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Datasheet for the decision of 11 December 2012

Case Number: T 2373/10 - 3.3.10

Application Number: 05013578.9

Publication Number: 1616850

IPC: C07C 45/74

Language of the proceedings: EN

Title of invention:
Processes for the preparation of higher molecular weight saturated ketones in the presence of hydrogen, an hydrogenation catalyst, an hydroxide or alkoxide of alkaline or alkaline earth metal and less than 16% water

Applicant:
EASTMAN CHEMICAL COMPANY

Headword:
Process for the preparation of ketones/EASTMAN

Relevant legal provisions:
EPC Art. 123(2)

Keyword:
"Main and auxiliary requests: amendment (not allowable) - not unambiguously derivable from the application as filed"

Decisions cited:
-

Catchword:
-

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Case Number: T 2373/10 - 3.3.10

D E C I S I O N
of the Technical Board of Appeal 3.3.10
of 11 December 2012

Appellant: (Applicant)
EASTMAN CHEMICAL COMPANY
100 North Eastman Road
Kingsport TN 37660 (US)

Representative:
Wibbelmann, Jobst
Wuesthoff & Wuesthoff
Patent- und Rechtsanwälte
Schweigerstrasse 2
D-81541 München (DE)

Decision under appeal:
Decision of the Examining Division of the European Patent Office posted 7 May 2010 refusing European patent application No. 05013578.9 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman: P. Gryczka
Members: J.-C. Schmid
D. S. Rogers

Summary of Facts and Submissions

I. The appeal lies from the decision of the Examining Division refusing European patent application No. 05 013 578.9 (European publication No. 1 616 850).

II. The decision of the Examining Division was based on the claims filed with the letter of 18 December 2008, independent claim 1 reading as follows:

"1. A process for producing a higher molecular weight saturated ketone, the process comprising:

(a) introducing an organic feed stream and a caustic feed stream into a reaction zone defined within a reactor, wherein said organic feed stream comprises an aldehyde reactant and a ketone reactant having at least one hydrogen atom alpha to the carbonyl, wherein said caustic feed stream comprises an aldol catalyst comprising a hydroxide or alkoxide of an alkali metal or an alkaline earth metal, wherein said hydroxide or alkoxide is provided as a solution or as a solid; and

(b) reacting of the aldehyde reactant with the ketone reactant in the presence of said aldol catalyst to thereby provide the higher molecular weight ketone or a precursor thereto,

wherein no more than 16 wt.% water is provided to the reaction zone, with respect to the total combined weight of the organic and caustic feed streams, wherein the molar ratio of ketone reactant to the aldehyde reactant is from 1:1 to 20:1, and the molar

ratio of the hydroxide or alkoxide of the alkali metal or alkaline earth metal aldol catalyst to the aldehyde reactant is from 0.001:1 to 0.45:1, and wherein the reacting of step (b) is carried out at a reaction time of no more than 120 minutes, wherein the reactor is provided with a solid hydrogenation catalyst and hydrogen gas; and wherein said higher molecular weight saturated ketone has a higher molecular weight than the molecular weights of the reactants."

The Examining Division held that claim 1 contained added subject-matter, thus infringing the provision of Article 123(2) EPC, *inter alia* because the feature of claim 1 "no more than 16 wt.% water is provided to the reaction zone, with respect to the total combined weight of the organic and caustic feed streams" was not disclosed in the application as filed.

III. In these appeal proceedings, with a letter dated 13 September 2010, the Appellant filed an auxiliary request. Claim 1 of auxiliary request 1 was directed to a process "consisting of essentially of" steps (a) and (b) instead of the process "comprising" steps (a) and (b) according to the main request.

According to the Appellant, it was clear from the application as filed that the terms "reaction mixture" and "reaction zone" were interchangeable. Paragraphs 2 and 3 of page 26 of the application as filed disclosed that the amount of water provided to the reaction mixture or reaction zone, was no more than about 16 wt% and that it was significant according to the invention that the total amount of water present throughout the reaction zone, with respect to the total weight of the

reaction mixture, be limited. The skilled person would therefore have understood that the limitation with respect to the water concentration in a reaction zone was equivalent to the water concentration which was provided by the reaction mixture. The second paragraph of page 20 of the application as filed disclosed that the reaction mixture was made of an aldehyde reactant, a ketone reactant and a basic catalyst which may comprise a hydroxide or alkoxide of an alkali- or alkali-earth metal. Accordingly the skilled man understood the aldehyde reactant and the ketone reactant as being the organic feed stream. Specifying that the organic feed and caustic feed stream were introduced into a reaction zone of a reactor merely made explicit that the reaction for making a higher molecular weight saturated ketone took place in a reactor. The feature "with respect to the total combined weight of the organic and caustic feed streams" was therefore clearly and unambiguously derivable from the application as filed, also from examples 3 to 20 on pages 33 to 37.

Accordingly, the subject-matter of the amended claims was supported by the application as filed.

IV. The Appellant requested that the decision under appeal be set aside and that the case be remitted to the department of first instance for further prosecution on the basis of, as a main request, the claims 1-34 filed under cover of a letter dated 18 December 2008, or subsidiarily, on the basis of the claims 1 to 34 of the auxiliary request filed under cover of a letter dated 13 September 2010.

V. At the end of the oral proceedings held on 11 December 2012 the decision of the Board was announced.

Reasons for the Decision

1. The appeal is admissible.

Main and auxiliary request

2. *Amendments (Article 123(2) EPC)*

2.1 The application as filed discloses that no more than 16 wt.% water is provided to the reaction mixture, with respect to the total initial weight of the reaction mixture (see claim 1; page 22, lines 2 to 4; page 20, second paragraph).

Claim 1, as amended according both to the main and the auxiliary request, requires that no more than 16 wt.% water is provided to the reaction zone, with respect to the total combined weight of the organic and caustic feed streams.

Thus, the upper limit of the amount of water provided to the reaction in claim 1 as amended is different to that disclosed in the application as filed, since the combined weight of the organic and caustic feed streams may be different from the initial weight of the reaction mixture.

This was also recognized by the Appellant who introduced this amendment in order to restore novelty of the claimed subject-matter. The Appellant asserted

that amended claim 1 clearly excluded incorporating a recycle stream in the calculation of the amount of water provided to the reaction zone by limiting the denominator of the weight percent calculation to the combined weight of the organic and caustic feed stream (see Applicant's letter dated 9 May 2008).

2.2 The Appellant argued that the modification was based on the disclosure of the application as filed, since page 20 thereof disclosed the reaction mixture being an aldehyde reactant, a ketone reactant and a basic catalyst which may comprise a hydroxide or alkoxide of an alkali- or alkali-earth metal. The skilled person would thus consider the aldehyde reactant and the ketone reactant as the organic feed stream and the basic catalyst as the caustic feed stream. However, this section of the application as filed does not disclose that the reaction mixture consists of an aldehyde reactant, a ketone reactant and a basic catalyst, but comprises the said components, i.e. other components may be present in the reaction mixture. Thus, the Applicant's argument should thus be rejected.

Also examples 1 to 6 of the application as filed cannot support the modification, since they are directed to specific embodiments which do not provide a support for establishing the general requirement of the process according to claim 1 that the upper limit of the water amount provided to the process should be based on the combined weight of the organic and caustic feed streams, and not on the total initial weight of the reaction mixture, as disclosed in the general parts of the application as filed.

2.3 The Board thus holds that the feature of claim 1 of the main request and the auxiliary request "wherein no more than 16 wt.% water is provided to the reaction zone, with respect to the total combined weight of the organic and caustic feed streams" is not directly and unambiguously derivable from the application as filed. Claim 1 of the main and auxiliary requests is thus amended in such a way that subject-matter extending beyond the application as filed is added, contrary to the requirements of Article 123(2) EPC, with the consequence that these requests must be refused.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar The Chairman

C. Rodríguez Rodríguez P. Gryczka