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Datasheet for the decision of 15 April 2019

Case Number: T 2146/16 - 3.3.09

Application Number: 12003980.5

Publication Number: 2495615

IPC: G03G9/087, G03G9/08, C08F2/00, C08F2/22

Language of the proceedings: EN

Title of invention:
Processes for producing toner compositions

Applicant:
Xerox Corporation

Headword:

Relevant legal provisions:
EPC Art. 56, 84

Keyword:
Main request: clarity (no)
Auxiliary requests 1-3: inventive step (no)

Decisions cited:

Catchword:

Europäisches Patentamt
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Case Number: T 2146/16 - 3.3.09

D E C I S I O N
of Technical Board of Appeal 3.3.09
of 15 April 2019

Appellant: (Applicant)	Xerox Corporation Xerox Square - 20A Rochester, NY 14644 (US)
Representative:	Grünecker Patent- und Rechtsanwälte PartG mbB Leopoldstraße 4 80802 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 25 April 2016 refusing European patent application No. 12003980.5 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	W. Sieber
Members:	N. Perakis
	E. Kossonakou

Summary of Facts and Submissions

I. This decision concerns the appeal filed by the applicant against the examining division's decision refusing European patent application No. 12003980.5. According to the examining division, the subject-matter of claim 1 of the main request was unclear and the subject-matter of claim 1 of the main request and the first to fourth auxiliary requests lacked novelty in view of:

D1: US 6 503 680.

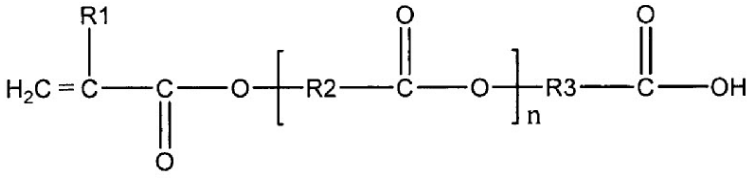
II. With the statement setting out the grounds of appeal dated 5 September 2016, the applicant ("appellant") filed a main request and three auxiliary requests, the main request corresponding to the main request before the examining division.

The appellant requested that the examining division's decision be set aside and that a patent be granted based on the claims of the main request or any of the first to third auxiliary requests.

Claim 1 of the **main request** reads as follows:

"1. A process comprising:

forming an emulsion by contacting monomer components of a latex resin with a stabilizer of the following formula:



(I)

where R1 is a hydrogen or methyl group; R2 and R3 are independently selected from alkyl groups containing 1 to 12 carbon atoms and a phenyl group; and n is from 0 to 20;

adding a portion of the emulsion to a reactor;

contacting the emulsion in the reactor with a crosslinker;

optionally adding an initiator to the reactor;

forming a seed particle comprising a gel latex in the reactor;

adding additional monomers comprising the latex resin and optionally additional stabilizer to the reactor; and

recovering the resulting latex resin,

wherein the amount of gel latex in the latex polymer is from 0.1% to 20% by weight of the other monomers utilized to form the latex,

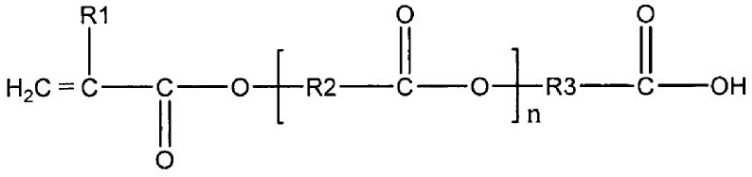
wherein the gel latex utilized as the seed particle enables the production of latex particles from the latex resin that have acceptable sizes, such as 80 nm to 800 nm, for producing toners, even where a

stabilizer, known to otherwise produce toners having particles that are too large, is utilized."

Claim 1 of the **first auxiliary request** reads:

"1. A process comprising:

forming an emulsion by contacting monomer components of a latex resin with a stabilizer of the following formula:



(I)

where R1 is a hydrogen or methyl group; R2 and R3 are independently selected from alkyl groups containing 1 to 12 carbon atoms and a phenyl group; and n is from 0 to 20;

adding a portion of the emulsion to a reactor;

contacting the emulsion in the reactor with a crosslinker;

optionally adding an initiator to the reactor;

forming a seed particle comprising a gel latex in the reactor;

adding the remaining emulsion and optionally additional stabilizer to the reactor;

and recovering the resulting latex resin,

wherein the amount of gel latex in the latex polymer is from 0.1% to 20% by weight of the other monomers utilized to form the latex."

Claim 1 of the **second and the third auxiliary requests** differs from claim 1 of the first auxiliary request in that the step of "adding the remaining emulsion and optionally additional stabilizer to the reactor" has been replaced by the following wording:

"adding the remaining emulsion containing additional monomers consisting of the latex resin and optionally additional stabilizer to the reactor" (**second auxiliary request**), or

"adding additional monomers consisting of the latex resin and optionally additional stabilizer to the reactor" (**third auxiliary request**).

III. On 15 March 2019, the board issued a communication in preparation for the oral proceedings set to take place on 15 April 2019. According to the board's preliminary non-binding opinion, claim 1 of the main request did not appear to fulfil the requirements of Article 84 EPC. As regards inventive step of the first to the third auxiliary request, the difference over D1 appeared to be the absence of a cross-linking agent in the second polymerisation step, i.e. when the additional monomers are added to the gel latex. Without any evidence that this difference resulted in a particular technical effect, the objective technical problem would have to be formulated as the provision of a mere alternative to the process of D1.

IV. At the oral proceedings, held before the board as scheduled, the appellant **upheld** its requests submitted with the grounds of appeal.

V. The relevant arguments put forward by the appellant may be summarised as follows:

- Claim 1 of the main request was clear because the skilled person would have found a clear guidance on how to interpret claim 1 in the patent application.

- The subject-matter of claim 1 of the auxiliary requests was novel over D1. The claimed process differed from the process disclosed in the examples of D1 in that it required the addition of a cross-linking agent only in the preparation of the seed particle latex, whereas D1 disclosed the addition of a cross-linking agent also in the subsequent polymerisation step relating to the preparation of the final latex resin.

- The subject-matter of claim 1 of the auxiliary requests involved an inventive step. The above-identified difference provided an improved process for producing a latex resin for the protection of toner particles. The skilled person would not have been prompted by D1 or any other cited document to avoid adding a cross-linking agent in the subsequent polymerisation step of the latex resin.

Reasons for the Decision

Main request

1. Clarity

The process of claim 1 requires:

"wherein the gel latex utilized as the seed particle enables the production of latex particles from the latex resin that have acceptable sizes, such as 80 nm to 800 nm, for producing toners, even where a stabilizer, known to otherwise produce toners having particles that are too large, is utilized".

The term "acceptable sizes" has no clear meaning. Also, the following embedded clause "such as 80 nm to 800 nm" cannot render this term clear since this clause does not limit the particle size but simply provides an example of acceptable sizes (see also appealed decision, reasons 2.2).

Furthermore, the expression "toners having particles that are too large" lacks clarity because the term "large", let alone "too large", has no clearly defined meaning (see also appealed decision, reasons 2.2).

As claim 1 of the main request lacks clarity, this request is not allowable.

First auxiliary request

2. Inventive step

2.1 Closest prior art

2.1.1 D1 discloses a process for the preparation of a latex polymer suitable in the manufacture of toners by mixing a seed particle latex, generated by aqueous emulsion polymerisation of a first portion of a monomer emulsion, with a second portion of the monomer emulsion and at least one chain-transfer agent. The mixing is done in the presence of a free-radical initiator under heating, and the monomer emulsion comprises a mixture of polymerisation reactants of at least one monomer, at least one chain-transfer agent, at least one surfactant and water. The mixture of polymerisation reagents may further comprise at least one cross-linking agent (abstract; column 3, lines 10-19 and 40-42; column 17, lines 28-40; column 18, lines 47-48; column 22, line 47, to column 23, line 2; column 25, lines 6-8; claims 1 and 7). The 2-carboxyethyl acrylate (β-CEA) is disclosed as a monomer component (column 15, line 26; column 33, line 16). The one portion of the monomer emulsion used to make the seed particle latex is preferably of from 0.5 to 50 wt.% of the total monomer emulsion used to prepare the latex polymer and, more preferably, of from 15 to 25 wt.% (column 18, lines 55-60; column 25, lines 14-25).

According to examples IA, IB, IIA and IIB of D1, a latex was produced by the semi-continuous emulsion seed polymerisation of styrene, n-butylacrylate and β-CEA in the presence of a cross-linking agent (decanediol diacrylate) and a chain-transfer agent (1-dodecanethiol). More particularly, part of a monomer emulsion comprising styrene, n-butylacrylate, β-CEA, decanediol diacrylate as the cross-linking agent and 1-dodecanethiol as the chain-transfer agent was added to a reactor to allow, after the addition of an initiator solution, seed particle formation. Then the remaining monomer emulsion was fed in one or two steps into the

reactor to produce the (final) latex. The cross-linking agent is present both during the preparation of the seed particle latex and the subsequent polymerisation step.

2.1.2 These examples, which represent the preferred embodiments of the process of D1, are considered to represent the closest prior art.

The preceding analysis shows that the process of claim 1 of the first auxiliary request differs from the examples of D1 in that it is carried out by adding a cross-linking agent only during the preparation of the seed particle latex.

2.2 The technical problem

The patent application does not contain any evidence showing that the addition of a cross-linking agent only during the preparation of the seed particle latex results in a technical effect over the process of the above-mentioned examples of D1. Comparative example 1, samples A and B, of the patent application discloses a process where no cross-linking agent at all is used. Thus, no comparison is available of the claimed process with the process of the examples of D1. Nor has the applicant provided any evidence of such an effect in reply to the board's preliminary opinion. Under these circumstances, the objective technical problem cannot be the provision of an improved process for producing latex resin for the protection of toner particles as asserted by the appellant. It can only be the provision of an alternative process for the preparation of a latex resin.

2.3 Obviousness

The question which remains to be answered is whether the prior art would have prompted the skilled person starting from the process disclosed in the examples of D1 and aiming at an alternative process to add the cross-linking agent only during the preparation of the seed particle latex. However, D1 itself repeatedly discloses that:

"(t)he mixture of polymerization reagents may further comprise at least one cross-linking agent"
(See column 3, lines 40-42; column 4, lines 17-19, to mention just a few instances.)

This general disclosure concerns the addition of a cross-linking agent at any step of the process, including that illustrated in the examples of D1. Thus, the skilled person would have envisaged the possibility of adding a cross-linking agent only at one step, for example during the preparation of the seed polymer latex, and they would have arrived in an obvious way at the subject-matter of claim 1 of the first auxiliary request.

2.4 On the basis of the above, the subject-matter of claim 1 of the first auxiliary request lacks inventive step, and the first auxiliary request is not allowable.

Auxiliary requests 2 and 3

3. The process of claim 1 of the second and third auxiliary requests differs from the process of claim 1 of the first auxiliary request in that the expression "adding the remaining emulsion" has been replaced by:

- "adding the remaining emulsion containing additional monomers consisting of the latex resin" (second auxiliary request), or

- "adding additional monomers consisting of the latex resin" (third auxiliary request).

However, these amendments cannot alter the finding on inventive step. The difference of the claimed subject-matter over the examples of D1 is still the addition of the cross-linking agent only at the seed polymerisation step. Hence, for the reasons set out above for the first auxiliary request, the subject-matter of claim 1 of the second and third auxiliary requests also lacks an inventive step in view of D1. Thus, these requests also are not allowable.

4. In summary, none of the requests of the appellant is allowable.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

M. Cañueto Carbajo W. Sieber

Decision electronically authenticated