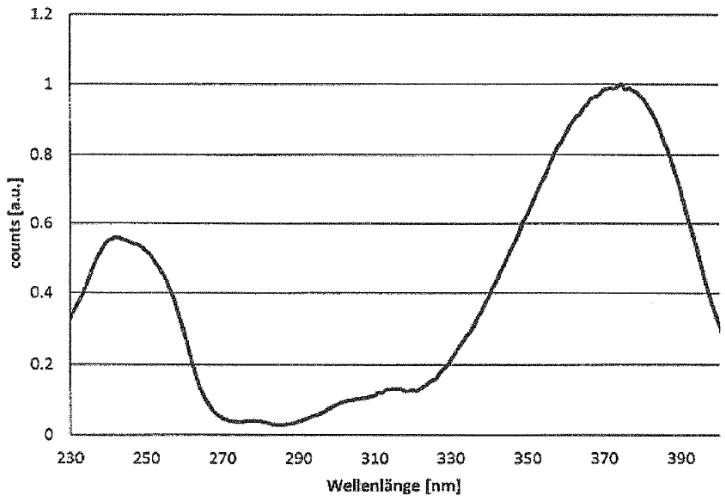
Claim 1 lacks novelty over the disclosure of document D9.

Feature 1-3: The board's provisional opinion is based on an incorrect interpretation of the feature "security device". The respondent's assertion that the document substrate is not a component of the security device is wrong. The fact that the regions are "printed" suggests otherwise. See also paragraph [0016] ("... and a background"). When the photograph is invisible, the white substrate is visible. Then all the regions have the same white colour. Thus, feature 1-3 is disclosed.

Feature 1-4: When viewed under visible light, the second photograph (reference 2 in Fig. 1) is invisible. Only the white background is visible, which generates a first colour perception. When viewed under UV, the multicoloured picture 2 becomes visible. Consequently, there are two regions of different colour.

Feature 1-6: The disclosed range of UV radiation is very close to the claimed range. It is highly likely that the effect exists over the whole claimed range. The respondent's declaration that the UV source of document D9 is just an exemplary source is untenable. The pigment used in document D9 can be excited over the relevant range of UV radiation:

7-diethylamino-4 methylcoumarin (Anregungsspektrum)
Quelle: http://www.fluorophores.tugraz.at/substance/567



(ii) Respondent

Feature 1-4: Claims 1 and 2 require the security device itself to exhibit colours visible to the naked eye under visible light illumination. The security device

is the fluorescent image 2 alone. The document substrate is not a component of the device.

Feature 1-6: The UV wavelength range mentioned on page 6, lines 16 and 17, only describes wavelengths of an exemplary UV source that might be used to irradiate the luminescent material. There is no suggestion in document D9 that the material is responsive to every wavelength in the range of 250 to 366 nm. The spectral data filed by opponent III are not *prima facie* relevant and should not be admitted. In any case, the spectrum shows that the material does not respond over a very substantial portion of the cited wavelength range.

(o) **Main request A: Novelty over document D12**

(i) Appellants

Document D12 discloses a document comprising two regions that appear grey under visible light and red and green under the light of a tungsten lamp. The skilled person is aware that such light comprises both visible and near UV light. Thus there is at least one UV wavelength in the range 235-380 nm in which the claimed effect is observed. The opposition division has overlooked the disclosure in col. 5, lines 12 to 19, which discloses the subject-matter of claim 2. The inks can be excited over a range from 235-380 nm.

(ii) Respondent

The opponents offer contradictory explanations as to how UV light might be involved in the colour change. The disclosed colour change is not due to the presence or absence of UV light at all. Luminescence is explicitly excluded (page 2, lines 22-39). The data

referred to by appellant III could not be found in its written submission. Document D12 plainly does not destroy novelty.

(p) **Main request A: Novelty over document E16**

(i) Appellants

Document E16 discloses features 1-3, 1-4 and 1-6.

Feature 1-3: It should be noted that the feature only requires the colour to be "substantially" the same. There may be differences. When the fluorescent pigments are added to the rose red inks of embodiment 3, there is no substantial change in colour, which can be seen from the fact that the inks continue to be presented as "rose red inks" (note the plural).

Feature 1-4: The description of Example 3 discloses that the fluorescent colours are "bright and sharp". They would dominate the visible rose red colour. As a rule, the authentication of fluorescent security elements is carried out by means of a small, portable UV lamp, i.e. in situations where visible light is also present. This can also be seen from the fact that the fine line patterns remain visible (see the last sentence of the description of Example 3). Moreover, such hand-held devices usually also emit visible (e.g. blue) light. Also, if devices are tested under a table, there would still be a portion of visible light. The patent does not require any particular amount of visible light. It also covers situations where the light is almost exclusively UV (or visible) light. And even if the yellow colour becomes orange by the admixture of visible light, there is a colour change. Thus, the device of document E16 shows

feature 1-4 (considering also that the light used in the method has no bearing on the structure of the claimed device).

Feature 1-6: This feature is disclosed in claim 5. Document E16 relates to providing fluorescent lights having components of different colours of the same intensity. The skilled person is aware that this is not achieved in a single wavelength. Although the components may have the same intensity in only one wavelength, the colour effect can be observed over a whole range of wavelengths. It should be noted that the patent does not claim that the colours have the same intensity over the whole range. In document E16 the colour effects are obtained over the entire range of 250 to 430 nm (see penultimate sentence on page 4 of translation E16a). The skilled person reading a document interprets every bit of technical information and would not consider elements of the disclosure to be meaningless. This also applies to the statement in document E16 that the substances produce the same or similar fluorescent intensity "under UV radiation of the same wavelength in the range of 250-430 nm" (see the beginning of the second paragraph on page 5 of translation E16a). The respondent tries to present the feature "in the range of 250 to 430" as meaningless. The indication of the range shows that the effect is obtained over the whole range and not only in a single wavelength within that range.

(ii) Respondents

Claim 1 differs from the disclosure of document E16 in features 1-3, 1-4 and 1-6.

Feature 1-3: There is no disclosure in document E16 that the various inks have the same colour under visible light. In the only relevant embodiment 3 the inks are obtained by adding different fluorescent materials to "rose red ink". However, there is no information on the colour of those fluorescent substances. Their addition might change the visible colour of the ink. The fact that those inks are still referred to as "rose red inks" only means that those inks still contain the rose red pigments. And even if the terms "rose red" were understood to describe the overall colour, this does not mean that all three have the same shade of rose red. According to paragraph [0044] of the patent, several different shades of the same colour can be used. The use of the word "substantially" in claim 1 does not make any difference because this is not disclosed in document E16 either. The fact that the ink is still rose red is not sufficient to ascertain that the ink appears to have substantially the same colour.

Feature 1-4: The claimed invention does not require the verification to be made in darkness. Document E16 never considers viewing conditions where both visible and UV light are used at the same time. Embodiment 3 says nothing about the possibility of visible light being present. The information given makes it possible to conclude that visible light is not present.
In embodiment 3 of document E16, fluorescein (yellow fluorescence) fluorescent whitening agent (blue fluorescence) and complexes formed from Sm^{3+} (red fluorescence) are added to the batches. Embodiment 3 states that the patterns emit a combination of yellow, blue and red fluorescent colour blocks. This means that the viewing is performed in darkness because otherwise the rose red pigments would contribute. In the presence

of visible light, the contribution of the rose red pigments might completely overwhelm the fluorescent radiation. But at the very least the light emitted would not be yellow, but a sort of orange. The blue colour would look at least purple, but it might also look red. The fact that the presence of some visible light cannot be ruled out in the viewing conditions of document E16 is not equivalent to the direct and unambiguous disclosure of that feature. There is no disclosure in document E16 that the fluorescence is of high intensity. The assertion of the appellants in this respect amounts to mere speculation. The fluorescence appears bright and sharp because it is viewed in darkness and there is no other light to compare it to. This does not mean that the fluorescent intensity is sufficiently strong to somehow block out the presence of the rose red pigments. Also, it is simply not true that traditional devices are always tested in the presence of visible light. Everybody has seen bank employees hiding under their desk to carry out the test, trying to block out the visible light which would otherwise be overwhelming (see also documents D1 and D4). The aim of the invention is specifically to avoid the need for this. The visible patterns referred to in Example 3 may be such that they are visible under both light conditions. Unless the document discloses what the claimed object looks like, and in the absence of further information, there is no way of knowing what the device would look like under specific conditions. Therefore, feature 1.4 is not directly and unambiguously disclosed.

Feature 1-6: The board relied entirely on the word "uniform" in claim 5 in translation E17, which is a mistranslation, as can be seen from translation E16a. What is disclosed is that the substances are chosen to

yield the same intensity at one particular wavelength somewhere within the disclosed range. This can be seen from claim 2, which contains the same feature, and from the passage bridging pages 5 and 6 of translation E16a. This is partly how the device of document E16 achieves security. To copy the device, counterfeiters would have to find three different materials that produce the desired colours and have the same intensity in a specific wavelength. The discussion of the prior art in document E16 itself contradicts the appellant's objection because it repeatedly refers to "a specific wavelength" (see the second paragraph on page 4 of translation E16a). The whole idea of document E16 is to pick a clever selection of known materials which all happen to respond to exactly the same wavelength. Each of the embodiments of document E16 requires a specific wavelength for it to work. The indication of the range in document E16 is not meaningless. It qualifies the specific wavelength, which has to be within that range. For example, the wavelength cannot be 200 nm.

(q) **Qualification of the skilled person**

(i) Appellants

The skilled person is a physicist or a mechanical engineer familiar with the composition and function of pigments (absorption, emission, ...) and is experienced in the field of printing technology.

(ii) Respondent

The skilled person is a person who designs and manufactures security devices. They have to be distinguished from the counterfeiter. The skilled

person has access to a wide range of luminescent pigments and to expert ink mixers capable of creating the inks. The counterfeiter does not have access to these resources. The skilled person is an ink specialist and could have various technical backgrounds. They could be defined as ink chemists who understand pigments.

(r) **Main request A: Inventive step, starting from D1**

(i) Appellants

The opposition division was incorrect to conclude that document D1 was limited to a hidden security feature. (machine scanning is just one of the possible modes of operation disclosed, see claim 18), and in stating that the colours are not visible to the naked eye.
The viewing conditions are not part of the claimed object. The pigments used produce light that is visible to the eye. Thus the claimed structure is disclosed in document D1 and the excitability over the claimed range is obvious in view of the disclosure of document E19.
It should also be noted that the patent itself shows that there were suitable commercially available materials before the priority date, as can be seen from the trade names used.

(ii) Respondent

The appellants' arguments are based on an incorrect evaluation of what is actually disclosed in document D1 and are entirely based on hindsight. The skilled person has no motivation to modify a hidden security device so that it becomes apparent to the naked eye.

(s) **Main request A: Inventive step, starting from D3**

(i) Appellants

In document D3 the monochrome background is superposed by a multicolour pattern when illuminated with UV light. Thus, it is suggested to the skilled person to provide two regions that have the same appearance under normal light and a different appearance under UV light. Whether the luminescent picture is provided in an area of the banknote that is monochrome simply depends on the design of the banknote. The teaching of document E19 would cause the skilled person to use pigments that can be excited over the whole near UV range.

(ii) Respondent

The security feature is invisible in visible light. There is no motivation to change this. The background of the banknote is not part of the security device. Its colour is not relevant.

(t) **Main request A: Inventive step, starting from D5**

(i) Appellants

The respondent's assertion that document D5 discloses a covert device is not correct. On page 13, lines 9 to 11, it is said that the effect "appears in normal room lighting". Fig. 2 shows what can be seen when a lamp that also emits some visible light is used. This can be seen from the fact that not only the security device but also other parts of the ID card are visible. Document D5 does not disclose in detail which pigments are to be used. To fill the gaps, the skilled person would have used common materials. By doing so,

they would have obtained devices that can be activated over a broad range. This also has the advantage that any UV source can be used. Alternatively, the skilled person wishing to be able to use the device of document D5 with a portable UV lamp would wish the security device to be detectable by a whole variety of lamps, i.e. over the whole near UV range. They would know from document E19 or their common general knowledge that there are pigments that can be excited over virtually the whole near UV region and thus achieve the subject-matter of claim 1 without any inventive effort.
The fact that UV lamps that emit over a whole range are used does not mean that the skilled person would not have seen the usefulness of pigments that have a broadband response. This is because the lamp (usually discharge lamps are used) has a wavelength-dependent intensity spectrum and may have a small yield in a specific wavelength. The teaching in document D5 that other bands than the long UV band can be used (see page 5, lines 20 to 23) constitutes an incentive for the skilled person to use pigments that extend the range in which fluorescence can be activated. Other relevant passages are found on page 3, lines 1 to 8, where lamps covering the range from 280 to 400 nm are mentioned, and on page 7, lines 7 to 21, where there is no reference to a single band (see lines 13 and 14: "exposed to the radiation needed to excite the inks").
Document D5 does not require the materials to be excited within a single band only (see page 6, line 13, which does not add "exclusively"). There is no deep technical meaning in the disclosed band width of 60 nm. The skilled person would not have stuck to this piece of information. The patent itself cites certain pigments by their commercial name, which shows that at the priority date those materials were commercially available and known to the skilled person.

The respondent has admitted this in the context of sufficiency of disclosure. The argument that the skilled person would have had no incentive to replace the pigments of document D5 fails because the document does not disclose the nature of the pigments. Thus, the skilled person has to fill the gap by finding appropriate pigments. The security of the document disclosed in document D5 is not obtained by the narrowness of the domain within which the fluorescent response is obtained, but by the fact that the use of UV radiation generates a coloured image replacing a monochromatic pattern or background. This also follows from the assertion that any desired band may be used (page 5, line 23). According to the argumentation of the respondent, the claimed security devices reduce the security level of the documents because the fluorescent materials respond over a broad range. At the same time, they argue that the same approach would not be chosen in the context of document D5. This is inconsistent. When defining the objective technical problem, only effects obtained by the distinguishing features should be taken into account. In the present case, this means that the objective technical problem has to be based on the ease of detection rather than on maintaining a security level (which the claimed invention does not achieve either).

(ii) Respondent

Document D5 is not an appropriate starting point because it essentially discloses a covert device which is invisible under visible light. The single reference to a "ghostly white image" does not change the overall teaching of the document in this respect. Thus, the skilled person looking for an improved "overt" device would not start from such a device. Fig. 1 confirms

this interpretation because image 30 is not visible. A key factor of the device of document D5 is that the luminescent effect is only revealed at a specific wavelength within a single band (see page 4, line 24), which should not exceed 60 nm in breadth. This is a major factor in how document D5 achieves its security level (see page 7, lines 14 and 15). The narrowness of the band makes it hard for the counterfeiter to reproduce the security element. As a consequence, the skilled person would not have envisaged enlarging the range within which the material shows luminescence. It is true that document D5 does not say "only a single band", but the word "single" means "only one". If anything else was meant, the drafter would have simply referred to "a band". All that is disclosed on page 3, line 4, is that light sources can be used that emit in the range of 280 to 400 nm. The response range of the material is not affected by this statement. The skilled person may have to choose some material to carry out the invention described in document D5, but they would have a great number of narrow-band materials at hand to choose from. By choosing such a material, they would be in line with the proper teaching of the document. The formulation of the objective technical problem used by the board in its communication is inappropriate because it contains a clear pointer to the solution. The correct objective technical problem is to provide a security device which is simpler to examine whilst maintaining a high security level (see paragraph [0010] of the patent). In view of this objective technical problem, the invention does involve an inventive step. There is nothing in document D5 that would prompt the skilled person towards the invention. Rather, document D5 actively teaches away from the claimed solution by requiring all of the inks to respond at one particular

wavelength within a single wavelength band. The mere fact that the skilled person would have been aware of the existence of materials that respond over a larger range does not result in a different conclusion. The skilled person would not necessarily have chosen such a material. Also, there is nothing in the spectral data submitted by the appellants that would have motivated the skilled person to use such a material to solve the correct objective technical problem. Thus, the skilled person may happen to choose one of those materials, but it has not been shown that they would. The disclosure in document D5 that "other bands may also be used if desired" (see page 5, lines 22 and 23) only relates to possible illumination ranges and does not refer to the response wavelength of the material. It means that in a distinct embodiment a different (yet still narrow) band can be used. There is a fundamental difference between the knowledge of the skilled person in respect of sufficiency of disclosure (where they make use of the teaching of the patent) and in respect of inventive step (where they cannot rely on the disclosure of the patent itself). By giving up the narrow-band response of document D5, the invention does indeed give up the way in which document D5 achieves security, but it can do that because its security is based on a different effect, namely the matching of ink colours, which is difficult to reproduce.

(u) **Main request A: Inventive step, starting from D9**

(i) Appellants

The use of common commercially available pigments in the element of document D9 would have led the skilled person to the subject-matter of claim 1.

(ii) Respondent

The security device is invisible under visible light. There is no motivation for the skilled person to make the feature visible under visible illumination. The background is not part of the security device.

(v) **Main request A: Inventive step, starting from D10**

(i) Appellants

The opposition division only asserted that document D10 was not a suitable starting point and did not provide further arguments as to why the security device was not also visible to the naked eye. Document D10 also discloses the use of several fluorescent inks side by side (col. 3, lines 38-40). The objective technical problem is to increase the security of the document against forgery. This would have led the skilled person to the subject-matter of claim 1. Claim 2 is also disclosed in column 3, lines 47 to 56.

(ii) Respondent

Document D10 fails to disclose that any of its inks are responsive to UV light. Moreover, in document D10 matching/mismatching is achieved between a fluorescent ink and a non-fluorescent ink. There is no motivation in document D10 or in the cited prior art that would lead the skilled person to modify the teaching in such a way as to arrive at the subject-matter of claims 1 or 2.

(w) **Main request A: Inventive step, starting from E16**

(i) Appellants

Document E16 discloses the use of certain pigments. The skilled person wishing to extend the region within which the device can be activated by UV radiation, so that a great variety of UV lamps can be used, would easily find appropriate pigments. The indication in document E16 that the same intensities are obtained for different colours would not deter the skilled person from using other pigments because this feature is only a preferential feature in document E16 (see page 5, second paragraph). Moreover, document E16 also teaches that the mixing ratio is relevant (see page 5, first paragraph, and claim 4). Thus, the skilled person could adapt the relative intensities via the mixing ratios. Example 3 refers to the wavelength of 365 nm, but still the wavelength range is disclosed on page 5, line 12, or claim 5. This is a clear indication that a broad range response could be desirable.

(ii) Respondent

In document E16, the security feature is revealed only under very specific conditions. Features 1-4 and 1-6 are not disclosed. They have a synergistic effect. The objective technical problem again is how to make the device simpler to examine while maintaining a high security level. Starting from document E16, nothing would motivate the skilled person to use materials with a broad UV response. The device in document E16 is used in darkness. There is no motivation for the skilled person to make the feature visible if visible light is used as well because they wish to obtain the primary colours, which is not possible if visible light is

there as well. And even if the skilled person had contemplated this, there is nothing in the prior art to enable them to do so. Feature 1-4 in itself is not obvious. In respect of feature 1-6, it should be noted that the security of the device of document E16 is based on the fact that all the materials respond at a specific wavelength (see, for example, claim 4 and the last paragraph on page 5). This applies throughout document E16. The feature that all the materials respond with the same intensity at that specific wavelength is only a preferred embodiment. As the response at a specific wavelength is vital for the security level, the skilled person would not have contemplated using materials with a broad response. The fact that they might be aware of materials with a broad response does not give them the motivation to use them. The ink/pigment ratio referred to by the appellants is irrelevant because it has nothing to do with the wavelength range of the response of the ink.

(x) Auxiliary request 0A: Added matter

(i) Appellants

Among the features introduced into the original claims is the feature that the regions are "being printed" (see feature 1-2). The original application only discloses a particular kind of printing, i.e. printing with very specific inks. Considering the fact that the matched pairs of inks are particularly important for the invention, it should be noted that only very particular inks are disclosed. This is also supported by the fact that in the context of document D5 the use of commercially available inks was not found to destroy the inventive step involved in the invention. The absence of the very particular inks from

claim 1 constitutes an inadmissible extension. Claim 1 is also inadmissibly extended because it does not require the security device to be printed on a substrate, contrary to the disclosure on page 3, lines 21 to 22 and 32 to 33 and claims 24 and 25 of the original application.

(ii) Respondents

There is no inadmissible extension. The basis for feature 1-2 is page 7, lines 31 to 36 of the original application. The disclosure of this passage is quite general. It does not refer to inks at all and does not tie the option of printing the region to any other feature. It can be applied to the entire disclosure of the application. This also has a firm basis in the original method claims and on page 3, lines 21, 22 and 33. The suggestion that the substrate has to be part of the product claim is incorrect. The references to printing on the substrate are clearly in the context of the method. This does not mean that the substrate becomes part of the security devices.

(y) Auxiliary request 0A: Sufficiency of disclosure

Note: These objections were also raised against main request A but they were discussed in the context of auxiliary request 0A during the oral proceedings before the board.

(i) Appellants

The skilled person would have been unable to carry out the invention, for several reasons.

- Functional definition: The materials to be used are defined by their function (effect on the eye of the observer, dependent on the illumination, the colour perception of the observer). There is no definition of what "the same" and "different colours" are meant to be, and the wavelength range of the visible light is not defined. The skilled person is faced with an infinite number of possibilities. The patent comprises only one complete example for the embodiments of claims 1/17 and 2/18. The technical concept is not sufficiently disclosed. The skilled person does not know how to obtain the desired result over the entire scope of the claims (see T 435/91).
- Materials: How can the invention be carried out with other inks and, more generally, with other materials than those disclosed in the patent, in particular when a matching pair is to be obtained? The patent does not mention this aspect.
- Colour perception and discrimination: The disclosure of the patent is not sufficient for carrying out the invention over the entire claimed range because two different observers do not see colours in the same way. The skilled person has no way of differentiating different colours (see T 435/91, T 1023/00, T 1569/11).
- Viewing conditions: The feature "means viewing under visible light" is not to be interpreted exclusively. It does not exclude the fact that wavelengths other than visible light may be concerned. Thus the difference between the first and second viewing conditions is not clear enough for the skilled person to carry out the invention. Also, the feature "extended combined illumination" in claim 6 is not well defined and results in the

skilled person being unable to carry out the invention.

- Trade marks: The components of the compositions are defined by their trade marks rather than their chemical formula.
- Time frame for colour changes: Claims 6 and 7 do not define the period of time within which the change in colour is to be observed. The opposition division's argument is based on mere speculation.
- Skilled person: The opposition division did not apply the same standard to the skilled person's common general knowledge when examining sufficiency of disclosure and patentability. The skilled person is a printing engineer or a chemist with an academic degree and several years of practice in the field of security printing.
- The skilled person does not know which conditions the materials are tested in. Wavelength ranges outside the claimed range are not excluded.

These problems should not be considered one by one but must be seen in combination. The claims cover an infinite number of colours and colour combinations without offering the skilled person enough guidance. Only a single example is given (see paragraphs [0055] and [0056]). This is not enough in view of the very broad scope of the claims. It is always easy to dismiss sufficiency objections as clarity objections but in the present case, the skilled person lacks information on many issues.

(ii) Respondent

The objections are unfounded. The invention is sufficiently disclosed for it to be carried out by those skilled in the art.

- The patent does not provide a single example, nor does decision T 435/91 establish a difference between the treatment of functional and structural features. Moreover, the present case is entirely different from case T 435/91. The patent explains where those willing to carry out the invention have to take care (paragraphs [0029], [0042], [0043], [0054]).
- The invention does not relate to the compositions of the materials themselves (which are available to those skilled in the art) but to the juxtaposition of two such materials. The patent explicitly discloses four suitable inks. The skilled person would have been capable of replacing them with suitable inks of different colours if need be. The process of selecting a suitable ink is very similar to the process employed in any standard printing method.
- The appellants' assertions in respect of the skilled person (that they are familiar with physics, have expertise in security technology and can ask suppliers) have to be taken into account when sufficiency of disclosure is examined.
- Trade names: The specific formulations of the inks used are not the subject of the present invention. They are already available to the skilled person. The skilled person would have had no difficulty in asking the manufacturers for suitable pigments with the desired colour characteristics.
- Viewing conditions: The definition of these conditions is a matter of clarity. The skilled person would have understood that the change in colour arises from including a material that luminesces under UV illumination. Thus the first and second viewing conditions differ from one

another by the addition of UV radiation. The viewing conditions must be sufficiently different from one another that the UV luminescent materials are activated under the second viewing condition but not under the first.

- Claims 6 and 7: Again, the objection relates to a matter of clarity and not of sufficiency. It is preferable that the change takes place within a few seconds, but it could also involve a time lag (see paragraphs [0030] and [0047]).
- Colour sensitivity: Only the relative colour is important, not the absolute colour. Also, the skilled person has at their disposal standard equipment for measuring colour. Decisions T 1023 and T 1569/11 are not relevant.

When dealing with sufficiency of disclosure, it is necessary to break down the sum of potential problems and look at the different aspects. When doing so, most objections are found to be based on clarity issues rather than on insufficiency of disclosure.

Reasons for the Decision

1. Applicable law

The application on which the patent is based was filed on 6 November 2003. In accordance with Article 7 of the "Act revising the EPC of 29 November 2000" (Special edition No. 1, OJ EPO, 196) and the "Decision of the Administrative Council of 28 June 2001 on the transitional provisions under Article 7 of the Act revising the EPC of 29 November 2000" (Special edition No. 1, OJ EPO, 197), Articles 54(1) and (2), 56, 83,

84, 114 EPC 1973 and Articles 115 and 123 and Rule 80 EPC [2000] apply in the present case.

2. Admissibility of late-filed documents

2.1 Spectral data filed by appellant III

The board cannot endorse the objection that the spectral data filed by appellant III are not *prima facie* relevant. They help to ascertain the implicit disclosure of document D3. As a consequence, they are admitted into the proceedings.

2.2 Document E16 and its translations (E17 and E16a)

About two weeks before the oral proceedings before the opposition division, a series of anonymous observations under Article 115 EPC were filed. One of them referred to document E16 and was accompanied by an English translation (E17) of that document. The opposition division decided not to admit these documents by applying Article 114(2) EPC, because the translation was not certified and could not be assumed to be accurate (point 29 of the decision under appeal).

The timing of the first filing of document E16 was such that there was no time to invite the party that had adopted the third party's objections to file a duly certified translation, without postponing the oral proceedings. Therefore, and in view of the fact that the opposition division had doubts regarding the translation E17, the decision not to admit documents E16 and E17 seems justified. It does not amount to a procedural violation, let alone a substantial one.

Incidentally, the board is unable to endorse the third party's assertion that Article 114(2) EPC is not applicable to third parties within the meaning of Article 115 EPC. According to established jurisprudence, submissions from third-parties filed after expiry of the opposition period are to be treated, by way of a legal fiction, as "late". Article 115 EPC cannot be used to extend third parties' rights, let alone extend them beyond the rights of parties to the proceedings. In other words, when third-party observations are filed after the time limit under Article 99(1) EPC, the principle enshrined in Article 114(1) EPC of examination by the EPO of its own motion is to be applied on the fictional basis that those observations are late, i.e. they are subject to the criteria developed in the jurisprudence for the boards' exercise of discretion when deciding whether to admit late-filed submissions within the meaning of Article 114(2) EPC (see "Case Law of the Boards of Appeal of the EPO", 9th edition, 2019, item III.N.4.4).

Documents E16 and E17 were once again invoked in appellant I and II's statement of grounds of appeal. Their admission lies within the discretion of the board under Article 12(4) of the Rules of Procedure of the Boards of Appeal (RPBA).

The respondent's translation E16a was filed with a letter dated 6 August 2019, i.e. about three months before the oral proceedings before the board. The board cannot endorse the argument that the filing of translation E16a, which was established on or before 27 May 2015, was a reaction to the board's communication dated 23 November 2018. There were good reasons to file this translation with the proprietor's response to the statements of grounds of appeal.

Thus, document E16a is late-filed and its admission lies within the discretion of the board under Article 13, paragraphs (1) and (3), RPBA.

Regardless of which translation is considered, document E16 is potentially destructive to novelty and therefore *prima facie* highly relevant. Thus, the board has decided to exercise its discretion by admitting document E16 into the proceedings. Having considered that both the translation E17 and the "Verified Statement on Translation" accompanying it have manifest deficiencies, the board has decided to admit not only translation E17 but also the late-filed alternative translation E16a, so as to have the best possible understanding of the actual disclosure of document E16.

The board notes that once this decision was announced to the parties in the oral proceedings, they all relied on translation E16a exclusively.

3. Remittal to the department of first instance

Having considered the nature of document E16 and the fact that the opposition was filed in 2009, the board has decided not to grant the respondent's request to remit the case to the department of first instance.

The board is aware that parties may have a legitimate desire to have a case discussed before two instances. However, in the present case, the board had already expressed its provisional opinion that document E16 was destructive to novelty. There is reason to believe that this opinion would have influenced the opposition division and, as a consequence, reduced the benefit of having two instances. Also, in view of the great commercial importance of the patent, there is little

doubt that whatever the second decision of the opposition division, the case would be brought back to the board in due time. It may be true that a remittal would offer the respondent additional opportunities to file auxiliary requests. However, in view of the statements of grounds of appeal the respondent had to be aware that the board might admit document E16 and could have filed appropriate auxiliary requests. There was no reason to expect that the board would not admit document E16. The refusal to remit the case cannot be considered to be unfair and does not deprive the respondent of its right to be heard. The boards have repeatedly stated that there is no absolute right to have a case remitted, even if a new document is admitted to the proceedings (see "Case Law of the Boards of Appeal of the EPO", 9th edition, 2019, chapter V.A.7.5.6).

The fact that the board (in a different composition) had decided to remit another case (decision T 2007/16 dated 15 February 2019) has no bearing on the present case because the procedural situation was different and all the parties had requested a remittal.

Incidentally, the fact that a case is of great commercial importance is not *per se* justification for a remittal. On the contrary, this fact may in certain circumstances constitute an incentive to reach a final decision as quickly as possible.

4. Claim interpretation

4.1 "security device"

The patent discloses that "[t]he present invention relates to a security device ... for use for example on

security documents and documents of value such as banknotes ..." (paragraph [0001]). Paragraph [0010] discloses that there is a "continuing need to develop security devices whose presence is difficult to ascertain but which, when inspected by someone who knows where to look, are simple to examine, and at the same time are difficult to replicate". Thus, the patent clearly distinguishes security devices and security documents. The security devices under consideration are to be used on security documents but their presence should not attract attention.

In view of the above, the board is unable to endorse the assertion that the claimed security device comprises the substrate to which it is applied. The fact that the security device has "regions" does not mean that those regions are regions of the substrate.

The fact that feature 1-2 requires the regions to be "printed" does not lead to a different conclusion. The claimed security device necessarily requires there to be a substrate onto which the region is printed. The substrate may be part of the security device (the last sentence of paragraph [0016]: "... the region may present an overall solid colour made up of a combination of elements and a background" appears to describe such a variant), but it does not have to be. The substrate can also be formed by the security document on which the security device is provided.

4.2 Viewing conditions

Paragraph [0017] of the patent makes clear that the claimed colour effects are to be detectable by the naked eye. The expression "viewing conditions"

encompasses many parameters involved in the observation of optical effects by a human observer, such as the point of view and distance with respect to the security device, but also the intensity and nature of the light with which the device is illuminated, and perhaps even the temperature of the security device (in case thermochromic materials are used) or the duration of the observation (if time-dependent photochromic effects are involved). However, in the patent the expression "viewing conditions" mainly refers to the wavelength of the radiation used.

4.2.1 First and second viewing conditions

Claims 1 and 2 cite that "first viewing conditions means viewing under visible light" and refer to "second viewing conditions [that] comprise a combination of a) visible light and b) light of substantially any UV wavelength in the range 235-380nm".

(a) "viewing under visible light"

The expression "viewing under visible light" does not exclude that the security device is viewed under light that also comprises components that are not part of the visible spectrum. This understanding is corroborated by a statement in paragraph [0020] of the patent, according to which "it should be understood that when viewing under UV there will be visible light present so that colours visible under visible light also contribute to the overall appearance of each region" (underlining added by the board).

That being said, the wording of the claim suggests that the first viewing conditions do not involve significant

quantities of UV radiation in the wavelength range from 235 to 380 nm.

(b) Second viewing conditions

The skilled reader would have understood the second viewing conditions such that the materials are exposed to light that necessarily comprises both visible light and UV radiation the wavelength of which is within the range of 235 to 380 nm. The presence of light of other wavelengths, such as IR radiation, is not excluded.

(c) Difference between the viewing conditions

The patent as a whole makes it abundantly clear that there has to be a difference between the first and second viewing conditions. There is no clear disclosure of the precise nature of the difference. The skilled person would have realised that the difference must be related to the effect responsible for the change in colour. If the change is due to the fact that the materials used emit light in the visible domain after having been irradiated with UV radiation, the portion of UV light in the first viewing condition has to be negligible, at least at the absorption frequencies of the luminescent material. If the change in colour is due to the use of photochromic substances, the difference must be related to the mechanisms involved in the photochromism.

4.3 "any UV wavelength in the range 235-380 nm"

The meaning of the word "any" for the interpretation of the claims requires careful consideration. In the context of the second viewing conditions, the fact that those conditions comprise a combination of visible

light and light of substantially any UV wavelength in the range 235-380 nm is understood to mean that the light used has to comprise both visible light and UV light, the wavelength(s) of which lie(s) within that range. It is not required that the light comprises substantially the whole range of wavelengths from 235 to 380 nm. In principle, the addition of one single wavelength within that range would be sufficient.

However, the word "any" also has major consequences for the definition of the materials to be used because they have to satisfy certain functional requirements under the second viewing conditions. For instance, when claim 1 is considered, the two regions have to exhibit different colours, regardless of which UV wavelength or wavelengths within the range from 235 to 380 nm are being used under the second viewing conditions.

4.4 "visible to the naked eye"

The patent does not define this feature in any particular way. Therefore, the board interprets it according to its common meaning as "able to be seen (by a human observer) without the help of an instrument".

4.5 "the regions define ... graphical patterns ..."

It was asserted that the wording of feature 1-9 did not require the patterns, indicia or images defined by the regions of the security device to be discernable at both viewing conditions. Accordingly, the claim would also encompass cases where the pattern is only visible under one of the two viewing conditions. The board finds this interpretation unpersuasive. The skilled person would have understood that the core of the invention lies in the fact that the colour of the

security device pattern changes when the viewing conditions are changed, and that security devices that appear or disappear upon a change of viewing conditions are not part of what is claimed.

4.6 Claims 1 and 2

Although the materials used to print the regions are required to luminesce under UV irradiation, strictly speaking, the subject-matter of claims 1 and 2 does not require the colour changes to be due to luminescence effects. This becomes apparent when the subject-matter of claims 6 and 7 is considered, where additional photochromic materials are used. The effect may then be due to the change in colour of the those materials.

4.7 Claims 6 and 7

4.7.1 "extended combined illumination"

The board understands this feature, which is not defined in the patent, to mean prolonged illumination by both visible and UV light.

4.7.2 Overall interpretation of the claims

Claim 6, which is dependent on claim 2, is understood to relate to a security element having two regions that exhibit different colours under visible light. Under combined illumination (i.e. visible light + UV radiation), the regions at first exhibit different colours. After extended combined illumination, however, both regions exhibit the same colour.

Claim 7, which is dependent on claim 1, is understood to relate to a security element having two regions that

exhibit the same colour under visible light. Under combined illumination (i.e. visible light + UV radiation), the regions at first still exhibit the same colour. After extended combined illumination, however, the regions exhibit different colours.

5. Clarity

5.1 Consistency between claims and description

This objection was based on the original description and no longer applies to the requests before the board.

5.2 Lack of definition of "white light"

In the description filed as part of main request A, the reference to typical examples of white light ("north sky light, general indoor light, tungsten light, fluorescent tube light or tri-band fluorescent tube light"; see page 4, lines 14-17, of the marked-up version) has been deleted. The argument that the absence of any definition of "white light" made the claims unclear is unpersuasive. Those skilled in the art know that "white light" is light containing all of the wavelengths of the visible spectrum in roughly equal amounts. The list deleted from the description is only given by way of example and corroborates this common understanding of the term. It is not crucial for the interpretation of the expression "white light".

5.3 "means viewing under visible light"

Contrary to the claims as granted, which refer to "first viewing conditions comprising visible light", the claims on file comprise the feature "wherein the first viewing conditions means viewing under visible

light". The syntax of this amended feature could be improved but the board has no doubt that the skilled reader would have understood the expression to be equivalent to "wherein the expression "first viewing conditions" means viewing under visible light" (underlining by the board).

5.4 Proportion of UV light

This alleged lack of clarity, which is based on the absence of information on the proportion of visible light and UV light in the second viewing conditions, was already present in the claims as granted. It is, therefore, beyond the scrutiny of the board (see decision G 3/14 of the Enlarged Board of Appeal, OJ EPO 2015, A102).

5.5 Difference between the viewing conditions

Again, the alleged lack of clarity is already present in the granted claims and therefore cannot be examined by the board.

5.6 Visibility to the naked eye

There is no definition of this feature in the patent, but the skilled person would have known what kind of light is visible to the naked eye.

5.7 Conclusion on clarity

The objections based on Article 84 EPC are not successful.

6. Compliance with Rule 80 EPC

The last sentence of paragraph [0015] of the patent was deleted to bring the description in line with an intermediate set of claims that had been amended to meet objections made by the opponents. Thus, the amendment was occasioned by a ground for opposition under Article 100 EPC and complied with the requirements of Rule 80 EPC when it was carried out.

The very language of Rule 80 EPC ("... occasioned by a ground for opposition ...") makes clear that the situation at the time of the amendment needs to be considered when compliance with this provision is examined. The fact that the claims were amended again at a later stage and that, as a consequence, the deletion of the sentence was no longer required, does not lead to the conclusion that the amendment of the description retroactively contravenes Rule 80 EPC. The original amendment can still be said to have been occasioned by a ground for opposition.

7. Alleged prior uses

In points 30 and 31 of the decision under appeal the opposition division dealt with different cases of alleged prior use (E9a to E9f). The division concluded that the public availability of the documents had not been proven in any of the cases. In its statement of grounds of appeal, appellant II maintained its objections and supplied further evidence.

7.1 Document E9c

The alleged prior use concerns a Portuguese 10000 Escudos banknote. Such banknotes were issued from 1996

(i.e. well before 4 December 2002, the priority date of the patent) and withdrawn from circulation in 2002. The opposition division disregarded this prior use because the banknote shown on the first photocopy bore no identification number and the banknote shown on the second photocopy was a specimen that had not been in circulation. Appellant II then provided photographs of a banknote bearing the serial number OG4495711. The board is satisfied that this photograph shows a banknote that was put into circulation before the priority date of the patent and, therefore, constitutes prior art within the meaning of Article 54(2) EPC. However, appellant II has only provided photographs allegedly taken under certain experimental conditions. Neither the board nor the patent proprietor have been provided with original banknotes. The respondent repeatedly requested access to these banknotes to verify the experimental results claimed by appellant II, but was not given the possibility to do so. Therefore, the evidence relating to the 10000 Escudos banknote cannot be taken into account.

7.2 Document E9f

This alleged prior use concerns a South African driving licence. The opposition division had dismissed the prior use because the date of public availability was unknown. Appellant II then established that the driving licence was publicly available before the priority date of the patent. However, as the appellant has not given the respondent the opportunity to examine the driving licence and to verify the results claimed by the appellant (or to provide counter-evidence, as the case may be), the evidence cannot be taken into account.

8. Novelty (main request A)

8.1 Novelty over document D1

Document D1 discloses a security document with markings that can be used to prevent copies being made by scanning (e.g. by photocopying the document).
The markings are defined by a pair of coloured areas that have the same appearance when illuminated by visible light. One of the areas generates a particular pattern when scanned at wavelengths outside the visible spectrum, thereby indicating that the document is not to be copied. The features whose disclosure is disputed are features 1-4 (visible colours under the second viewing condition) and 1-6 (particular UV range)

8.1.1 Feature 1-4

The passage on page 10, lines 16-18, of document D1 discloses the possibility of luminescence occurring in the visible spectrum caused by near-UV or near-IR illumination. The argument that the option was designed to be detectable by a scanner and not by the human eye is unpersuasive because the claims only require the colours to be visible. It is not required that they are actually detected by a human eye.

Figures 2 and 3 disclose a security device viewed under visible light and under invisible light, respectively.

Fig.2.

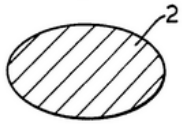
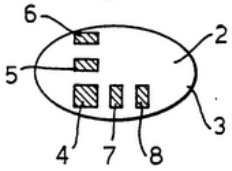


Fig.3.



The device is formed by the application of two inks, one of which forms the background 3 and the other a series of markings 4 to 8. Under visible light, both inks have the same colour (page 20, lines 13 to 14: "colour matched inks"). When illuminated by radiation outside the visible spectrum, the markings 4 to 8 are distinguished. When the device is illuminated by radiation both within and outside the visible range, the background will appear. However, it is not clearly disclosed what the colour of markings 4 to 8 would be. Possibly they would exhibit a different colour, but it could also be that their response to the irradiation would not be visible. The fact that document D1 teaches that the device is "illuminated by a UV source in darkness" (page 11, lines 16-19) and the general teaching of the document (that the pattern should be hidden and only be detected by a scanner and not a person) suggest that the latter is to be expected. The same conclusion applies to the embodiments shown in Figures 15 to 25. Thus, feature 1-4 cannot be said to be directly and unambiguously disclosed.

8.1.2 Feature 1-6

Claim 18 of document D1 discloses that "the inks of the marking ... respond differently when viewed under UV light". Moreover, the passage on page 10, lines 16-18 mentions "near ultraviolet or near infrared illumination". The expression "near ultraviolet" commonly designates a range of wavelengths between 300 and 400 nm. Therefore, the fact that the second viewing conditions comprise light in the range 235-380 nm cannot as such distinguish the subject-matter of claim 1 from document D1. However, document D1 does not disclose materials that exhibit different visible

colours when illuminated with UV light of substantially any wavelength between 235 and 380 nm.

8.1.3 Conclusion

Claim 1 differs from the disclosure of document D1 in features 1-4 and 1-6. As a consequence, its subject-matter is new over document D1.

8.2 Novelty over document D3

Document D3 discloses fluorescent security images. The items requiring verification comprise a substrate printed with a first printed ink image that is visible to the human eye under white light irradiation, and a second printed ink image that is only visible to the human eye under irradiation with non-visible light. The second image is a record of a polychromatic reference composition (see page 3, lines 4 to 12).

8.2.1 Feature 1-3

Document D3 does not disclose feature 1-3, for the following reasons.

The document repeatedly states that the second image is invisible to the eye under white light illumination (page 8, line 18) and only becomes visible because non-visible wavelengths are added (page 3, lines 7-9). The fact that in the Example described on pages 9 and 10 the "UV-visible inks used had the same basic components as the inks used to print the visible conventional parts of the image but carried the necessary special dopants" (page 10, lines 12-15) does not lead to a different conclusion. In the context of the document as a whole, those skilled in the art would

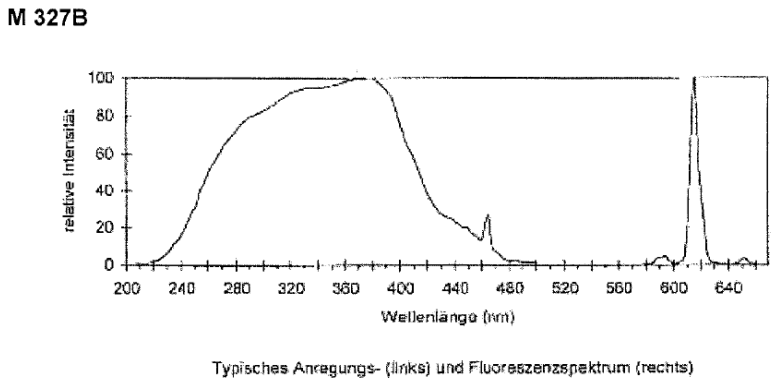
understand that the inks have the same basic components, with the exception of the pigments. According to document D3, coloured regions appear in regions adjacent to the first image when the device is illuminated with UV radiation, but these regions are not visible (and therefore not of the same visible colour as the first image) under visible light.

Document D3 also discloses that "the second printed ink image may be superimposed with a printed image which is visible under white light irradiation. The printed image which is visible under white light irradiation may be at least in part a portion of said first printed ink image and relates to the second printed image in an obvious manner" (see page 6, line 30 to page 7, line 3). The board understands this somewhat obscure statement to mean that it is possible to add a (third) printed image (apparent when illuminated with visible light) in the region where the second printed image is provided. The third printed image may at least partially overlap with the first printed image and be related in some unspecified way to the second printed image. It might for instance complement the second printed image so that the second and third printed images form a whole when viewed under light comprising both visible and UV components. However, this does not mean that the different regions of the second printed image exhibit the same colour under visible light. Thus, even this passage does not provide a direct and unambiguous disclosure of feature 1-3.

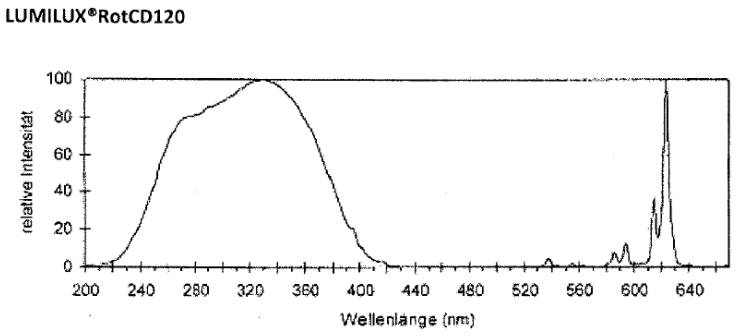
8.2.2 Feature 1-6

The excitation spectra for the pigments M 327B and CD120 provided by appellant III show that both pigments

cited in document D3 (page 7, lines 25 and 26) can be activated at any UV wavelength in the range 235-380 nm.



Typisches Anregungs- (links) und Fluoreszenzspektrum (rechts)



Typisches Anregungs- (links) und Fluoreszenzspektrum (rechts)

Thus, feature 1-6 as such does not further distinguish the subject-matter of claims 1 and 2 from the disclosure of document D3.

8.2.3 Conclusion

Claim 1 differs from the disclosure of document D3 in feature 1-3. As a consequence, the subject-matter of claim 1 is new over the disclosure of document D3.

8.3 Novelty over document D4

Document D4 discloses a security device comprising two patterns. The two patterns have the same colour when

illuminated by UV light with a specific wavelength and a different colour when illuminated by UV light with a different specific wavelength (see claim 1).

Document D4 cannot destroy the novelty of the subject-matter of claims 1 and 2, if only because the colour effects are obtained at very specific wavelengths, contrary to the requirements of claims 1 and 2, where the effects relating to the second viewing condition have to be obtained substantially at any UV wavelength in the range 235-380 nm.

8.4 Novelty over document D5

Document D5 discloses a substrate such as an ID card bearing a non-visible printed image. The image is formed from at least two fluorescent or phosphorescent inks. When illuminated by non-visible radiation, the areas of the image display differing colours.

The board has already explained under point 4.1 how it understands the expression "security device". The corresponding item is called a "verification feature" or "non-visible feature" in document D5.

8.4.1 Feature 1-3

Document D5 discloses that the expression "non-visible image" is not to be understood in the sense that the image is completely invisible. Rather, the image will be visible as a "ghostly white image" (page 7, lines 7-12). This white appearance qualifies as a visible colour within the meaning of feature 1-3. It may be that a "ghostly white image" does not qualify as a solid, single colour, the claims do not require such a colour. The assertion that the "ghostly white

image" is not visible to the naked eye in the sense required by the invention is unfounded because the patent does not attribute a special meaning to the feature "visible to the naked eye" (see point 4.4).

The board is unable to endorse the argument that the difference observed when UV components are added to the visible light is not due to colour because the colour switches from white to different colours. Whether similar effects could be obtained by means of variations in the surface roughness is irrelevant in the present context.

The fact that the image would have to be looked for, as observed by the opposition division (page 13 of the decision under appeal), does not lead to a different conclusion, as this is generally true of security devices (see point 4.1).

Thus, feature 1-3 is disclosed in document D5.

8.4.2 Feature 1-4

Document D5 discloses that the non-visible image is formed from at least two fluorescent inks which produce different colours when excited by a band of non-visible radiation (page 5, lines 13-17), which is disclosed to be UV radiation of long or short wavelength (page 5, lines 18-23). The skilled person would have expected the admixture of visible light to possibly result in a different colour (if the visible light is not white light) but not to make the colour difference disappear. It is not plausible that the ghostly white appearance added by the admixture of visible light would completely overwhelm the fluorescent light emission. Therefore, feature 1-4 is implicitly disclosed.

8.4.3 Feature 1-6

Document D5 discloses the use of fluorescent materials capable of being excited by a single band of non-visible radiation (page 4, line 24; see also page 5, lines 15 and 16). A "band" is defined to be a wavelength range "not exceeding about 60 nm" (page 5, line 19). Typically, the long UV band (350 to 400 nm) is used (page 5, lines 20 and 21) but other bands such as the short UV band (300 to 350 nm) can also be used (page 5, lines 22 and 23). Even assuming that the materials of document D5 respond over the whole band, the document cannot be said to disclose the use of materials responding to light of substantially any wavelength between 235 and 380 nm. The statement that normal UV bulbs or tubes emit "radiation in the near UV range of about 280 to 400 nm" (see page 3, lines 3 and 4) does not lead to a different conclusion because it just defines the range covered by common UV light sources and has no bearing on what the materials disclosed in the context of the invention disclosed in document D5 can accomplish. Thus, feature 1-6 is not disclosed in document D5.

8.4.4 Conclusion

Claim 1 differs from the disclosure of document D5 in feature 1-6. As a consequence, the subject-matter of claim 1 is new over the disclosure of document D5.

8.5 Novelty over document D9

8.5.1 Feature 1-4

In the embodiment of Fig. 1 of document D9,

"photograph 2 is invisible to the naked eye, unless UV radiation is applied to it, which results in the fluorescence of the indicia that thus becomes visible" (see page 8, last line to page 9, line 2).

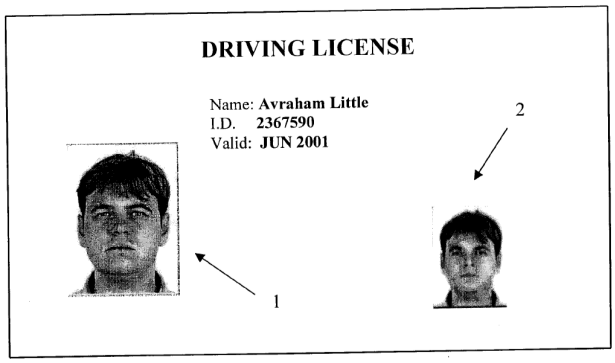
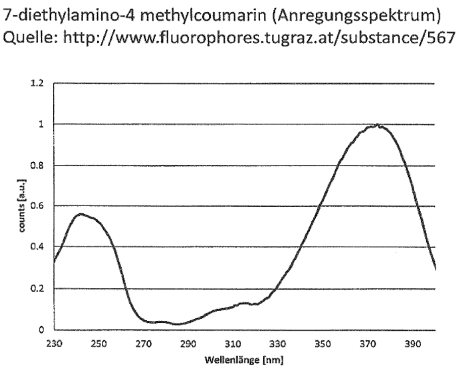


Fig. 1

The white background that is visible in the absence of UV light cannot be said to be a region of the security device, be it only because it is not printed as required by feature 1-2. The device is invisible as long as there is no UV illumination. Thus, feature 1-3 is not disclosed.

8.5.2 Feature 1-6

There is experimental evidence that the labelling dye of Example 1 (7-diethylamino-4 methylcoumarin; see page 11, last paragraph) absorbs at all wavelengths in the range from 235 to 380 nm.



The board cannot endorse the objection that the material does not respond over a very substantial portion of the claimed wavelength range. There is a region of reduced response, but there is absorption over the full range. Thus, feature 1-6 is implicitly disclosed in document D9.

8.5.3 Conclusion

Document D9 does not disclose feature 1-3. The subject-matter of claims 1 and 2 is new over this document.

8.6 Novelty over document D12

Document D12 discloses security documents comprising marking with metameric inks (i.e. inks that appear to have the same colour although the spectral distribution is different). Example 1 discloses a pair of green inks having matching colours under daylight illumination. When viewed with a tungsten filament lamp, however, the colours do not match (see page 4, lines 37 and 38 and 84 to 90). Example 2 discloses the use of inks that have a single grey-black colour under daylight but turn red and green under the light of the tungsten filament lamp (see page 5, lines 12 to 19).

8.6.1 Features 1-3 and 1-7

Example 2 discloses pigments that exhibit the same colour (grey-black) under first viewing conditions (daylight) and different colours (red and green) under second viewing conditions (illumination by a tungsten filament lamp). However, both viewing conditions comprise near UV radiation. Moreover, the inks used are not luminescent. Rather, luminescence is excluded because the inks under consideration are "comprised

only of materials which are not transformed by radiation to an excited form having a different colour to the unexcited form" (page 2, lines 22 to 27).

8.6.2 Feature 1-6

There is no experimental evidence showing that the pigments can be excited over the range 235 to 380 nm.

8.6.3 Conclusion

The subject-matter of claims 1 and 2 is new over the disclosure of document D12.

8.7 Novelty over document E16

Document E16 discloses a fluorescent anti-counterfeiting tag printed with a colour pattern made of several fluorescent materials (claim 1). When irradiated with UV light in the 250-430 nm range, a multicoloured pattern is displayed (claim 2).

8.7.1 Feature 1-3

The fluorescent agents of Example 3 are incorporated into rose red ink (see document E16a, page 6, line 28). The incorporation of the fluorescent pigments may alter the ink colour to some extent, but document E16 still refers to those inks as "rose red inks" after their incorporation (see document E16a, page 6, line 29). The various inks may have different shades of rose red, but claim 1 does not require the regions to exhibit the very same colour but only "substantially" the same colour. There is no definition of a substantial difference in the patent. In the absence of a precise definition, it is legitimate to consider that the

various shades of rose red (if there is more than one shade) correspond to "substantially the same visible colour" within the meaning of feature 1-3. Thus, feature 1-3 is disclosed in document E16.

8.7.2 Feature 1-4

When the device of Example 3 is viewed under viewing conditions involving UV light with a wavelength of 360 nm, the fluorescent pigments emit yellow, blue and red light (see document E16a, page 6, lines 32 to 34). This emission will necessarily also take place if some visible light is added to the UV radiation. As a consequence, the emission of fluorescent light will lead to a - possibly small - change in the rose red appearance of the inks under visible light alone. Thus, the regions exhibit different visible colours, as required by feature 1-4. The skilled person contemplating the teaching of document E16 would not understand it to describe the extreme case construed by the respondent, in which the fluorescent light is completely invisible with respect to the visible rose red colour of the inks. There is no indication whatsoever in document E16 that would lead the skilled person to this conclusion. It is not manifest in document E16 that the examination is carried out in the absence of any visible light and that the bright and sharp colour effects are obtained only under such conditions. Thus, the skilled person contemplating document E16 would have considered feature 1-4 to be directly and unambiguously disclosed in this document.

8.7.3 Feature 1-6

In its communication dated 23 November 2018, the board

expressed the provisional view that feature 1-6 was disclosed in claim 5 of document E16, which, according to document E17, requires that "... the selected base colour ultraviolet material emits the same or similar fluorescent intensity under uniform UV radiation wavelength in the range of 250nm to 430nm" (underlining by the board). However, this translation is doubtful. According to translation E16a, claim 5 requires that "... each of the selected primary-color fluorescent substances produces the same or similar fluorescent intensity under ultraviolet irradiation of the same wavelength in the range of 250~430 nm" (underlining by the board). Having considered that translation E17 never refers to "uniform" UV radiation elsewhere and - very much like translation E16a - it repeatedly refers to the effect obtained at "a particular wave-length of UV light radiation" (see, for instance, page 5, line 23, of document E17), the board considers the reference to uniform UV radiation to be uncertain. As a consequence, it is unsuitable for establishing the clear and unambiguous disclosure of a feature in document E16.

The board accepts that the fluorescent phenomena put to use in document E16 do not occur at single wavelengths but can always be observed within a certain range of wavelengths. However, this does not mean that the disclosure of fluorescence at a wavelength of 365 nm anticipates the feature according to which the effect occurs for UV light of substantially any wavelength between 235 and 380 nm, as required by feature 1-6.

The disclosure in document E16 that "the said color fluorescent authentication label displays a color design, which emits fluorescence in a plurality of colors with the same or similar fluorescent intensity

under ultraviolet irradiation with a specific wavelength in the range of 250~430 nm" (see document E16a, page 4, lines 32 to 34) does not directly and unambiguously disclose feature 1-6 either. Considering the syntax of the sentence, the most natural reading of this sentence is that a plurality of colours of the same intensity are obtained at one specific wavelength within the range extending from 250 to 430 nm, rather than that the effect is obtained over the whole range. In any case the latter cannot be said to be directly and unambiguously disclosed.

The same applies to the sentence found on page 5, lines 10 to 12, according to which "[t]he selected primary-color fluorescent substances in the present invention are preferably those which produce the same or similar fluorescent intensity under ultraviolet irradiation of the same wavelength in the range of 250~430 nm ...".

The aforementioned understanding of those passages does not require the expression "in the range of 250~430 nm" to be technically meaningless. The indication limits the range of wavelengths within which the effects occur. This is technically meaningful, if only because the far ultraviolet range is excluded.

Thus, there is no direct and unambiguous disclosure of feature 1-6 in document E16.

8.7.4 Conclusion

Claim 1 is new over the disclosure of document E16 because this document does not directly and unambiguously disclose feature 1-6.

8.8 Overall conclusion on novelty

The subject-matter of claims 1 and 2 is new over the state of the art presented to the board.

9. Inventive step (main request A)

9.1 Starting from document D1

Document D1 is not an appropriate starting point for the assessment of inventive step because its object (a method for automatically preventing unauthorised copying) is quite different from the purpose of the invention, where colour effects visible to the naked eye are used to authenticate a security document. Document D1 is clearly more remote from the invention than other documents cited as state of the art.

9.2 Starting from document D3

As explained above (point 8.2), document D3 does not disclose feature 1-3, according to which the two or more regions exhibit substantially the same visible colour under the first viewing conditions.

The assertion that a combination of documents D3 and E19 would lead the skilled person to the claimed subject-matter is based on a different assessment of what distinguishes claims 1 and 2 from the teaching of document D3 and therefore cannot be endorsed. The board remains unpersuaded that the skilled person starting from document D3 and considering the teaching of document E19 would be led to provide feature 1-3.

The appellants also brought forward arguments relating to the background colour of the banknote carrying the

security device. However, this colour is not part of the security device (see point 4.1) and is therefore irrelevant to the patentability of claims 1 and 2.

As a consequence, it has not been established in a persuasive way that the subject-matter of claims 1 or 2 lacks inventive step over the disclosure of document D3.

9.3 Starting from document D5

9.3.1 Appropriateness as starting point

The board cannot agree that document D5 is not suitable as a starting point because it essentially discloses a covert device which is invisible under visible light. The security device is not completely invisible (cf. page 7, lines 7 to 12 and its reference to a "ghostly white image"), which means that the device is not an entirely covert device. There is no good reason to disregard document D5 as a possible starting point.

9.3.2 Differences

As explained above (point 8.4), document D5 does not disclose materials that exhibit different visible colours when illuminated with UV light of substantially any wavelength between 235 and 380 nm (feature 1-6).

9.3.3 Objective technical problem

The technical effect of this difference is that the colour change can be observed with a great variety of UV light sources.

It was argued that the objective technical problem is that of providing a security device which is simpler to examine whilst maintaining a high security level (see paragraph [0010] of the patent). The board can only partially approve this formulation. This is because the effect that a high security level is maintained is not due to the distinguishing feature.

Thus, the objective technical problem solved by the invention is that of providing a security device which is simpler to examine.

9.3.4 Obviousness

It has not been persuasively demonstrated that the skilled person starting from the disclosure of document D5 and wishing to make the detection of the security device easier would be led in an obvious manner to providing fluorescent pigments that respond to UV radiation of substantially any wavelength between 235 and 380 nm. The reasons are as follows.

Firstly, document D5 itself does not lead the skilled person towards the invention. Although document D5 states that other bands than the long UV band can be used (see page 5, lines 20 to 23), this cannot be said to constitute an incentive for the skilled person to use pigments that extend the range in which fluorescence can be activated. Rather, document D5 suggests that the excitation should be obtained within a single band (see page 5, line 16), a band being understood to correspond to a range of wavelengths not exceeding about 60 nm (see page 5, lines 18 and 19). The first paragraph on page 3 (lines 1 to 8) of document D5, where UV "bulbs or tubes emitting radiation in the near UV range of about 280 to

about 400 nm" are mentioned, does not lead to a different conclusion: this statement only delimits the region within which conventional light sources emit light. The assertion that it constitutes an incentive to the skilled person is based on hindsight. Also, the argument based on the absence of a reference to a single band in the paragraph on page 7, lines 7 to 21, is not persuasive in light of the overall disclosure of document D5.

Secondly, the board has not been presented with documents of the state of the art that would have given the skilled person an incentive to solve the objective technical problem in the manner of the device of claim 1.

The mere fact that the skilled person knew pigments capable of responding over the whole range claimed in feature 1-6 does not mean that the skilled person would actually have envisaged using them. The skilled person could have done it, but it has not been established that they would have acted in this way.

9.3.5 Other considerations

Also, the skilled person wishing to put the teaching of document D5 into practice and having to fill the gaps in the disclosure in respect of the pigments to be used would not necessarily have chosen inks that can be activated over a broad range. Although such inks were available at the priority date of the patent, there was no apparent incentive to choose them. On the contrary, document D5 rather suggests excitation by radiation of a single band within the UV light range.

9.3.6 Conclusion

It has not been shown that the subject-matter of claim 1 does not involve an inventive step over the disclosure of document D5.

9.4 Starting from document D9

As explained above (point 8.5), document D9 does not disclose feature 1-3, according to which the two or more regions exhibit substantially the same visible colour under the first viewing conditions. Therefore, the board cannot endorse the argument that the mere use of common commercially available pigments for realising the device disclosed in document D9 would lead the skilled person to the features of claim 1.

9.5 Starting from document D10

Document D10 discloses a method for detecting copies of security documents that have been obtained with a colour copier. The document is printed with a fluorescent and a non-fluorescent ink. The colour fluorescent ink is not rendered correctly by the copier, so that a difference in colour can be detected between the two regions (variant of claim 1) or can no longer be detected (variant of claim 2).

As noted by the opposition division, document D10 does not disclose the range of feature 1-6. Also, there is no disclosure of different visible colours under the required viewing conditions: the differences are only obtained by photocopying and are not visible to the naked eye. Moreover, document D10 fails to disclose that the inks are responsive to UV light.

It is true that document D10 discloses that several fluorescent inks can be used side by side (column 3, lines 38 to 40), but this passage appears to be irrelevant because even in this case the colour difference is the difference between the fluorescent inks and the non-fluorescent ink.

In view of the above, document D10 clearly is a less suitable starting point than documents D5 and E16.

Also, the board has not been presented with a plausible reason why document D10 would lead the skilled person to subject-matter falling within claims 1 or 2. Thus, the subject-matter of claims 1 and 2 cannot be denied an inventive step over the disclosure of document D10.

9.6 Starting from document E16

9.6.1 Difference

As explained above (point 8.7), document E16 does not disclose materials that exhibit different visible colours when illuminated with UV light of substantially any wavelength between 235 and 380 nm. Example 3, which constitutes the "closest prior art" only discloses fluorescence under irradiation by UV light with a wavelength of 365 nm (see E16a, page 6, last sentence).

9.6.2 Objective technical problem

As discussed in point 9.3.3, the objective technical problem solved by the invention is that of providing a security device which is simpler to examine.

9.6.3 Obviousness

The subject-matter of claim 1 involves an inventive step over the disclosure of document E16, for basically the same reasons as given for document D5:

Firstly, document E16 itself does not lead the skilled person towards the invention. The reference to a range of wavelengths of 250 to 430 nm in claim 5 and in the description (see translation E16a, page 5, line 12) does not indicate to the skilled person materials that exhibit fluorescence over a broad range of wavelengths. Rather, the skilled person would have understood that this indication delimits the range to which the "specific wavelength" belongs, to which document E16 repeatedly refers (see claim 4, but also page 4, line 34, page 5, line 33 and page 6, line 1, etc. of translation E16a).

Secondly, the board has not been presented with documents of the state of the art that would have provided the skilled person with an incentive to solve the objective technical problem in the claimed way.

Again, the mere fact that the skilled person knew pigments capable of responding over the whole range claimed in feature 1-6 does not mean that the skilled person would actually have envisaged using them. Those skilled in the art could have used such pigments, but it has not been shown that they would have done so.

9.7 Admissibility of late-filed inventive step attacks

During the oral proceedings before the board the appellants for the first time raised objections against claims 15 and 16 under Article 56 EPC.

The objections cannot be considered to be a legitimate reaction to a new procedural situation. The board merely decided a factual question in line with its preliminary opinion expressed in its communication issued on 23 November 2018. This decision could not come as a surprise to the appellants. Their objection could and should have been filed at an earlier stage of the proceedings. Moreover, the new attacks appear not to be well-founded. Therefore, the board used its discretion under Article 13(1) RPBA and decided not to admit the attacks into the proceedings.

9.8 Conclusion in respect of inventive step

None of the admissible attacks having been found persuasive by the board, the subject-matter of claim 1 is found to involve an inventive step over the prior art cited against it.

10. Added matter (Article 123(2) EPC)

There were objections related to amendments of both the claims and the description.

10.1 Amendments of the claims

10.1.1 "each region being printed with"

It was argued that the introduction of the feature "each region being printed with" into claim 1 resulted in an inadmissible intermediate generalisation because the feature is only disclosed in the context of inks. The amended claims cover situations where the luminescence is achieved with printed materials that are not inks.

This objection is not persuasive. The amendment has a firm basis on page 3, lines 21 to 22 and 32 to 33, page 7, lines 31 to 33 and original independent claims 24 and 25. All these passages refer to printing materials rather than to inks.

Incidentally, the fact that there is no reference to the substrate in claims 1 and 2 does not constitute an inadmissible extension. The security device as such does not have to comprise a substrate (see point 4.1). Obviously, the disclosure in respect of the claimed methods has to refer to the substrate, but this does not make the substrate a mandatory feature of the claimed security devices.

10.1.2 Claims 6 and 7 (vs. granted claims 7 and 8)

It was also argued that the reference in claim 6 to claim 2, and the reference in claim 7 to claim 1, was not allowable because granted claims 7 and 8 depend on claims 1 and 2 (rather than on claims 2 and 1), respectively. The respondent presented the amendment to correct an obvious clerical error.

Granted claim 1 describes the case where the two regions have the same colour when irradiated with visible light. When UV light is added, the two regions have different colour. Granted claim 2 describes the case where regions of different colour under visible light have the same colour when UV light is added.

Granted claims 7 and 8 add complexity due to the use of photochromic materials, i.e. materials that change their colour when illuminated for some time. Claim 7 requires the regions to at first have a different

colour "under UV and visible light illumination" but to have substantially the same colour "after extended combined illumination" (see point 4.7 above). The board cannot endorse the view that the skilled person would have understood that the reference to claim 1 is obviously erroneous and that claim 1 can only depend on claim 2. The reason is that claim 1 does not state that the different colours are apparent immediately under combined illumination (in which case a combination of claims 7 and 1 makes sense) or only after extended illumination (in which case a combination of claims 8 and 1 is appropriate). The same reasoning applies, *mutatis mutandis*, to claim 8.

The fact that the amendment cannot qualify as an obvious correction does not necessarily mean that Article 123(2) EPC is violated because there may be sufficient support for the amendment in the original application. The passage on page 8, lines 9 to 19, of the original description discloses a case where the colour change is due to the photochromic material only, the luminescence as such having no effect on the colour (both colours appear under combined visible and UV illumination before the photochromic effect sets in: page 8, lines 13-15). This passage, in combination with the teaching of paragraphs [0018] and [0019], discloses the subject-matter of claim 6 in combination with claim 2. However, there is no direct and unambiguous disclosure of the subject-matter of claim 7 in combination with claim 1 in the original application.

As a consequence, the amendment violates the requirements of Article 123(2) EPC.

10.2 Amendments of the description

10.2.1 Description of Figs. 5 and 6

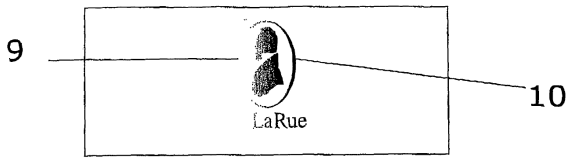


Figure 5

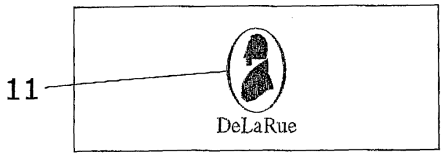


Figure 6

The description of those figures discloses that the device appears as red and yellow under visible light and as red when illuminated with visible light and UV radiation. The description was amended such that the original sentence "This colour [i.e. the single red colour] may be the same as one of the first two colours but is preferably different." now reads "This colour is different from the first two colours." (see page 12, lines 7-9, of the marked-up version of the description of main request A).

It was argued that this amendment did not comply with Article 123(2) EPC because the original description did not disclose two different shades of red. The board is unable to endorse this argument. The amendment only selects one of the two disclosed alternatives. The fact that the red colour under combined visible and UV light irradiation may be different from the red colour under visible light is already disclosed in the original application.

The board is unable to see how the absence of a definition of what is "different" could lead to a contravention of Article 123(2) EPC, as the original application did not comprise such a definition either.

10.2.2 Definition of "white light"

As mentioned under point 5.2, the reference to typical examples of white light in the original application ("north sky light, general indoor light, tungsten light, fluorescent tube light or tri-band fluorescent tube light"; see page 4, lines 14-17, of the marked-up version of the description) was deleted. Such an amendment may lead to the contravention of Article 123(2) EPC, if, and only if, it has an effect on the way in which the claims are interpreted. However, in the present case there appears to be no such effect because the claims refer to "visible light" rather than "white light". Thus, the precise definition of white light has no consequences for the scope of the claims. Therefore, the amendment appears to be irrelevant with respect to the requirements of Article 123(2) EPC.

10.3 Conclusion

Main request A does not comply with the requirements of Article 123(2) EPC because claim 7 in dependence on claim 1 has no basis in the original application.

11. Overall conclusion in respect of main request A

Main request A meets the requirements of Articles 54, 56 and 84 EPC 1973 but it cannot be allowed because it does not fully comply with the requirements of Article 123(2) EPC (see point 10.1.2).

12. Auxiliary request 0A

12.1 Added matter (Article 123(2) EPC)

The objections raised by the appellants under Article 123(2) EPC against auxiliary request 0A are the same as those raised against main request A. The claims of auxiliary request 0A differ from the claims of main request A in that claims 6 and 7 have been deleted. As a consequence of this deletion, the sole objection under Article 123(2) EPC against main request A which the board had found to be well-founded (see point 10.) has been overcome. As a consequence, auxiliary request 0A is found to comply with the requirements of Article 123(2) EPC.

12.2 Sufficiency of disclosure (Article 83 EPC)

12.2.1 Definition of the materials

All the independent claims refer to materials that are characterised via their optical properties: those materials have to exhibit a visible colour when viewed under first viewing conditions (visible light) and a different visible colour when viewed under second viewing conditions (involving a combination of visible light and UV light in the range from 235 to 380 nm).

12.2.2 Functional definition

The appellants were of the opinion that the functional definition of the material hindered the skilled person from carrying out the invention over the whole scope of the claim. T 435/91 of 9 March 1994, Reasons 2.2.1, was cited in support of this view.

This decision appears not to be relevant in the present case. Chemical board 3.3.1 had to decide on a claim directed at a detergent composition comprising an "additive" that was to be "capable of forcing a particular surfactant system into hexagonal phase". The board noted that there was an indefinite and abstract host of possible alternatives and that the definition of the additive was not more than an invitation to conduct a research programme. This objection does not apply here. It is not disputed that the patent discloses embodiments allowing the invention to be carried out. The skilled person wishing to obtain other colour effects than the ones obtained with the disclosed materials would not be at a loss to find suitable substitutive materials, for instance by consulting a pigment manufacturer, and would not have to carry out a research program to find such materials.

12.2.3 Colour perception

The fact that the claims refer to "visible light" is unproblematic. It is well known that a typical human eye can detect light in wavelengths from about 390 to 700 nm. The domain of "visible light" is commonly defined accordingly. Different light sources produce light having a different spectral distribution, but this appears to have no bearing on whether the invention can be performed by the skilled person.

The fact that different eyes have different colour sensitivity and that different observers might perceive different colours, for physiological or perhaps even cultural reasons, is also irrelevant here. The claimed invention is defined in terms that do not rely on the subjective perception of colours. Although each eye and each brain is unique, it is possible to define an average eye and an average colour perception. Also, which colour a region exhibits can be measured objectively, regardless of what a colour-blind or culturally biased person might see or believe to see.

12.2.4 Colour discrimination

It was argued that the absence of any disclosure of a method for discriminating colours hindered the skilled person from carrying out the invention. The board does not find this argument persuasive because the determination of whether a security device exposes different colours under different viewing conditions appears to be within the skillset of the skilled person. The decisions cited by the appellants refer to different situations, i.e. the absence of evidence that a matter whose very existence was in doubt (plasma produced in a solid) could be used in particular ways (such as the transmutation of elements) (see T 1023/00 of 17 September 2003, Reasons 2.8) or the impossibility of establishing a claimed parameter (the "minimum average release time" of an absorbent article) with the test methods disclosed in the patent (see T 1569/11 of 21 May 2015, Reasons 2.4.3 and 2.5). The objections relating to colour perception and discrimination appear to relate to the difficulty of determining whether a particular case would fall within the scope of the claim. These objections appear to be hidden objections under Article 84 EPC that do

not result in an insufficient disclosure of the invention (see decision T 1811/13 of 8 November 2016, Reasons 5).

12.2.5 Viewing conditions

The fact that the viewing conditions are not precisely defined makes the claim broad but appears not to hinder the skilled person from carrying out the invention. The view that a claim can only be said to comply with Article 83 EPC if the skilled person would have known how to carry out the invention for any conceivable value of each parameter that is not precisely defined seems excessive and goes beyond the actual requirement of Article 83 EPC.

12.2.6 Great degree of freedom

It is not apparent why the fact that the skilled person wishing to carry out the invention has a great degree of freedom (i.e. that claims are broad) would hinder the skilled person from carrying out the invention.

12.2.7 Trade marks

The fact that the disclosed embodiments are identified by their trade names rather than by their chemical formula is not decisive. The skilled person would have been capable of obtaining information on the respective chemical formulas if need be.

12.2.8 Time frame for colour changes (claims 6 and 7)

The fact that the patent does not disclose the period of time over which the colour change is to occur does not hinder the skilled person from carrying out the

invention. The invention concerns security features for documents of value such as banknotes etc. The skilled person would have expected the verification of such documents to be possible within a time lapse of typically a second or a few seconds. Therefore, the finding of the opposition division in point 25 of the decision under appeal appears to be reasonable and not based on mere speculation. Paragraphs [0030] and [0047] disclose an exceptional case involving photochromic pigments, where changes become observable over longer periods.

12.2.9 First and second viewing conditions

It was argued that the distinction between the first and second viewing conditions is not clear enough for the skilled person to be able to carry out the invention. The board cannot endorse this assertion. It is true that the first and second viewing conditions can be similar, but it is clear from the claims that they are necessarily different. The objection appears to be an objection of lack of clarity, based on the fact that the definition of the viewing conditions is very general and lacks precision.

12.2.10 Holistic view

Finally, the appellants objected to the atomistic treatment of the different objections related to insufficiency of disclosure by the board. The board cannot endorse this objection because in practical terms there is no other way for the board to tackle the multiple objections than by breaking the sum of objections into distinct aspects. This is what the skilled person would have done when faced with difficulties in carrying out the invention. The board

can see no methodological flaw in its way of proceeding step by step. A more holistic approach would have to be based on some overall impression and would therefore lack objectivity.

12.2.11 Conclusion on sufficiency of disclosure

The invention is sufficiently disclosed for the skilled person to be able to carry it out.

12.3 Conclusion on auxiliary request 0A

None of the objections raised against auxiliary request 0A are well-founded. The request is allowable.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to maintain the patent in amended form in the following version:

   - claims 1 to 18 of auxiliary request 0A filed with letter dated 6 August 2019,
   - description pages 1, 2, 2a and 3 to 12 filed with letter dated 6 August 2019, and
   - Figures 1 to 13(B) of the patent specification.

The Registrar: The Chairman:

N. Schneider M. Poock

Decision electronically authenticated