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# Datasheet for the decision of 28 October 2009

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| **Case Number:** | T 0066/07 - 3.3.03 |
| **Application Number:** | 99112716.8 |
| **Publication Number:** | 0969024 |
| **IPC:** | C08F 20/06 |
| **Language of the proceedings:** | EN |

**Title of invention:**
Detergent builder, production process therefor, and poly(meth)acrylic acid (or salt) polymer and use thereof

**Patentee:**
NIPPON SHOKUBAI CO., LTD.

**Opponent:**
Rohm and Haas Company
BASF SE

**Headword:**
-

**Relevant legal provisions:**
EPC Art. 123(2), 100(b)
RPBA Art. 13(1)

**Relevant legal provisions (EPC 1973):**
-

**Keyword:**
"Amendments - added subject-matter (Main request and Auxiliary request 1: yes)"
"Opposition grounds - insufficiency of disclosure (Auxiliary request 2)"
"Late-filed request not admitted"

**Decisions cited:**
T 0002/81, T 0201/83, T 0153/85, T 0409/91, T 0962/98, T 0172/99, T 0943/00, T 0914/01, T 0396/02, T 0343/03, T 0757/03, T 0186/06, T 1140/06

**Catchword:**
-

**Case Number:** T 0066/07 **-** 3.3.03

# DECISION
## of the Technical Board of Appeal 3.3.03
## of 28 October 2009

| | |
|---|---|
| **Appellant**:<br>(Patent Proprietor) | Nippon Shokubai Co., Ltd.<br>1-1, Koraibashi 4-chome<br>Chuo-ku<br>Osaka-shi, Osaka 541-0043 (JP) |
| **Representative**: | Glawe, Delfs, Moll<br>Patent- und Rechtsanwälte<br>Postfach 26 01 62<br>D-80058 München (DE) |
| **Respondents**:<br>(Opponent 01) | Rohm and Haas Company<br>100 Independence Mall West<br>Philadelphia<br>Pennsylvania 19106-2399 (US) |
| **Representative**: | Buckley, Guy Julian<br>Patent Outsourcing Limited<br>1 King Street<br>Bakewell<br>Derbyshire DE45 1DZ (GB) |
| (Opponent 02) | BASF SE<br>-Patentabteilung - C6-<br>Carl-Bosch-Strasse 38<br>D-67056 Ludwigshafen (DE) |
| **Representative**: | Paashaus, Sabine<br>BASF SE<br>Global Intellectual Property<br>GVX - C6<br>D-67056 Ludwigshafen (DE) |

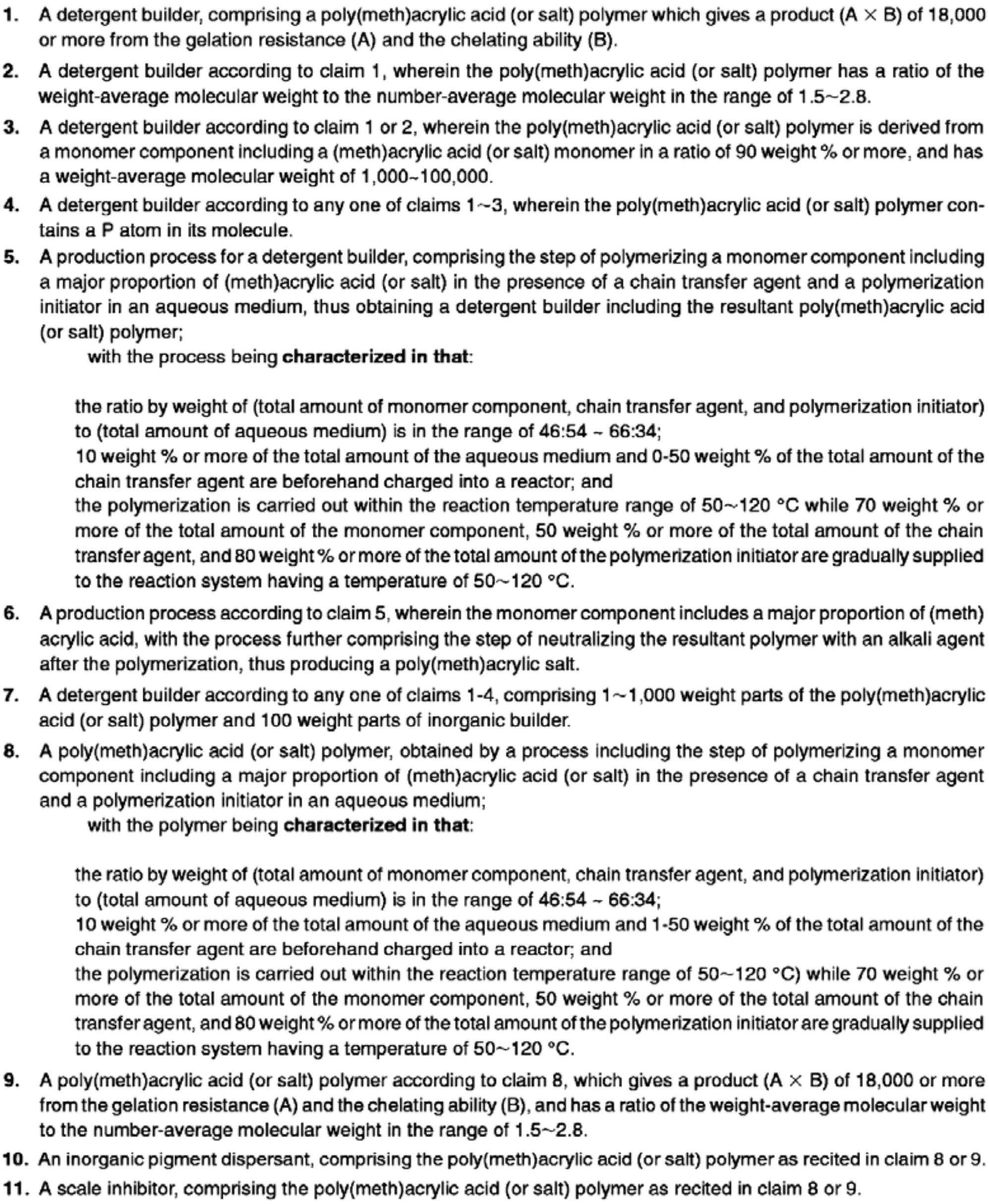
**Decision under appeal:** **Decision of the Opposition Division of the European Patent Office dated 15 November 2006 and posted on 22 November 2006 revoking European patent No. 0969024 pursuant to Article 102(1) EPC 1973.**

**Composition of the Board:**

**Chairman:** R. Young
**Members:** A. Däweritz
H. Preglau

## Summary of Facts and Submissions

I. The grant of European patent No. 0 969 024 in respect of European patent application No. 99 112 716.8, filed on 1 July 1999 and claiming the priority of an earlier application filed in Japan (18745698) of 2 July 1998, was announced on 22 September 2004 (Bulletin 2004/39). The patent was granted with eleven claims reading as follows:



**1.** A detergent builder, comprising a poly(meth)acrylic acid (or salt) polymer which gives a product (A × B) of 18,000 or more from the gelation resistance (A) and the chelating ability (B).

**2.** A detergent builder according to claim 1, wherein the poly(meth)acrylic acid (or salt) polymer has a ratio of the weight-average molecular weight to the number-average molecular weight in the range of 1.5~2.8.

**3.** A detergent builder according to claim 1 or 2, wherein the poly(meth)acrylic acid (or salt) polymer is derived from a monomer component including a (meth)acrylic acid (or salt) monomer in a ratio of 90 weight % or more, and has a weight-average molecular weight of 1,000~100,000.

**4.** A detergent builder according to any one of claims 1~3, wherein the poly(meth)acrylic acid (or salt) polymer contains a P atom in its molecule.

**5.** A production process for a detergent builder, comprising the step of polymerizing a monomer component including a major proportion of (meth)acrylic acid (or salt) in the presence of a chain transfer agent and a polymerization initiator in an aqueous medium, thus obtaining a detergent builder including the resultant poly(meth)acrylic acid (or salt) polymer;

with the process being **characterized in that**:

the ratio by weight of (total amount of monomer component, chain transfer agent, and polymerization initiator) to (total amount of aqueous medium) is in the range of 46:54 ~ 66:34;
10 weight % or more of the total amount of the aqueous medium and 0-50 weight % of the total amount of the chain transfer agent are beforehand charged into a reactor; and
the polymerization is carried out within the reaction temperature range of 50~120 °C while 70 weight % or more of the total amount of the monomer component, 50 weight % or more of the total amount of the chain transfer agent, and 80 weight % or more of the total amount of the polymerization initiator are gradually supplied to the reaction system having a temperature of 50~120 °C.

**6.** A production process according to claim 5, wherein the monomer component includes a major proportion of (meth) acrylic acid, with the process further comprising the step of neutralizing the resultant polymer with an alkali agent after the polymerization, thus producing a poly(meth)acrylic salt.

**7.** A detergent builder according to any one of claims 1-4, comprising 1~1,000 weight parts of the poly(meth)acrylic acid (or salt) polymer and 100 weight parts of inorganic builder.

**8.** A poly(meth)acrylic acid (or salt) polymer, obtained by a process including the step of polymerizing a monomer component including a major proportion of (meth)acrylic acid (or salt) in the presence of a chain transfer agent and a polymerization initiator in an aqueous medium;

with the polymer being **characterized in that**:

the ratio by weight of (total amount of monomer component, chain transfer agent, and polymerization initiator) to (total amount of aqueous medium) is in the range of 46:54 ~ 66:34;
10 weight % or more of the total amount of the aqueous medium and 1-50 weight % of the total amount of the chain transfer agent are beforehand charged into a reactor; and
the polymerization is carried out within the reaction temperature range of 50~120 °C) while 70 weight % or more of the total amount of the monomer component, 50 weight % or more of the total amount of the chain transfer agent, and 80 weight % or more of the total amount of the polymerization initiator are gradually supplied to the reaction system having a temperature of 50~120 °C.

**9.** A poly(meth)acrylic acid (or salt) polymer according to claim 8, which gives a product (A × B) of 18,000 or more from the gelation resistance (A) and the chelating ability (B), and has a ratio of the weight-average molecular weight to the number-average molecular weight in the range of 1.5~2.8.

**10.** An inorganic pigment dispersant, comprising the poly(meth)acrylic acid (or salt) polymer as recited in claim 8 or 9.

**11.** A scale inhibitor, comprising the poly(meth)acrylic acid (or salt) polymer as recited in claim 8 or 9.

In this decision, any reference to passages in the patent in suit as granted will be given underlined in squared brackets, eg [0001]. References in underlined italics concern passages in the application as filed, eg *page 1, lines 8 to 11*. "EPC" refers to the revised text of the EPC 2000, "EPC 1973" to the previous version. Quotations remained unamended/uncorrected.

II. On 22 June 1998, two Notices of Opposition (NoOp) were filed by Opponents O-01 and O-02, both requesting revocation of the patent in its entirety. Both Opponents invoked Articles 100(a) and 100(b) EPC 1973 and asserted lack of novelty, lack of inventive step and insufficiency of disclosure. The oppositions relied on altogether ten documents, including

D2: EP-A-0 942 015 (published on 15 September 1999),
D3: US-A-5 294 686,
D7: Declaration of J.E. Shulman with annexes: Appendices 1 to 6, "*Polymeric Dispersing Agents Sokalan*®", dated 1991, by BASF Corporation, "*Technical Information Sokalan*® *CP Types*" dated June 1988, and an invoice dated 30 April 1992, concerning a delivery of "*Sokalan* CP 12 S*" on 24 April 1992, both of BASF Aktiengesellschaft and
D8: EP-A-0 668 298 (published on 23 August 1995).

(1) During the opposition and appeal proceedings, both Opponents and the Patent Proprietor provided arguments concerning the objections under Article 100(a) EPC 1973/EPC, which need not, however, be considered here in detail, because they played no role in these appeal proceedings.

(2) With regard to the objection under Article 100(b) EPC 1973, both opponents had argued in their respective NoOp that the claimed subject-matter, namely the copolymer comprised in the detergent builder of [Claim 1], was not disclosed in a manner sufficiently

clear and complete for it to be carried out by a person skilled in the art (as required in Article 83 EPC 1973).

(3) In order to support its insufficiency arguments, O-02 had additionally referred in its NoOp to Decision T 172/99 of 7 March 2002 (not published in OJ EPO) which required, in the case of claimed subject-matter relying on new and unfamiliar parameters, that the Patent Proprietor provided all the information necessary for the person skilled in the art correctly and reliably to determine these parameters.

(4) According to Opponent O-01, the two parameters "*gelation resistance (A)*" and "*chelating ability (B)*" in [Claim 1] were functional characteristics, which were not measured by industry standards, but according to test methods ([page 8]) set by the Patent Proprietor. Since these characteristics were crucial to distinguish the claimed copolymers from known polymers or polymers falling outside the claim, the patent would only be sufficiently disclosed if the tests to determine these characteristics could be reliably performed. Hence, it would have been necessary for them "*to be extremely carefully defined in the Patent in order for a person skilled in the art to reproduce the claimed technology*" (O-01, NoOp, page 4, paragraphs 1 and 2).

(5) More particularly, the gelation resistance (A) defined in the patent in suit as the reciprocal of the absorbance (A = 1/ABS, wherein ABS was the difference between the absorbances of a sample (a) and a blank (b); cf. [0051]) was identified by Opponent O-01 as the "*Patentee's term*" for calcium ion tolerance or the ability of a polymer to withstand higher concentrations of calcium ion without precipitating as a calcium/polymer complex. However, at the concentrations used

for the measurement, the polymers as described in the patent in suit would have no tendency to gel, nor would they show any signs of gelling.

(6) Moreover, O-01 argued, that it was not specified in the patent in suit which equipment was to be used for measuring absorbances, nor which equipment had been used in the examples for measuring the small differences in absorption values between the polymer sample and the blank with sufficient precision.

Furthermore, it pointed out that an error of ±0.002 in measuring absorbance (as was detectable with its own Hach DR 3000 spectrophotometer (O-01's NoOp, page 4, penultimate paragraph) allowing to read "*values down to thousandth of a decimal place (0.000)*") would change a gelation resistance (A) of 100 to 83.3 on the low end and to 125 on the high end. Applying these error margins to even lower absorbance values would, therefore, cause even larger swings in gelation resistance values and, depending on the equipment used, the measuring error was possibly as large as the absorbance values being measured.

Moreover, the Opponent pointed out that the temperature "*at which the absorbance is actually measured*" was not given. In the absence of the specification of the measuring temperature at which absorbance was measured, the gelation resistance could not be reliably determined and this would render the patent in suit insufficient. The absorbance of a modestly turbid sample measured changed its absorbance when measured again after waiting one minute at ambient temperature, the drift had been 0.002, an absorbance value expected from a sample of the invention (NoOp, pages 4 and 5).

(7) As regards the chelating ability (B), O-01 pointed out that the patent in suit failed to define the temperature, the mixing time and the pH, at which this feature was measured, and that the chelating ability could vary with each of these parameters. In order to repeat the experiment successfully and to get reproducible values of the chelating ability, the parameters of temperature and mixing time of a given sample prior to measurement had to be defined. The pH value of the polymer was considered by the Opponent as being the most critical parameter. In support of this argument, experimental report D7 was submitted to demonstrate that that the statement that the chelating ability was measured at a pH of 9 to 11 was not sufficiently detailed (NoOp, pages 5 to 7).

(8) According to Opponent O-02, the gelation resistance (A), yet unknown in the art and created for the purpose of delimiting the claimed subject-matter from the prior art, should apparently characterise the gelation behaviour of the polymer. However, its measurement was carried out at a concentration of the polymer solution far too low for gelation of the acrylic acid polymers considered (0.01 wt.%; NoOp, pages 4 and 5). The determination of both the gelation resistance in the patent in suit and of its reciprocal, ie the degree of gelling, in D2 were based on the extinction of an aqueous solution containing some polymer, calcium ions and a buffer without identifying the method by which the ingredients were mixed together and how long this mixing took, which had an essential influence on the solution. Nor was the actual measuring temperature in the measuring cell given, which would, however, strongly affect the result of the measurement. The measurement of the absorbances in the patent in suit

and in D2 were the same with the single exception that the calcium chloride solution used in the patent in suit had only half the concentration of the solution used in D2. Consequently, the probability that the polymer would gel was even further reduced in the patent in suit. Moreover, the description of the different steps for obtaining the solution to be measured and of the measuring conditions did not, according to O-02, allow a reliable quantitative assessment of the gelation resistance and was not, therefore, sufficient. In other words, the person skilled in the art was not put in a position to carry out a quantitative assessment of the gelation resistance (A), due to the absence of the description of various processing steps and missing information about the measuring conditions (NoOp, pages 4 and 5, in particular, page 5, paragraph 2).

(9) According to O-02, the chelating ability (B) was identical to the calcium ion trapping ability in D2. The feature was determined by measuring the concentration of $Ca^{2+}$ ions by means of an electrode selective for $Ca^{2+}$ ions. However, as already argued by the Opponent in the opposition case against D2, the measuring instructions would be insufficient. Thus, no instructions were given concerning the adjustment of a constant final volume, because of different amounts of sodium hydroxide solution needed to adjust the pH value of the solution dependent on the nature and pH of the polymer. Consequently, measuring values would be obtained which were not standardised or comparable with one another, because of different $Ca^{2+}$ concentrations dependent on the final volume of the solution. Moreover, further ions added to the solution such as $Na^{+}$ and $Cl^{-}$ brought in by the sodium hydroxide and the potassium

chloride solutions, respectively, would also affect the result of the measurement.

In summary, the patent did not, according to O-02, provide a method for correctly and reliably determining the chelating ability (B). Nor had, according to O-02, the duty for complete information in this respect been discharged by the Patent Proprietor.

(10) With a letter dated 6 December 2005, the Patent Proprietor submitted an amended set of claims (replaced later, see section II(17), below) and an "*Enclosure A*" containing comparative experiments.

The amendments in the new claims consisted in (i) the definition of the composition of the monomer component from which the claimed polymer is derived in each of independent Claims 1, 5 and 8 as including "*90 weight % or more*" of "*(meth)acrylic acid (or salt)*" (cf. [Claim 3]; section I, above), (ii) a further definition of the chain transfer agent in each of Claims 5 and 8 ("*… a chain transfer agent comprising a hypophosphorous compound …*") and (iii) the limitation of the two temperature ranges in the last paragraph of each of Claims 5 and 8 to "*90~120 °C*".

(11) Moreover, the Patent Proprietor identified the apparatus, which had been used for the measurement of the absorbance in the [examples] and [comparative examples] of the patent in suit, as a "*Shimadzu UV-3600 Spectrophotometer*" and estimated the measurement error of the absorbance values to be in the range of ±0.0002 at most, so that the corresponding error of the gelation resistance (A) would be one tenth of the error asserted by O-01. "*In addition, it is common sense for an average skilled person to choose a method of measurement which is sufficiently accurate so that*

*given measurement values can be reproduced without undue error. Therefore, a skilled person will choose a different spectrophotometer if it turns out that the spectrophotometer which is used at first is not sufficiently accurate and the obtained measurement values have an undue error margin.*" (page 2 of the letter, paragraph 2).

With regard to the influence of the temperature of the sample during the measurement, the Patent Proprietor asserted that the measurement was carried out immediately after taking the sample from a thermostat having an internal temperature of 90°C sample wherein it had been left for one hour ([0049]). Since the mass of the material of the quartz cell was much smaller than the mass of the solution which was poured into the cell in order to measure the absorbance, "*the decrease in temperature of the solution is so small (about 5 °C) that there is no significant influence on the result of measuring the absorbance.*" Moreover, it was, according to the Patent Proprietor, self-evident to a skilled person that the term "*mixing*" meant a complete and thorough mixing and that the specific method or time of mixing was not, therefore, important (bottom of page 2 and top of page 3 of the letter).

(12) As regards the chelating ability (B), the Patent Proprietor disputed the arguments of the opponents on the basis of the following assertions. It would be clear to a skilled person that the temperature of measurement was room temperature if no other temperature was specified. The mixing time was not relevant as long as the mixing was carried out thoroughly. The argument concerning the pH range had become moot by the limitation of the composition of the polymer (section II(10), above, feature (i)). "*A ratio*

*of less than 10 weight% of a further monomer component has no significant influence on this characteristic.*" Likewise, the volume of added sodium hydroxide to the small amount of polymer and the use of 1 ml of 4 mol/L aqueous KCl solution as stabiliser for the calcium ion electrode (cf. [0052]) would have no significant influence on the measurement of the chelating ability.

(13) On 15 May 2006, the Opposition Division issued a summons to oral proceedings for 15 November 2006. In an annex, the issues to be discussed were mentioned. Moreover, the Opposition Division indicated *inter alia* that "*Example 1 of D3 discloses all the features of process claim 5.*" (item 4.1).

(14) In a letter dated 14 September 2006, O-01 submitted an information brochure

D13: "*SHIMADZU, UV-3600, Shimadzu UV-Vis-NIR Spectrophotometer*", undated (cf., however, the "*Specifications*" on its third last page: "*Note: A PC … is required separately*" and "*PC Requirements Operating System Windows XP Professional*")

As regards the issues playing a role in these appeal proceedings, O-01 disputed the Patent Proprietor's arguments to the issue of the error margins in the measurements of the gelation resistance (A) and the chelating ability (B).

(15) In particular, O-01 put emphasis on the fact that no mention was made in the patent in suit of the specific equipment used by the Patent Proprietor for the measurement of absorbances, let alone that the above specific spectrophotometer would be required. Furthermore, O-01 referred to the fact that D13 mentioned values for the photometric and repeat accuracies, both of which were, in the Opponent's view,

considerably higher than the value quoted by the Patent Proprietor (section II(11), above). Furthermore, O-01 provided calculations concerning the product (A × B) of the polymers in [Comparative Examples A-8, A-11 and A-14] on the basis of absorbance values derived as the reciprocal of the gelation resistance (A) reported in [Table 4] (cf. section II(5), above). Starting from a given absorbance value thus obtained and calculating the respective lower and higher ends of an error range corresponding to a variation in absorbance of ±0.003 (a value mentioned in D13), the calculation resulted in two values of the product (A × B) for each of these polymers, which were listed in Table 4 on page 3 of the letter. The value corresponding to the upper end of the error range provided for each of these *comparative* polymers fulfilled the relevant definition in Claim 1, which showed, according to the Opponent, that "*As it is impossible to measure gelation resistance sufficiently accurately using information provided in the Patent, the Patent lacks sufficiency.*" (letter, page 3).

Moreover, O-01 disputed the Proprietor's argument that the incorporation of <10 weight% of a further monomer would have no significant influence on the chelating ability (section II(12), above).

(16) In a letter of 15 September 2006, O-02 also disputed the Proprietor's above arguments in particular with regard to the not standardised measuring conditions ("*nicht standardisierten Messbedingungen*") in the determination of the chelating ability which automatically yielded data not being comparable with one another. Moreover, it agreed to the statement in the annex to the summons concerning Example 1 of D3 (section II(13), above).

(17) With a letter dated 15 September 2006, the Patent Proprietor filed a new Main Request and explained the amendments in Claims 5 and 8 with regard to the requirements of Article 123(2) EPC 1973. It considered the new lower limit of the temperature range of 100°C as being properly based on [Examples A-1 to A-10] and [Table 1]. Moreover, with regard to the amendment of the percentage range in the first characterising clause of these claims to "*50:50 - 60:40*" and of the upper limit of the amount of the initially charged chain transfer agent to "*45*" weight% (second characterising clause), reference was made to [page 5, lines 11 to 13] and [page 5, lines 46 to 49], respectively. Furthermore, the Patent Proprietor filed new comparative examples described in two Enclosures A and B and commented on the statement in item 4.1 of the annex to the summons (section II(13), above).

(18) Moreover, an Auxiliary Request was submitted by the Patent Proprietor with a further letter of 27 September 2006, wherein the new Claim 1 was a combination of Claims 1 and 3 of the Main Request and wherein the remaining further claims had been renumbered accordingly (cf. sections I and II(10), above).

III. At the end of the oral proceedings on 15 November 2006 (cf. section II(13), above), the Opposition Division revoked the patent in suit. The decision was issued in writing on 22 November 2006.

(1) In particular, the Opposition Division held that the modified split between initial charge and the remainder of the chain transfer agent fed during the polymerisation, although not objectionable under Article 123(2) EPC 1973 (cf. T 2/81, OJ EPO 1982, 394), had not been disclosed as being preferred in

combination with all other features claimed in Claim 5 (including those which had been amended and had been published as being preferred) and considered the combination of the lower limit of the temperature range (ie 100°C) with several other amended features in the characterising parts of Claims 5 and 8 (cf. sections II(10) and II(17), above) as not being clearly and unambiguously derivable from the application as filed, even if the generalisation of the value of 100°C, *per se*, taken from the *examples*, were not considered as being added subject-matter (No. 2.1 of the reasons). In summary, the Opposition Division concluded that neither request complied with Article 123(2) EPC 1973.

(2) Apart from that, the decision under appeal dealt only with the objection under Article 100(b) EPC 1973.

The Opposition Division referred to the Opponents' arguments that no mention had been made in the patent in suit of the spectrophotometer to be used for the measurement of the absorbances necessary for the determination of the gelation resistance (A) and that, due to the dependency on the precision of the spectrophotometer used, the values obtained might be meaningless and not reproducible. Furthermore, the decision under appeal referred to Table 4 submitted by O-01 (section II(15), above) and held that "*some examples which according to the patent are comparative examples and do not meet the requirement A*B>18000 would meet this requirement if the margin of error are taken into account. The consequence is that it is not possible for the person skilled in the art to know wether he is working within the claims or not and to carry out the invention in all its essential aspects.*" (page 5, third last and second last paragraphs).

(3) Furthermore, reference was made to the catchword of decision T 172/99 (above). This decision was held applicable to this case, because the patent did not disclose all the information necessary reliably to define the new parameter (gelation resistance) so that the requirements of Article 83 EPC 1973 were not fulfilled.

(4) In this context, the Opposition Division commented on the arguments of the Patent Proprietor at the oral proceedings that the patent in suit was directed to the person skilled in the art and that it was not, therefore, necessary to put all information in the patent. The person skilled in the art could select the appropriate photometer. Moreover, whilst noise was the most important value, accuracy depended on many circumstances such as the measurement conditions, but it could be optimised to about 0.0002. The error was not important for gelation resistance of 60 to 70 according to [Tables 3 and 4]. Statistical deviation could occur in both directions, a certain error was normal and acceptable in every measurement. The term "*immediately thereafter*" in [0049] was to be understood that the person skilled in the art needed less than 1 min to carry out the measurement, probably close to 30 s. This short time did not lead to much difference in absorbance (Minutes of 15 November 2006, page 2, paragraph 5 *et seq.*; decision under appeal, No. 3.3).

The Opposition Division established that the Patent Proprietor had only offered these arguments concerning the spectrophotometer and the need for an essential specific calibration at the hearing, whilst the patent had been completely silent in this respect. Nor had the Patent Proprietor explained "*what this calibration was. It is not clear wether this reduction of the margin of* *error of the spectrophotometer is indeed possible and in any case wether it is possible for all kinds of spectrophotometer or only for the Shimadzu UV-3600. It is true that it can be expected that the person skilled in the art would select a spectrophometer having a high accuracy but it can not be expected that he will specifically choose the Shimadzu spectrophotometer. Further, in the present case, the person skilled in the art must also perform a sort of calibration process which increases the accuracy by a factor 10 compared to the accuracy indicated by the constructor of the spectrophotometer. This calibration process is not disclosed in the patent and can not be considered as a standard calibration usually done by a person skilled in the art. Expecting from the person skilled in the art that he selects the right spectrophotometer and finds out how to increase its accuracy much over the accuracy specified by the constructor amounts to an undue burden.*" (decision under appeal, No. 3.2, namely, page 6, paragraph 3)

(5) The Opposition Division did not accept the Patent Proprietor's argument that the objection raised by the opponents was at most a clarity objection, but not a ground for opposition.

(6) In summary, the Opposition Division came to the conclusion that the two requests under consideration did not meet the requirements of Article 83 EPC 1973 for the reasons given in No. 3.2 of the decision under appeal, even though the Patent Proprietor was given the benefit of the doubt with regard to the issues concerning (i) the measuring temperature and (ii) the significance of the influence of the pH on the measurement of the chelating ability of the copolymers

as defined in the claims (section II(12), above; decision under appeal, Nos. 3.3 and 3.4 of the reasons).

(7) Consequently, the patent in suit was revoked for the above reasons (sections III(1) and III(4), above).

IV. On 15 January 2007, an appeal was filed against this decision by the Patent Proprietor (Appellant), who requested that the decision under appeal be set aside and that the patent in suit be maintained in amended form based on the claims of the Main Request in the opposition proceedings. The prescribed fee was paid in due time. The Statement of Grounds of Appeal (SGA) was received on 21 March 2007, wherein the Appellant maintained its Main Request (section II(17), above) and its Auxiliary Request (section II(18), above) as "*Auxiliary Request 1*" and additionally filed Auxiliary Requests 2 and 3. Since, however, no decision had to be made on these requests, because they were replaced by new requests in the further course of these proceedings (section VII, below), they need not be considered here any further.

(1) With regard to the refusal of the requests under Article 123(2) EPC 1973, the Appellant referred to the individual amendments in Claim 5, namely to (i) [0013] "*disclosing 90 weight-% or more as a more preferred proportion*" and (ii) [0017] "*disclosing hypophosphorous compounds as preferable*". Furthermore, the Appellant argued (iii) that "*The ratio … is in the range of 50:50 - 60:40 (originally: 46:54 - 66:34). This amendment is based on [0019] describing this range as more preferred.*", (iv) that "*the upper limit of 45 weight-% is disclosed as a preferred upper limit (in combination with a lower limit of 5 weight-%) in paragraph [0022]*." and (v) that "*The lower limit of 100 °C is based on the*

*examples (cf. table 1) which all, without exception, show a lower limit of the reaction temperature range of 100 °C. … The lower limit of 100 °C … is clearly implicitly disclosed as a preferred value to a skilled person by the fact that* *<u>all</u>* *examples are carried out in a reaction temperature range having a lower limit of 100 °C.*" (SGA, pages 2 and 3).

On page 4, paragraph 1 of its SGA, the Appellant concluded that "*each amendment, and also the combination of all amendments, is not based on arbitrarily 'cherry picking' from the original disclosure, but on a restriction of original ranges to new ranges which are not only based on disclosed upper and lower limits, but on new limits which are disclosed as preferred limits (at least implicitly in case of the lower limit of the reaction temperature range).*

*None of the amendments is such that a skilled person having studied the original disclosure of the application document could be surprised by new claim 5. Therefore, the Proprietor believes that all amendments, also in combination, are in full compliance with the requirements of Article 123(2) EPC*".

(2) With regard to Article 100(b) EPC 1973, the Appellant disputed the arguments brought forward by the opponents, in particular the arguments and calculations concerning the photometric accuracy (error margin) of the absorbance in the determination of the gelation resistance, and the reasons in the decision under appeal. Based on the disclosure of D13, calculation of the relative value of the magnitude of the error margin ("*error margin ratio*") relative to the magnitude of a measured value of the absorbance for the measurement apparatus used in the <u>[examples]</u> would result in the

finding "*that when the measured value of the absorbance is close to zero, the error margin ratio does not exceed ± 0.5 %*".

(3) Moreover, the Appellant submitted a Table A depicting the individual values of absorbance "*a*" of the samples and absorbance "*b*" of the blanks as measured by the method described in [0048] to [0051], from which the gelation resistance (A) of [Examples A-1l to A-20] and [Comparative Examples A-8 to A-14] as shown in [Tables 3 and 4] had been calculated (SGA, page 5, last paragraph and page 6). Based on a calculation using the values provided in Table A for [Example A-14], the Appellant argued that it could be derived from these individual values that, at and due to an error margin ratio E = ±0.5% (= 0.005) at the maximum, the swing width of a gelation resistance (A) of 130 was as small as only about ±0.5 %. The results of such calculations for the other experiments in Table A was said to be "*almost as small as the above*".

Furthermore, on the same assumption (E = ±0.5%) as above, the Appellant provided calculation results of "*product (A × B)*" for the polymer of [Comparative Example A-8] in order to rebut previous calculation results of O-01 (cf. section II(15), above). According to its calculation, the product (A × B) in [Comparative Example A-8] was below 18000 with an extremely slight variation of only about 0.7%. This was, according to the Appellant, also true for the two other [Comparative Examples A-11 and A-14]. If the error margin of the absorption had been a large value of ±0.003 as asserted by O-01, then it would not have been possible to obtain the measured values in the numerical value range of 0.00012 to 0.00029 as reported in Table A, ie much smaller than ±0.003.

(4) The Appellant argued furthermore that the application of T 172/99 (above) was not appropriate, because that case had been completely different from the present case. This case dealt with statistical measurement errors, but not, as in the case of T 172/99, with errors influenced by an arbitrary selection during the measurement procedure. "*In such cases, the Board of Appeal usually decided that inaccuracies do not result in insufficiency of disclosure (cf. e.g. T 396/02 and T 943/00 which refer to further decisions)*".

V. Respondent I (O-01), in its rejoinder of 24 September 2007, disputed the Appellant's arguments, commented on the grounds for opposition under Article 100(a) EPC 1973 and raised a new objection of lack of clarity against the term "*in a ratio of 90 wt % or more*" introduced into Claims 1, 5 and 8 of the Main Request and claims corresponding thereto in the auxiliary requests. In its opinion, this term had no meaning to a person skilled in the art.

(1) Moreover, it also objected to this term under Article 123(2) EPC 1973. The reason therefor was seen in the lack of a basis for the contested term "*in a ratio of 90 wt % or more*" in isolation of any other restrictive feature in the *application*, namely [0013]/*page 6, last paragraph* and [Claim 3]/*Claim 3*.

(2) Furthermore, the reformulated "*temperature range of 100-120 °C*" in Claims 5 and 8 contravened, according to the Respondent, Article 123(2) EPC. More particularly, the Respondent referred, in principle, to two temperature ranges in the claims (letter, page 3, paragraph 1) and moreover, argued that "*the worked examples refer to the boiling point of the system, which varies from example to example … Furthermore,*

*there are many process factors included in the worked examples which are relevant and need to be taken into consideration, the 100°C cannot be extracted from the worked examples in isolation of other relevant factors. For example, in Example A-1, if 100°C is the lower limit, then it is inextricably linked to an upper limit of 105°C, for a system using a particular type and amount of monomer, chain transfer agent and initiator, all operating at a specified time. It is not permissible under the EPC to extrapolate one of many of the particular process factors of the worked examples to the generalised form of the claims.*" Moreover, it supported the view taken by the Opposition Division with regard to the combination of the above amended feature and the amended distribution of the chain transfer agent between initial charge and gradual supply (section III(1), above).

(3) The Respondent furthermore reiterated its previous arguments to the (in)sufficiency objection and referred additionally to the arguments and experimental results submitted by Respondent II (O-02) in the opposition against D2. It also referred again to D7 (section II(7), above) and to T 172/99 (above) and disputed that the present case was similar to the situations as decided in T 396/02 of 2 August 2005 or T 943/00 of 31 July 2003 (neither published in OJ EPO) as suggested by the Appellant (section IV(4), above). The Respondent argued that according to the data provided by the Appellant with its SGA, the accuracy of measurement was a variable factor as conceded on page 5 of the SGA and that determining the parameters placed an undue burden on the skilled person.

VI. In its rejoinder dated 29 September 2007, Respondent II (O-02) also raised objections of lack of clarity and of extension beyond the content of the application as filed and argued with regard to the three decisions, mentioned above, very shortly along the same lines as Respondent I.

VII. With a further letter dated 2 January 2009, the Appellant filed a new Main Request and Auxiliary Requests 1 to 10 to replace all its previous requests (section IV, above). The wording of those claims of the Main Request is quoted herein below, which had been amended in substance during the opposition or appeal proceedings (cf. section I, above).

(1) Thus, Claim 1 of the Main Request read as follows:

"*A detergent builder, comprising a poly(meth)acrylic acid (or salt) polymer derived from a monomer component including a (meth)acrylic acid (or salt) monomer in a ratio of 90 weight % or more which gives a product (A x B) of 18,000 or more from the gelation resistance (A) and the chelating ability (B).*"

(2) From dependent Claim 3, the passage "*is derived from … in a ratio of 90 weight % or more,*" had been deleted.

(3) Process Claim 5 read as follows:

"*A production process for a detergent builder, comprising the step of polymerizing a monomer component including (meth)acrylic acid (or salt) in a proportion of 90 weight % or more in the presence of a chain transfer agent comprising a hypophosphorous compound and a polymerization initiator in an aqueous medium, thus obtaining a detergent builder including the resultant poly(meth)acrylic acid (or salt) polymer;*

*with the process being characterized in that:*

*the ratio by weight of (total amount of monomer component, chain transfer agent, and polymerization initiator) to (total amount of aqueous medium) is in the range of 50:50 - 60:40;*

*10 weight % or more of the total amount of the aqueous medium and 0 - 45 weight % of the total amount of the chain transfer agent are beforehand charged into a reactor; and*

*the polymerization is carried out within the reaction temperature range of 100-120 °C while 70 weight % or more of the total amount of the monomer component, 55 weight % or more of the total amount of the chain transfer agent, and 80 weight % or more of the total amount of the polymerization initiator are gradually supplied to the reaction system having a temperature of 100-120 ° C.*"

(4) From dependent process Claim 6, the passage "*wherein the monomer component includes a major proportion of (meth)acrylic acid,*" had been deleted.

(5) Product Claim 8 differed from Claim 5 only by the wording of its preamble, whereas the wording of the characterising part of the claim following thereafter was identical to that part of Claim 5:

"*A poly(meth)acrylic acid (or salt) polymer, obtained by a process including the step of polymerizing a monomer component including (meth)acrylic acid (or salt) in a proportion of 90 weight % or more in the presence of a chain transfer agent comprising a hypophosphorous compound and a polymerization initiator in an aqueous medium;*

*with the polymer being characterized in that: …*"

(6) At least one of the two definitions concerning the "*product (A × B) of 18,000*" and a minimum temperature

of 100 °C, which had been the reason for the revocation of the patent in suit by the Opposition Division and were also relevant to the outcome of these appeal proceedings, was also contained in the respective set of claims of each operative Auxiliary Request.

(7) Thus, the feature of the "*product (A × B)*" could *expressis verbis* be found in a number of claims derived either from [Claim 1] or dependent [Claim 9] (section I, above). Thus, it was contained in Claims 1 and 7 of Auxiliary Request 1, in Claim 1 of Auxiliary Request 2, in Claims 1 and 9 of Auxiliary Request 5, in Claims 1 and 8 of Auxiliary Request 6, Claims 1 and 6 of Auxiliary Request 7, Claim 1 of Auxiliary Request 8, Claim 1 of Auxiliary Request 9 and in Claim 2 of Auxiliary Request 10.

(8) Likewise, a temperature range of "*100-120 °C*" was mentioned in a number of claims derived from [Claims 5 and 8], respectively, namely in Claims 3 and 6 of Auxiliary Request 1, Claims 1 and 3 of Auxiliary Request 3 and Claims 1 and 2 of Auxiliary Request 4, whereas in each of Auxiliary Requests 5, 6, 7, 9 and 10 the temperature range had been amended at each occurrence to "*90-110 °C*" (cf. section II(10), above).

(9) In order to support its new sets of claims with regard to Article 123(2) EPC, the Appellant referred in detail to the different amendments and their asserted basis in the patent in suit and, furthermore, referred to decision T 962/98 of 15 January 2004, not published in OJ EPO. It furthermore disputed that the term "*in ratio of 90 wt. % or more*" would not be understood by a person skilled in the art, reiterated its arguments concerning the objection under Article 100(b) EPC and also commented on novelty and inventive step.

VIII. Oral proceedings took place as scheduled on 28 October 2009. Many of the arguments brought forward at the hearing had already been provided in writing (see the Facts and Submissions, above), the following passages will, therefore, concentrate on new aspects in the respective submissions of the parties at the hearing as far as they are relevant to the outcome of the case.

(1) At the outset of the hearing the parties were reminded that it was not the patent specification as granted, but the application text as originally filed, which is the yardstick for the decision on the question of whether the requirements of Article 123(2) EPC are met by an amendment.

(2) The first points controversially discussed by the parties at the oral proceedings concerned the amendments in Claims 1, 3, 5, 6 and 8 of the new Main Request with regard to the requirements of Articles 84 and 123(2) EPC. The Appellant indicated that it would, if need be, delete Claim 6 in order to prevent a revocation under Rule 80 EPC because of the amendment in this claim.

More particularly, the amendments concerned related (i), in Claims 1, 5 and 8 (sections VII(1), VII(3) and VII(5), above), to the definition of the composition of the monomer component from which the poly(meth)acrylic acid (or salt) polymer was derived and to the meaning of "*ratio*" and "*proportion*", respectively, in that context, (ii), in Claims 3 and 6 (sections VII(2) and VII(4), above), to the deletion of the respective features concerning the composition of the monomer component, (iii), in the preambles of Claim 5 and 8 (sections VII(3) and VII(5), above), to the further specification of the chain transfer agent as "*comprising a hypophosphorous compound*" and (iv) to the amendments of the process features as defined in the characterising parts of Claims 5 and 8.

In particular, the above amendments (i) concerned the insertion of "*derived from a monomer component including a (meth)acrylic acid (or salt) monomer in a ratio of 90 weight % or more*" in Claim 1, and the replacement of "*including a major proportion of (meth)acrylic acid (or salt)*" by " *including (meth)acrylic acid (or salt) in a proportion of 90 weight % or more*" in each of Claims 5 and 8.

Furthermore, the above amendments (iv) related to the modifications of the range of the ratio by weight of the total amount of the reaction participants to the total amount of the aqueous medium in Claims 5 and 8 from "*46:54 ~ 66:34*" to "*50:50 - 60:40*" and to the upper limit of the weight ranges of the total amount of chain transfer agent initially charged to the reactor in Claim 5 from "0-*50 weight %*" to "0-*45 weight %*" and in Claim 8 from "*1-50 weight %*" to "*1-45 weight %*", the amendment of the corresponding complements of the total amount of the chain transfer agent to "*55 weight % or more*" in Claim 5 and to "*55-99 weight %*" in Claim 8.

A still further amendment as referred to under (iv) concerned the replacement of "*50~120 °C*" by "*100-120 °C*" at each occurrence in Claims 5 and 8.

(3) Whilst the Respondents argued that the amendments were based on combinations of individual selections of features not originally disclosed in a single context as used in the new claims, the Appellant considered these amendments as having their clear basis in the *application*:

on *page 6, lines 20/21*, where reference had been made to a "*proportion of … more preferably 90 weight % or more*" for the (meth)acrylic acid (or salt);

on *page 10, lines 2/3*, where it was said that "*the hypophosphorous compounds are preferable*";

on *page 11, lines 5/6*, where it was stated that "*the ratio by weight of (total amount of monomer component, chain transfer agent and polymerisation initiator) to (total amount of aqueous medium) needs to be … more preferably 50:50 ~ 60:40*";

on *page 12, lines 13 to 24*, where, the original ranges of "*0~50 weight % (preferably 1~50 weight %)*" and "*1~50 weight %*", respectively, for the respective initial charge of chain transfer agent and their complements ("*50 weight % or more (preferably 50~99 weight %)*") had been mentioned in the context of the polymerisation aiming at the claimed polymers (for use for detergent builders and for other purposes, respectively), each of these ranges providing, in the Appellant's opinion, the basis for the lower limit of the relevant ranges in Claims 5 and 8. A basis for the respective upper limits of these ranges as amended in Claims 5 and 8, respectively, could, in the Appellant's view, be found on page 13, lines 7 to 11, where a preferred upper limit of "*45 weight %*" for the initial charge and its complement of at least "*55*" weight % were disclosed. According to established case law, a lower limit of a general numerically defined range and an upper limit of a preferred version of this range or *vice versa* could be used to define a narrower version of this range in compliance with Article 123(2) EPC.

Whilst it accepted that the lower limit of the new temperature range in the last paragraph of each of

Claims 5 and 8 of 100 to 120°C had no basis in the general description, the Appellant asserted that it was clear from all the *examples* (eg *page 22, lines 10/11*, *page 23, lines 5/6* and *page 24, lines 8/9*) and in particular from column (6) and footnote (6) of *Table 1*, that 100°C was the preferred lower limit of the range, which corresponded to the boiling point of the reaction system at the start of and also during the whole of the polymerisation reaction, at which all *examples* had been carried out. Hence, it its opinion, the double mention of the temperature range of "*100-120 °C*" referred to a single process feature and also satisfied the requirements of Article 123(2) EPC.

Moreover, in the Appellant's opinion, the claims had further been restricted by these amendments.

Furthermore, the Representative of the Appellant pointed out that he could neither recognise a meaningful difference between "*ratio*" and "*proportion*" as used in the claims, nor could he see any justification for the assertion of lack of clarity of the amended passages (i) (cf. the next paragraph). In his opinion both terms had been used synonymously.

(4) By contrast, Respondent I (O-01) was of the opinion that the meaning of the words "*ratio*" and "*proportion*" as used in the above new formulations in connection with amendment (i) (section VIII(2), above) was not clear (Article 84 EPC). Thus, the use of "*ratio*" was not, in its opinion, appropriate in Claim 1, nor did the formulation "*a proportion of 90 weight % or more*" make sense.

(5) Moreover, both Respondents took the view that these new formulations had been disclosed in *Claim 3*/[Claim 3] only in direct connection with a particular weight-

average molecular weight (both features in that claim having been connected by "and"). Therefore, the new wording of the independent Claims 1, 5 and 8 would violate the requirements of Article 123(2) EPC.

(6) The second item, on which the discussion focused in the connection with Article 123(2) EPC, was the amendment concerning a minimum temperature of 100°C in the last paragraph of each of Claims 5 and 8.

Whilst the twofold mentioning of a range of "*100-120°C*" in each of these paragraphs related, according to the Appellant, to a single process feature, Respondent I took a different view in this respect and pointed, on the one hand, to [0021] (in particular, [page 5, lines 25 to 27]/the sentence bridging *pages 11 and 12*), where mention was made of a temperature of "*50~120 °C*" of the reaction system without disclosing any preferred temperature range, and, on the other hand, to [0023] (in particular [page 5, lines 52 to 54]/*page 13, lines 16 to 19*) referring to a general and to preferred temperature ranges ("*50~120 °C*", "*60~115 °C*" and "*90~110 °C*") at which the raw materials were gradually supplied to the reaction mixture. In the Respondent's opinion, the two paragraphs, above, referred to different process features, whereby no disclosure of a preferred range for the temperature of the reaction system was available.

(7) In the Appellant's opinion, the twofold mention of the temperature range referred to the same process feature, as would be confirmed by the description of the examples, eg in [Example A-1] in [0055] and [0056], where reference was made in each case to the "*boiling point … of the system*", whereby the lowest temperature reported for this boiling point was 100°C. The

polymerisation and the gradual supply of starting material during the polymerisation were in each case carried out within the temperature range defined in the claims. It would, moreover, be evident from the examples, in general, that the temperature was not linked with other features.

More particularly, the Appellant referred to the *examples*, namely to *Examples A-1 and A-2* and to column (6) of *Table 1* concerning the "*Temperature of reaction system during dropping and polymerization (°C)*". More particularly, it referred to *page 22, lines 10/11* and *page 23, lines 15/16*, respectively, ("*… then the temperature was elevated to the boiling point (100 °C) of the system under stirring.*"), to *page 23, lines 5/6* and *page 24, lines 8/9*, respectively, ("*the reaction temperature was kept at the boiling point (100-105 °C) of the system during the dropping.*") and to the individual temperatures given in column (6) of *Table 1*.

Moreover, this finding was, according to the Appellant, valid for all the *examples*.

Therefore, the amendment of the temperature range at each occurrence in Claims 5 and 8 would comply with Article 123(2) EPC.

(8) Respondent II, however, referred to the fact that the polymerisation was, according to Claims 5 and 8, carried out in an "*aqueous medium*" and argued that this medium could, according to [0018], contain water alone or mixed solutions of water and water-soluble solvents. Therefore, the temperature of 100°C as referred to in the *examples* could not be generalised to cases in which another solvent was present and, therefore, 100°C was not an appropriate basis for the amendment of the two temperature ranges mentioned in each of Claims 5 and 8.

In other words, the suggested amendment would be based on what is often called an intermediate generalisation.

More particularly, Claims 5 referred to the process for the preparation of a detergent builder comprising the step of polymerising a monomer component including a (meth)acrylic acid (or salt) in the presence of a chain transfer agent and a polymerisation initiator "*in an aqueous medium*". The meaning of this term was explained in [0018]/*page 10, lines 7 to 13* as including "*water alone; mixed solutions of water and water-soluble solvents. … The ratio of water in the mixed solution is preferably 40 weight % or more …*".

(9) According to the Appellant, the presence of further solvents would not, however, make any difference.

(10) In summary of this discussion, the parties maintained their controversial points of view with regard to the range of 100 to 120°C. Then the debate was closed on this issue and the hearing was interrupted for deliberation of the Board. After resumption of the proceedings, the Board gave the decision that the Main Request was refused and asked the parties whether they wanted, in view of the decision on the Main Request, to present any additional arguments to Auxiliary Request 1.

(11) Since none of the parties intended further to discuss Auxiliary Request 1, nor had any further comments on Auxiliary Request 2 with regard to Article 123(2) EPC, the floor was given to the Appellant for presenting its case concerning the issue of sufficiency of Auxiliary Request 2.

(12) The discussion on this topic focused essentially on the spectrophotometer to be used for the determination of the gelation resistance (A) by measurement of the

UV-absorbance and the accuracy of the apparatus needed therefor and included only few remarks to the other feature of the "*chelating ability (B)*", which were consistent with the previous written submissions.

(13) The issue concerning the photometric accuracy and the photometric repeat accuracy mentioned on the penultimate page of D13 and the accuracy of the spectrophotometer used by Respondent I were discussed in depth along the same lines as in the previous written submissions, referred to above.

(14) In particular, the Appellant referred to the details as provided in its letter of 6 December 2005 (sections II(10) to II(12), above) and pointed out that the accuracy of the measurements as provided in Table A accompanying the SGA (section IV(3), above) was distinctly better that that of the measurements of Respondent I by one order, ie ±0.0002 at most (section II(11), above) as compared with 0.002 referred to by O-01 (section II(6), above, paragraph 2). Apparently, the spectrophotometer used by O-01 had not had the required accuracy.

The person skilled in the art would, of course, choose an appropriate apparatus which was sufficiently accurate to carry out the measurements as shown in Table A. In this connection, the Appellant pointed out that that it was neither necessary to use the specific Shimadzu UV-3600 Spectrophotometer mentioned in D13 and in sector II(11), above, nor had it been disputed that this specific spectrophotometer had been a commercially available product. The fact that the apparatus used had not been identified in the patent in suit was, in the Appellant's view, at most a lack of clarity.

The term "*Immediately thereafter*" as used in the description of the method of measuring the absorbance (cf. [page 8, line 11]/*page 20, line 15*) meant that the transfer of the sample from the thermostat to the optical cell preheated to 90°C had been carried out without delay. According to the information from the Appellant to the Representative, it took only approximately 10 s, ie far less time than the period mentioned in the NoOp of O-01 (section II(6), above), so that the temperature could not drop to such an extent which would have significantly affected the measurements carried out by the Patent Proprietor and Appellant, respectively.

(15) Moreover, the Appellant argued that neither Respondent had discharged its burden of proof for its assertions concerning the question of (in)sufficient disclosure by repeating any [examples].

(16) Both Respondents put emphasis on the argument that the polymer as claimed in the patent in suit was defined in terms of a newly formulated and, hence, unfamiliar parameter, so that the reasoning in T 172/99 (above) was applicable to this case. Furthermore, the burden of proof for sufficiency of disclosure was, in their opinion, shifted to the Appellant, who had, according to T 172/99, had a particular obligation to provide all details, namely the measuring conditions, necessary for obtaining reliable results in the measurement of the parameter in question.

However, the patent in suit provided absolutely no such information. Thus, it was completely silent about the apparatus to be used for the determination of the absorbance. Nor did it mention that the optical cell was to be preheated or that the measurement was to be carried out within 10 s. No mention was made, either, of the means (eg the pipette) used for transferring the sample from the thermostat to the optical cell and of its temperature, which would certainly also affect the result of the measurement.

Nor was there any information in the patent in suit about the minuteness of the absorbances to be measured (such as eg mentioned for the blanks in Table A filed with the SGA for the first time).

Respondent I gave further examples which confirmed its previously filed arguments to the comparative examples in the patent in suit, as referred to in section II(15), above, and raised the question of whether each numerical datum in an [example] obtained according to [0049] or [0050] represented an average value or was the result of a single measurement.

(17) When the parties indicated that they did not intend further to comment on these issues, the Board closed the debate on Auxiliary Request 2 and interrupted the hearing for deliberation on this request.

(18) When the hearing was resumed and the parties were informed that Auxiliary Request 2 was refused, the Appellant withdrew the previous Auxiliary Requests 3 to 10 as filed with the letter dated 2 January 2009 (section VII(6)to VII(8), above) and submitted instead a single new Auxiliary Request 3. The new Auxiliary Request contained Claims 1 to 4 corresponding to Claims 5, 8, 10 and 11 of previous Auxiliary Request 5 (cf. sections VII(3), VII(5), VII(8) and I, above).

(19) Both Respondents requested that the new Auxiliary Request not be admitted, because the problems concerning the temperature ranges in the requests on file had already been discussed in detail for a long

time in the opposition and appeal proceedings and had, moreover, been a decisive point in the decision under appeal. Hence, the Appellant could and, therefore, should have filed such an auxiliary request at an earlier stage of the proceedings. Therefore, the new request should not be admitted at this late stage of the appeal proceedings.

(20) After deliberation, the parties were informed that the new Auxiliary Request 3 would not be admitted into the proceedings.

IX. Then the final requests of the parties were again established.

The Appellant requested that the decision under appeal be set aside and that a patent be maintained of Claims 1 to 11 of the Main Request or, in the alternative, on the basis of the Auxiliary Requests 1 and 2, all submitted with the Appellant's letter dated 2 January 2009, or on the basis of Auxiliary Request 3 (Claims 1 to 4), filed at the oral proceedings.

The Respondent requested that the appeal be dismissed.

## Reasons for the Decision

1. The appeal is admissible.

2. In the decision under appeal, two different reasons were given for the revocation of the patent in suit (section III(7), above), namely

(i) that the amendment of the temperature ranges, ie the replacement of the range of "*50 ~ 120°C*" at all occurrences in the independent claims to the process and to the polymer *per se* of both former requests under consideration at that time by the new range of

"*100-120 °C*" (section III(1), above), did not fulfil the requirements of Article 123(2) EPC 1973 and

(ii) that these former requests did not meet the requirements of Article 83 EPC 1973 (sections III(2) to III(4) and III(6), above).

Before a decision can be made on the substance of a request, it must be decided whether this request meets the formal requirements of the EPC, in particular those of Articles 84 and 123(2) EPC, or whether an objection under Article 100(c) EPC against this request prevails.

*Main Request*

3. As regards the objection under Article 84 EPC (sections V, VI, VIII(2) and VIII(4), above) concerning the wording of the limitation of the monomer component from which the polymer is derived to 90 weight % or more of (meth)acrylic acid or salt, in particular the use of the words "*ratio*" and "*proportion*", respectively, the Board takes the view that the present wording of each of Claims 1, 5 and 8 in this respect does not prevent any one of these claims from being clearly understood by the person skilled in the art. Therefore, this objection must fail.

4. However, the issue mentioned as item (i) in section 2, above, ie whether the requirements of Article 123(2) EPC are fulfilled by the Main Request, is still pending with regard to its Claims 5 and 8 (cf. sections VII(3) and VII(5), above).

*Article 123(2) EPC*

5. The Appellant/Patent Proprietor and both Respondents/ Opponents presented their arguments to, in their opinion, the various aspects of this issue in great

detail (sections V(1), V(2), VII(9), VIII(2), VIII(3), VIII(5) to VIII(9), above).

5.1 Contrary to the Respondents' opinion, the amendment in Claim 1 (+ Claims 5 and 8), limiting the composition of the monomer component from which the polymer contained in the detergent builder claimed is derived, has a basis on *page 6, lines 16 to 21*, independently from the other feature of [Claim 3], referring to the weight-average molecular weight and having a basis on *page 16, lines 1 and 2*, which forms now the remaining sole feature of Claim 3 of this request.

Consequently, the Board accepts that the requirements of Article 123(2) EPC are met by the above amendments in Claims 1, 3, 5 and 8 of this request. Moreover, the amendment of Claim 1 restricts the scope of the claim further in comparison with [Claim 1], so that Article 123(3) EPC is also complied with.

5.2 With regard to the amendments of Claims 5 and 8 other than the modification of the temperature ranges in the last paragraphs of these claims, the Appellant referred to a number of passages in the general description of the *application*, as mentioned in section VIII(3), above. In each of the relevant passages on *pages 6, 9 and 11*, explicit reference is made to "*the present invention*" as such (*page 6, line 16, page 9, lines 21/22, page 11, line 2*). The amended ranges of the percentages of the chain transfer agent initially charged and gradually supplied to the reaction system can clearly and directly be derived from *page 12, line 13 to page 13, line 10* in accordance with the findings in T 2/81 (above), Headnote II, and No. 3 of the reasons. Therefore, the Board is satisfied in this respect, that the requirements of Article 123(2) EPC are met.

5.3 As regards the question of whether the lower limit of the range of 100 to 120°C mentioned twice in each of Claims 5 and 8 has directly and unambiguously a clear basis of the disclosure in the *examples* must be considered separately and in detail herein below.

5.3.1 The Appellant referred to T 962/98 (above) according to which the use of a feature taken from the examples for restricting the scope of a claim would be allowable, if a skilled person could recognise without any doubt from the application as filed that this feature was not closely related to the other characteristics of the worked examples and could be applied directly and unambiguously to the more general context (No. 2.5 of the reasons in T 962/98, which followed T 201/83, OJ EPO 1984, 481). The Appellant saw these prerequisites fulfilled in the present case, so that the value of 100°C disclosed in each of the *examples* in the context of the boiling point of each reaction mixture would, therefore, form an allowable basis for the amendment of the polymerisation temperature in each of Claims 5 and 8 of the Main Request (sections IV(1), VII(9), VIII(3), VIII(6) and VIII(7), above).

5.3.2 By contrast, the Respondents took a different view and argued that the extraction of the value of 100°C from the *examples* did not comply with the above requirements as formulated in T 962/98,above (sections V(1), V(2), VI and VIII(4) to VIII(6), above).

5.3.3 In the case underlying decision T 962/98 (above), each Claim 1 in question had been amended with reference to the argument that the amendment was properly supported by the disclosure of one example. The claims referred to a method comprising the dilution of a concentrate composition "*with a diluent*", wherein the composition comprised "*a carrier*" comprising, besides a conveyor lubricant comprising four specific chemical compounds identified by their chemical names, effective amounts of "*a quaternary ammonium cationic compound*" and "*an amphoteric surfactant*" (T 962/98, No. V).

The example which, in the Appellant's opinion supported its amended method claims, concerned a concentrate composition comprising, besides all of the above four specific chemical compounds as the conveyor lubricant component, distilled water, isopropanol, acetic acid, the monosodium salt of lauryliminodipropionic acid and coco-alkyldimethylbenzylammonium chloride.

The Board found (No. 2.6.2 of the reasons) that

"*It is, therefore, not possible to conclude without any doubt whether or not, those four surfactants either*

*(a) can be singled out of the composition of Example 1D and used with other carriers than a mixture of water and isopropyl alcohol, with an antimicrobial agent other than coco-alkyldimethylbenzyl, ammonium chloride or with an amphoteric surfactant other than lauryliminodipropionic acid monosodium salt or, to the contrary, whether they*

*(b) are only adapted to the specific composition disclosed in Example 1D.*

*The skilled reader is given no guidance, either in Example 1D itself, or in the more general description as to which components of Example 1D should be retained unchanged, and which can be varied at will. He will know that it will be possible to vary the example, but there is no clear guidance as to within what limits such variation will be possible. Certainly there is* *nothing to tell him that just the four surfactants recited in claim 1, but not other components recited in Example 1D, are essential.*" and

(in No. 2.6.3 of the reasons), that "*This situation of doubt is in contradiction with the requirement that an amendment be directly and unambiguously derivable from the application as filed.*" Consequently, it did not allow the requested amendment and dismissed the appeal.

5.3.4 The present situation is comparable with the circumstances in that case, in that, as pointed out by the Respondents, the boiling point is clearly linked to the particular composition of a given example. The Appellant has, however, amended its claims on the basis of a generalisation of the boiling temperatures of the examples, irrespective of their further particulars, by applying this generalised value to the full scope of the claims (sections V(2), VI, and in particular VIII(8), above).

5.3.5 Thus, whilst the examples related to the preparation of polyacrylic homopolymers with the only exception in Example A-6 concerning a copolymer of acrylic and methacrylic acids in a 6/4 molar ratio, the general description of the polymerisation mixtures encompasses the possibility that originally up to 50 weight % of the monomer composition (now restricted to 10 weight %, *page 8, line 21*) are monomers other than (meth)acrylic acid or their salts (see the long list of different types of comonomers, such as eg vinyl acetate and vinylsulfonic acid, on from *page 7, line 8* to *page 8, line 19*). Furthermore, the (meth)acrylic acids and some acidic comonomers may be used in their neutralised form as salts with mono- or divalent metal ions (*page 6,* *line 16 to page 7, line 5*, *page 7, line 27* to *page 8, line 3*).

Moreover, a further particular of all those examples, on which the Appellant relied in order to justify the suggested amendment, is the fact that, in all the *examples* in *Table 1* (cf. column (3)), no monomer had initially been charged, but 100% of the monomers component had gradually been supplied to the reaction mixture. However, neither of Claims 5 and 8 includes such a requirement. Instead, the last paragraph of each of these claims requires 70 weight % or more of the total amount of the monomer component to be gradually supplied to the reaction system. In other words, up to 30 weight % of this component may be initially charged. That the boiling point is not independent from the composition of the reaction system, eg from the amount of the monomer component, is illustrated by Comparative Example A-3 wherein part of the monomer component had initially been charged (cf. *page 28, last line*/ [page 11, line 16]).

5.3.6 Moreover and in particular, it must be noted that all *examples* relate to the polymerisation in ion-exchanged water, whilst in the claims reference is made to "*an aqueous medium*", in general, as defined on *page 10, line 7* to *page 11, line 1* (corresponding to [0018]). It clearly includes "*water alone; mixed solutions of water and water-soluble solvents*" (*page 10, lines 7 to 9*). Moreover, according to a preferred elaboration referred to on *page 10, lines 12 and 13*, the water content is 40 weight % or more of the mixed solution, which means, that, in this preferred elaboration, the solvent may be present in an amount of up to 60 weight % of the aqueous medium (cf. section VIII(8), above).

The water-soluble solvent which may thus even be the predominant component of the aqueous medium affects, of course, the boiling point of the "*aqueous medium*".

5.3.7 In view of these findings, it is evident to the Board that each of the temperature values in column (6) of *Table 1*, as further confirmed by the wording in the descriptions of each of the *examples*, refers to the individual "*boiling point (…) of the system*" of the respective given example. The accidental identity of the boiling temperatures in different examples does not disprove this finding.

In other words, the initially charged reaction systems eg of *Examples A-2 and A-7*, containing only ion-exchanged water, or *Example A-1* containing only ion-exchanged water and about 2 weight % of sodium hypophosphite monohydrate (*page 22, lines 7 to 11*) had a boiling point of 100 °C, and the temperature was then "*kept*" in these examples at the individual boiling point of the respective specific reaction system lying somewhere between 100 and 105°C (in other cases, up to between 103 and 107°C) apparently by controlling the feed of the various reaction components, ie of the monomer(s), sodium persulphate and hypophosphite monohydrate in distinct concentrations dissolved in ion-exchanged water, to the reaction system. "*After the end of dropping, the temperature was kept at the same temperature for 5 minutes to complete the aging.*" The comparison of the identical statements in *Example A-1* on *page 23, lines 5 to 8*, *Example A-2* on *page 24, lines 8 to 11*, *Example A-7* on *page 26, lines 16 to 19* and, moreover, in *Comparative example A-3* on *page 29, lines 17 to 20* makes it clear for the Board that that the formulation concerning the boiling point expressed in terms of eg "*(100~105 °C)*", "*(100~107 °C)*" or

"*(103~105 °C)*" (Comparative Example A-3) in *Tables 1 and 2* refers in each case to the respective individual boiling temperature of the individual reaction system.

These findings are, for the Board, valid for the polymerisation reactions in all the *examples*, which were also conducted in a similar way as confirmed by formulations such as eg "*A polyacrylic acid (…) was obtained by the same polymerization as of Example A-2 (or A-1) except that …*" on *page 24, lines 17/18 and 24 to 26*, *page 25, lines 4 to 6, 11 to 14* and *page 26, line 25* to *page 27, line 4*.

The above values given in the individual *examples* cannot, therefore, be considered as referring to a temperature range or to a lower or upper limit of a temperature range which would be valid for the generality of all conceivable elaborations encompassed by the operative claims.

5.3.8 Therefore, as held in T 962/98 (above); section 5.3.3, above), it is also, in the present case, neither clearly and unambiguously nor directly derivable from the disclosure in the *examples* that the lowest temperature value provided in *Table 1* would also be valid for the other reaction systems comprising other aqueous media and other monomer compositions as encompassed by Claims 5 and 8 under consideration.

5.3.9 Consequently, the Board takes the view that the conditions for an admissible and allowable generalisation of the temperature value of 100°C for amending the lower limit of the two occurrences of a temperature range to "*100-120 °C*" in the last paragraph of each of Process Claim 5 and Product Claim 8 are not met. Rather, the amendment of these two claims does not fulfil the requirement for the allowability of an amendment taken from an example, as referred to in section 5.3.1, above, but extends beyond the content of the application as filed.

5.4 Consequently, the Main Request is refused.

*Auxiliary Request 1*

6. Claims 3 and 6 of this request correspond directly to Claims 5 and 8 of the Main Request. The above reasoning in sections 5.3 to 5.4, above is also valid for them. Consequently, the conclusion must be the same as set out in section 5.3.9, above, and Auxiliary Request 1 must, therefore, also be refused.

*Auxiliary Request 2*

7. Claims 1 to 5 of Auxiliary Request 2 relate to a detergent builder comprising a poly(meth)acrylic acid (or salt) polymer. The claims are identical to Claims 1 to 4 and 7 of the Main Request (cf. section VII(1), above) and differ from [Claims 1 to 4 and 7] (section I, above) only in that the definition of the monomer component, from which the copolymer has been derived, was amended by transfer of the definition from Claim 3 to Claim 1 (cf. section II(10), above, amendment (i), concerning the same amendment in previous claims during the opposition proceedings).

Since no additional objection were raised by the Respondents under Article 123(2) EPC (section VIII(11), above), there is no need further to comment on this issue. Instead, reference can be made in this respect to section 5.1, above.

7.1 Apart from the composition of the polymer comprised by the detergent builder as considered in section 7, above, Claim 1 is further defined only in terms of the polymer required to give " *a product (A × B) of 18,000 or more* *from the gelation resistance (a) and the chelating ability (B).*". The parameters (A) and (B) were referred to by both Respondents, respectively, as "*functional characteristics, which are not measured by industry standards but according to test methods set by the Patentee, …*" (Respondent I's letter of 24 September 2007, middle of page 4, section V(3), above) and as "*functional parameters, which are measured by methods the patentee has set up. They are far from being industry standards, - to be precise they are completely unknown in industry.*" (Respondent II's letter of 29 September 2007, page 1; section VI, above).

7.2 In the present case, two older documents of the Appellant also relating to the field of detergent material, ie D2 and D8, were cited against the patent in suit. In each of these documents, the respectively claimed polymers were also characterised by parameters. In D2, reference is made to an "anti-gelling ability" expressed in terms of a Q-value (based on the degree of gelling and the weight-average molecular weight), "clay dispersing ability in high hard water" and "calcium trapping ability". In D8, the polymer is defined in terms of its weight-average molecular weight, its "calcium ion-capturability", its "clay-dispersibility" and its "gelatability".

As already mentioned in section II, above, D2 was, however, only published on 15 September 1999, ie after the filing date (1 July 1999) of the *application*. In view of its late publication date, D2 need not further be considered in the context of the question of whether the determination of the two parameters (A) and (B) have been sufficiently disclosed in the patent in suit, because it cannot contribute to the answer to this question (cf. T 172/99, above, reasons: No. 4.5.9, and further jurisprudence mentioned in section 7.3.3, below).

7.2.1 As pointed out by the Respondents (sections II(4), II(8) and 7.1, above), the parameter "*gelation resistance (A)*" has hitherto neither been known to the person skilled in the art, nor was it measured by industry standards. In D8, "*gelatability*" was instead used to define its polymer.

7.2.2 Both parameters were determined on the basis of a measurement of the absorbance (ABS) of a solution of the respective polymer at 380 nm measured in a 50 mm cell. Reference is made in this respect to the descriptions of the respective methods carried out (i) in the patent in suit in [0027] and from [0048] to [0051]/*page 15, lines 7 to 11* and *page 20, line 2* to *page 21, line 5* and (ii) in D8 on page 7, lines 18 to 46, and on page 15, lines 25 to 40. Whilst, according to [0051], the gelation resistance (A) is described as "*1/(absorbance a - absorbance b)*", ie the reciprocal of the *difference* between the absorbance values of a sample and a blank, D8 explains gelatability in terms of the "*Measurement method: the solution is stirred for 5 minutes using a stirrer, a portion of the solution is sampled, and its absorbancy (ABS) for 380 nm ultra-violet rays is measured using a 50 mm cell.*" (page 7 of D8, lines 29 to 31, and again in past tense on page 15, lines 38 to 40). Moreover, according to page 15, lines 26/27 of D8, "*the absorbancy of the resulting solution was measured and the obtained numerical value was taken as the gelatability of the polymer.*".

7.2.3 However, whilst the device and column material used for the determination of the molecular weight and the molecular weight distribution by GPC and the types of the calcium ion electrode and of the ion analyzer used for the determination of the chelating ability/calcium ion capturability are identified in [0047] and [0053] and in D8, page 14, lines 42 to 55, respectively, neither D8 nor (as mentioned above) the patent in suit (in [0048] to [0051]) give the slightest hint to the respective spectrophotometers, let alone to a preheated cell, which were used and apparently have to be used for the measurement of the absorbance in order to be able to get a meaningful result when determining the gelatability and the gelation resistance, respectively (section VIII(14), above).

7.2.4 The spectrophotometer used, according to the Patent Proprietor, in the *examples* was mentioned for the first time in the reply to the Notices of Opposition dated 6 December 2005 (section II(11), above), ie more than six years after filing. Individual absorbance values a and b were provided for the first time in Table A in the SGA (section IV(3), above), ie more than seven years after filing. Reference to further requirements concerning the handling of the sample (namely the transfer to a preheated cell) was only made at the oral proceedings (section VIII(14), above).

7.2.5 It must further be noticed that the measuring conditions used in D8 even differed *prima facie* significantly from those used in the patent in suit.

Thus, in D8, the temperature of the measurement was "*50 °C*", whilst in the patent in suit reference is made to the adjustment of the temperature of the thermostat to "*90 °C*" (*page 20, lines 14 and 24*), in which the dilute solutions were stored before the measurement was carried out. The only correspondence in the measuring conditions can be found in the optical length of the measuring cell (50 mm = 5 cm) and the wavelength (380 nm) (D8: page 15, lines 39/40; [page 8, lines 11/12 and 17/18]/*page 20, lines 15 to 18 and 25 to 27*).

7.2.6 It is conspicuous to the Board that there are considerable differences in the presentation of the parameters "*gelation resistance*" in the patent in suit and "*gelatability*" in D8, even though both are measures of UV-light absorbances using a spectrophotometer. Whereas the gelatability values in D8 are expressed in terms of absolute measured absorbances and are values in D8 ranging from 0.03 (Table 9, Example 2-7) to 0.19 (Table 6, Example 1-19) and to 0.25 (Table 14, Comparative Example 1-3), each value of the "*gelation resistance*" according to the patent in suit (see [0051] and [Tables 3 and 4]) is expressed in terms of a value which is the calculated reciprocal of a difference between the measured absorbance values of a sample a and of a blank b, the absolute values of which were not, however, disclosed upon filing (section 7.2.4, above).

It is, however, clear from the data filed for the first time with the SGA, in particular Table A, that the differences in the absorbances of sample a and blank b were miniscule - eg for [Example A-11] 0.00198 and 0.00019, respectively, leading to a difference of 0.00179; and for [Example A-14] 0.00794 and 0.00025, respectively, leading to a difference of 0.00769 - and were measured to the fifth decimal place.

7.2.7 However, as already addressed in section 7.2.4, above, individual values of the absorbance measured for samples a and blanks b are provided nowhere in the patent in suit. Only the respective differences of such values (absorbance a - absorbance b) can be calculated from the values of the gelation resistance (A), which are the only data provided by the disclosure as filed. This means, however, for the patent in suit, that it is not possible to derive the magnitude, let alone the respective absolute values of the individual measured values of the samples and blanks from the disclosure as filed (cf. sections 7.2.2 and 7.2.6, above).

7.2.8 Thus, it only became evident with the filing of the SGA that the measuring sensitivity of a conventional spectrophotometer referred to by Respondent I in its NoOp (page 4, penultimate paragraph, cf. section II(6), above: "*a Hach DR 3000*"), which was stated to be accurate to the third decimal place (0.000), is far less than the measuring sensitivity of the Shimadzu UV-3600 Spectrophotometer (cf. section II(11), above) as provided by the data in Table A accompanying the SGA (including measured values for individual blanks b as low as 0.00019 for [Example A-11] and 0.00012 for [Example A-15]) which appeared to indicate that the latter instrument was even accurate to the fifth decimal place (cf. section 7.2.6, above).

However, the fact of this contrast was not apparent to the skilled reader of the patent in suit from the only data provided therein (the value for the gelation resistance A). This is because the actual measured values of samples a and blanks b were not disclosed in the *application*, but had, miniscule though they are, been translated according to the equation given in [0051], which expressed the parameter (A) as the reciprocal of the difference between the measured absorbances a and b, into numerically quite substantial values for the gelation resistance (A) values of eg 560 for [Example A-11] and 130 for [Example A-14] (cf. section 7.2.6, above).

In this connection it is noteworthy that all the values provided for gelation resistance (A) of the polymers according to the [examples] in [Table 3] were provided only as a single value in the order of tens without any indication of whether they were based on average absorbance values, each formed from a number of measurements, or whether they were each based only on one single measurement. This reduced degree of accuracy of the above gelation resistance values contrasts with that of the comparative values in [Table 4] shown in the order of ones, eg 32 in [Comparative Example A-12] or 74 in [Comparative Example A-14], which are the reciprocals of 0.03125 (= 1/32) and 0.01351 (= 1/74), respectively. Each of these two values as calculated from the above integers in [Table 4] differs, however, from the numbers as obtainable according to the equation in [0051] from the values of samples a and blanks b provided later in the SGA, Table A: 0.03159-0.00029 = 0.03130 and 0.01375-0.00025 = 0.1350, respectively. In the Board's view, these discrepancies also cast serious doubts on the asserted completeness and accuracy of the initial disclosure.

Moreover, the Patent Proprietor had, according to page 2, paragraph 5 of the Minutes of the oral proceedings before the Opposition Division, conceded with regard to the absorbance measurements that "*noise is the most important value, whereas accuracy depends on many circumstances such as the measurement conditions, but can be optimised to about 0.0002.*" (section III(4), above), thus indicating that an accuracy to the fourth decimal place *could be achieved by optimisation*. This appears to be at variance with the Patent Proprietor's earlier estimate in its letter dated 6 December 2005 that the accuracy (measurement error) of the Shimadzu instrument when measuring the absorbance values had been in the range of ±0.0002 (section II(11), above).

7.2.9 These facts and findings demonstrate that the original disclosure of the present case (and, therefore, also the specification as contained in the granted patent) has not provided a basis for the person skilled in the art to derive from the figures in the *tables* that his/her spectrophotometer conventionally used at that time (in summer 1998) to determine UV-absorbance values might not have been appropriate for determining whether his/her polymerisation process provided a "*poly(meth)-acrylic acid (or salt) polymer*" within the scope of operative Claim 1, let alone to provide the clear teaching of what was to be done in order reliably to obtain or not to obtain such a product. This uncertainty could not even been removed by the above later submissions of the Appellant (in the SGA and at the oral proceedings). In other words, the values disclosed in the *tables* did not provide the clear information that his/her instrument was not sufficient for carrying out the necessary measurements.

7.2.10 Nor had any information been made available by the Patent Proprietor/Appellant on the filing date of its *application* that a specific spectrophotometer had been available in the market which showed "*High sensitivity, high resolution and an ultra-low stray-light with the latest technology lead(ing) the way to new solutions*" as stated on page 2 of D13, when used in the required combination with a computer running under Windows XP Professional (see section II(14), above).

For this reason and furthermore, in view of two footnotes on its page 10 with the heading "*Optional*

*Software*" that "*This software runs on Windows 2000/XP*", the Board cannot see any basis in D13 which would change this situation favourably for the Appellant, because as already mentioned in the preceding paragraph and in section II(14), above, D13 provides with these references to the particular computer software a clear indication that its publication date was distinctly later than the filing date of the *application*.

7.2.11 Thus, neither the absorbance values disclosed in D8, nor those calculated from the gelation resistance (A) disclosed in the patent in suit or the apparent difference between these values support the Appellant's argument that the skilled person would have recognised from its measurements carried out in the knowledge of the patent in suit that the use of a particular, perhaps more appropriate instrument was necessary, because the details concerning the instrument should have been provided in the *application*. On the contrary, the fact that not even individual measured absorbance values were provided in the *application* (section 7.2.4, above) means that crucial information, which could perhaps have indicated at that time, that the sensitivity and the resolution of the spectrophotometers normally in use at the relevant filing date of the patent in suit were not sufficient, was specifically absent from the specification at the filing date.

7.2.12 In summary, it must thus be concluded that neither the application, nor, as a consequence thereof, the patent in suit provides any information about the spectrophotometer as such or its measuring accuracy needed. Nor could the person skilled in the art derive from the *description* or *examples* any information which would have indicated that an instrument was needed, which had a particular sensitivity and resolution not achieved by the instruments conventionally used at the filing date of the patent in suit.

7.2.13 Furthermore, when scrutinising whether a particular polymerisation process or its product might violate the claimed subject-matter of the patent in suit or what was to be done to obtain the claimed product, the person skilled in the art could have found retrospectively only that certain polymers obtained might or might not comply with the requirement of Claim 1 under consideration, depending on the range of error of the absorbance measurement (cf. sections II(15) and VIII(16), above).

7.2.14 As there are no indications that an instrument fulfilling particular, more stringent requirements than usual at the filing date was to be used, it must be concluded that the skilled reader does not have the necessary clear and complete information at his/her immediate disposal. Whilst it is normally expected that the common general knowledge is represented by basic handbooks and textbooks on the subject in question, which the skilled person could well be expected to consult in order to obtain clear advice as to what to do in the circumstances, the person skilled in the art could not, however, in the present circumstances, be expected to start extensive investigations about whether a new instrument was necessary for him/her and, if so, whether it would be available somewhere in the market, which would allow reliably to carry out the necessary measurements for obtaining the necessary information as referred to at the end of section 7.2.7, above. Such an expectation would put an undue burden upon the skilled reader.

Consequently, the argument of the Appellant that the person skilled in the art would choose an appropriate apparatus sufficiently accurate to obtain the measurements as shown in Table A is not convincing and must therefore fail (section VIII(14), above).

7.3 The discussion performed in these opposition and appeal proceedings, as referred to above (cf. sections III(4) and VIII(14) to VIII(16) above), shows, in the Board's opinion, that the particulars and details of the respective measurements of absorbance (such as eg exact procedure in the preparation of the samples, their handling and the actual temperature conditions during the measurement) are necessary for the person skilled in the art for being able to properly carry out the claimed invention. The differences between the description in D8 and in the patent in suit provide, in the Board's view, moreover a clear indication for the validity of the above arguments of both Respondents that the gelation resistance is a newly formulated and, hence, unfamiliar parameter defined by the Appellant, not even comparable with the "*gelatability*" in D8.

7.3.1 Therefore, the Board concurs with the Respondents' opinion in this respect that the Appellant/Patent Proprietor had been, on the filing date, under a particular obligation to disclose all the information necessary reliably to define the new parameter, the "gelation resistance", in order to fulfil the requirements of sufficiency of disclosure (cf. T 172/99, above, No. 4.5.6 of the reasons).

7.3.2 It would hence have been necessary for the Appellant to provide all the necessary information about the instrument to be used and about the requirements concerning the handling of the individual samples for the absorbance measurements of samples (a) and blanks (b) in order to enable the skilled reader of the patent in suit to draw the right conclusions for carrying out the claimed invention.

7.3.3 According to established jurisprudence of the Boards of Appeal, it is the disclosure of the *application as filed*, which is the yardstick for the decision on the (in)sufficiency of disclosure (cf. the following passages in the reasons in T 409/91, No. 3.5, OJ EPO 1994, 653, and in the following decisions, none of which has been published in OJ EPO: T 172/99, above, No. 4.5.9; T 914/01 of 2 December 2003, No. 15; T 343/03 of 3 May 2005, the last paragraph of No. 1.1; T 757/03, No. 5.1.5; T 186/06 of 19 November 2008, No. 3.2 and T 1140/06 of 13 May 2009, No. 7.3).

Consequently, the information concerning the measuring instrument used (section 7.2.4, above) and the values (a) and (b) in Table A (section 7.3.2, above) was belated and cannot be considered as being a part of the disclosure which can validly be used for the decision on sufficiency.

7.3.4 Nor, therefore, can the deficiency of the specification be remedied by the Appellant's argument, as set out in sections VIII(14) and 7.2.9 to 7.2.14, above, that the Respondent had not disputed that the knowledge concerning the brand and type of the spectrophotometer was not essential for carrying out the claimed invention, but that it was only necessary to choose an apparatus sufficiently precise for the measurements, which had already been commercially available (as indicated by D13 (section II(14), above).

7.4 In the debate concerning Article 100(b) (and 83) EPC, the Appellant, furthermore, argued repeatedly during the opposition and appeal proceedings that the objection as raised by the Opponents/Respondents would relate at most to a question of clarity under Article 84 EPC but not to a question of sufficiency of disclosure according to Article 100(b) EPC. Article 84 EPC would not, however, an ground for opposition (sections III(5) and VIII(14), above).

7.4.1 "*Although the requirements of Article 83 and Article 84 are directed to different parts of the patent application, since Article 83 relates to the disclosure of the invention, whilst Article 84 deals with the definition of the invention by the claims, the underlying purpose of the requirement of support by the description, insofar as its substantive aspect is concerned, and of the requirement of sufficient disclosure is the same, namely to ensure that the patent monopoly should be justified by the actual technical contribution to the art. Thus, a claim may well be supported by the description in the sense that it corresponds to it, but still encompass subject-matter which is not sufficiently disclosed within the meaning of Article 83 EPC as it cannot be performed without undue burden, or vice versa.*" (T 409/91, above, No. 3.5 of the reasons).

7.4.2 In the Board's opinion the present wording of Claim 1 is as such clear and concise. It is also supported by the description (see [0009] (item (1)), [0014] (first and last sentences), [0025] to [0027] and [Table 3]). Hence, the Board has no reason to raise the question of whether the requirements of Article 84 EPC are met.

7.4.3 However, this finding does not prejudice the answer to the question of whether the patent in suit as a whole complies with Article 83, requiring that "*The European* *patent application shall disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art*", or, as set out in Article 100(b) EPC, "*the European patent does not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.*".

7.4.4 As set out in detail, above, it has become clear to the Board that the parameter "*gelation resistance (A)*" has not been disclosed in a manner sufficiently clear and complete for it to be reliably determined by the person skilled in the art.

7.5 In view of this finding, there is no need additionally to deal with the further objections raised by the Opponents/Respondent with respect to the chelating ability (B) of Claim 1, because due to the insufficiency of disclosure of the gelation resistance (A), the person skilled in the art is not put in a position to determine the product (A × B) of Claim 1.

7.6 In summary, the Board has, therefore, come to the conclusion that the Ground for Opposition in the sense of Article 100(b) EPC prevails. Consequently, Auxiliary Request 2 must also be refused.

8. As mentioned in section VIII(18), above, the Appellant, when being informed that Auxiliary Request 2 was refused, submitted a new Auxiliary Request 3 and requested that this request be admitted to the proceedings. By contrast, the Respondents requested that this request not be admitted, because it gave rise to further questions in connection with those problems which had already been addressed during the opposition and appeal proceedings. Therefore, it should not be admitted because it was late-filed.

In view of all the questions and particulars which evolved in the course of the opposition and appeal proceedings and were extensively discussed (see the Facts and Submissions, above), the Board came to the conclusion, upon deliberating on this issue, that the request as submitted did not comply with those criteria set out in decision T 153/85 (OJ EPO 1988, 1, Nos. 2.1 and 2.2 of the reasons, Headnotes I and II), nor with those in Article 12(1) RPBA. Therefore, the Board decided in accordance with Article 13(1) RPBA not to admit this request into the proceedings and informed the parties accordingly (section VIII(20), above).

9. Since, consequently, none of the requests of the Appellant admitted into the proceedings prevails, the appeal cannot be allowed.

## Order

## For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

E. Görgmaier R. Young