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Datasheet for the decision of 11 January 2013

Case Number: T 1144/09 - 3.3.03

Application Number: 00108175.1

Publication Number: 1146079

IPC: C08L 23/06, C08L 23/04

Language of the proceedings: EN

Title of invention:
Polymer composition for pipes

Patentee:
Borealis Technology Oy

Opponent:
THE DOW CHEMICAL COMPANY

Headword:
-

Relevant legal provisions:
EPC Art. 83

Keyword:
"Sufficiency of disclosure - main request, auxiliary request (no)"

Decisions cited:
-

Catchword:
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Case Number: T 1144/09 - 3.3.03

D E C I S I O N
of the Technical Board of Appeal 3.3.03
of 11 January 2013

Appellant: (Opponent)
THE DOW CHEMICAL COMPANY
2030 Dow Center
Midland, Michigan 48674 (US)

Representative:
Hayes, Adrian Chetwynd
Boult Wade Tennant
Verulam Gardens
70 Gray's Inn Road
London WC1X 8BT (GB)

Respondent: (Patent Proprietor)
Borealis Technology Oy
P.O. Box 330
FI-06101 Porvoo (FI)

Representative:
Kador & Partner
Corneliusstrasse 15
D-80469 München (DE)

Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office posted 12 March 2009 concerning maintenance of European patent No. 1146079 in amended form.

Composition of the Board:

Chairman: B. ter Laan
Members: M. C. Gordon
C.-P. Brandt

Summary of Facts and Submissions

I. The appeal lies from the interlocutory decision of the opposition division announced on 25 February 2009 and posted on 12 March 2009, according to which it was held that European patent number EP-B1-1 146 079 (granted on European patent application number 00108175.1) could be maintained in amended form on the basis of the set of claims filed as auxiliary request at the oral proceedings before the opposition division.

II. The patent was granted with a set of 21 claims, whereby claims 1, 13 and 16 read as follows:

"1. A polymer composition for the manufacture of pipes having a design stress of at least 9.0 MPa (PE112) and a slow crack propagation resistance of at least 1000 hours at 4.9 MPa loop [*sic*] stress at 80°C temperature, measured according to ISO 13479:1997, comprising 92-99%wt of a bimodal ethylene polymer and 1-8%wt of carbon black, said composition being **characterised by** having MFR_5 measured according to ISO 1133 in the range 0.15 to 0.30 g/10 min and a density in the range 955 to 965 kg/m^3, said polymer being composed of 42-55%wt of a low molecular weight ethylene homopolymer having MFR_2 measured according to ISO 1133 in the range 350 to 1500 g/10 min and 58-45%wt of a high molecular weight copolymer of ethylene with 1-hexene, 4-methyl-1-pentene, 1-octene and/or 1-decene.

13. A method of producing pipes which comprises extruding a composition according to any of claims 1 to 12 over a mandrel and a die and thereafter enlarging

the diameter of the extruded pipe to a predetermined value.

16. Pipes formed of the composition claimed in any of claims 1 to 12 and having a design stress of at least 9.0 MPa".

Claims 2 to 12 were dependent on claim 1. Claims 14 and 15 were dependent on claim 13 and claims 17-21 were dependent on claim 16.

III. A notice of opposition against the patent was filed on 18 October 2006 in which revocation of the patent on the grounds of Art. 100(a) EPC (lack of novelty, lack of inventive step), Art. 100(b) EPC and Art. 100(c) EPC was requested.
During the course of the opposition the following documents *inter alia* were relied on:
D3: WO-A-00/22040
D10: Finathene® polyethylene XSene bimodal ethylene-hexene copolymers, The latest technology advance, Fina Chemicals, 10/98
D11: ISO 13479:1997(E)
D12: SS-EN ISO 9080 (May 2003)
D13: ISO 4427:1996(E)
D16: Declaration by Mats Bäckmann (inventor).

D3 and D10 were cited in the notice of opposition. D11 and D12 were submitted with a letter of the patent proprietor dated 4 October 2007. D13 was submitted with a letter of the opponent dated 23 December 2008. D16 was submitted with a letter of the patent proprietor dated 23 January 2009.

IV. The decision of the opposition division was based on a set of 18 claims filed as main request with the letter of 4 October 2007 and on a set of 16 claims filed during the oral proceedings before the opposition division as the only auxiliary request.

Claim 1 of the main request was identical to claim 1 as granted. Claim 1 of the auxiliary request differed from that by specifying the density of the bimodal polymer (953 kg/m^3) and by specifying the $FRR_{21/5}$ (flow rate ratio) of at least 38 for the composition. These features had been the subject matter of granted claims 11 and 12 respectively. Furthermore the term "loop stress" in the claim had been amended to "hoop stress". Additionally in both sets of claims, the claims 5, 7 and 10 of the patent as granted had been deleted and consequential adaptations made to the other claims.

With regard to Art. 100(b)/Art. 83 EPC the decision held:

- Standard ISO 13479:1997 (D11) which according to claim 1 was used to measure the slow crack resistance at 4.9 MPa only referred to PE 80 and PE 100 resins whereas the patent related to PE112 grade resins. Since D11 stated in Annex A that the test was applicable to other polymer materials, the argument of the patent proprietor that the skilled person would know how to develop test parameters and specifications for PE112 resins was accepted.

- The objection of the opponent that the patent contained no evidence that the pipes prepared exhibited the design stress specified in the claims

was itself not supported by any evidence or arguments.

– With regard to the applicable value of coefficient C ("safety parameter"), the patent clearly disclosed, by consideration of claim 1 and paragraph [0008], to employ a value of 1.25.

– Although only a single example (example 4) met the product requirements of claim 1 and showed a slow crack propagation resistance of at least 1000 hours, the evidence of the patent as well as the explanation in D16 strongly suggested that the amount of comonomer together with other properties such as MFR_5 and density were essential in order to obtain the required combination of design stress and slow crack propagation resistance. The application as filed together with general knowledge of the field put the skilled person into a position to understand these aspects.

– Therefore, the objections raised pursuant to Art. 83 EPC were not well founded.

V. On 22 May 2009 the opponent lodged an appeal against the decision, the prescribed fee being paid on the same date.

VI. The statement of grounds of appeal was received on 22 July 2009 together with a further document:
D17: TRIP Vol. 4 No 12, December 1998, pp 408-415; Scheirs, J. *et al*: "PE100 Resins for Pipe Applications: Continuing the Development into the 21st Century".

The appellant made a further written submission with a letter dated 11 December 2012.

VII. The patent proprietor - now the respondent - replied with letters dated 17 June 2009 and 4 December 2009.

The claims as upheld by the opposition division were maintained as the main request.

As an auxiliary request a set of 20 claims was submitted whereby claim 1 read as follows:

"A pipe having a design stress of at least 9.0 MPa (PE112) and a slow crack propagation resistance of at least 1000 hours at 4.9 MPa hoop stress at 80°C temperature measured according to ISO 13479:1997, formed of a polymer composition comprising 92 to 99 wt.-% of a bimodal ethylene polymer and 1 to 8 wt.-% of carbon black, wherein said polymer composition being characterized by having MFR_5 measured according to ISO 1133 in the range of 0.15 to 0.30 g/10min, an $FRR_{21/5}$ of at least 38, and a density in the range 955 to 965 kg/m^3, and wherein said bimodal ethylene polymer which has a density of at least 953 kg/m^3 is composed of 42-55 wt.-% of a low molecular weight ethylene homopolymer having MFR_2 measured according to ISO 1133 in the range of 350 to 1500 g/10min and 58-45 wt.-% of a high molecular weight copolymer of ethylene with 1-hexene, 4-methyl-1-pentene, 1-octene and/or 1-decene."

Claims 2-11 were dependent on claim 1. Claim 12 was an independent claim directed to a method for producing pipes having the properties set out in claim 1. Claims 13-20 were dependent on claim 12.

The patent proprietor made further written submissions with letters dated 7 December 2012 and 19 December 2012.

VIII. On 27 September 2012 the Board issued a summons to attend oral proceedings.

In a communication dated 22 October 2012 the Board set out its preliminary assessment of the case. In particular the Board raised matters relating to Art. 83 EPC querying the nature of the restriction imposed on the claim by the wording "for the manufacture of pipes" having specified properties. The meaning of "design stress" was also referred to, it being noted that the examples did not report this property, nor was there any discussion in the patent of which properties of the composition, or which aspects of the processing affected the "design stress".

IX. Oral proceedings were held before the Board on 11 January 2013.

X. The arguments of the appellant with respect to Art. 83 EPC can be summarised as follows:

The patent in suit failed to provide any general guidance how to obtain compositions meeting the requirements of the claim.

(a) Regarding the preparation of the polymers there was a discrepancy between the amount of comonomer employed in the preparation of the polymers and the amount actually incorporated into the final polymer which was not explained in the patent in suit. In particular according to the data in the

examples it appeared possible to obtain polymers with increased comonomer content despite reducing the amount of comonomer added to the reactor. The patent was however silent as to how this might be accomplished.

(b) Examples 3 and 4 failed to disclose how the polymers had been prepared beyond a teaching that these polymers had been prepared under "slightly different" conditions to those of "Example 1" (by which it was assumed that "Example 2" was meant since Example 1 related to preparation of the catalyst, not to a polymer). The polymer composition of Example 2 had an MFR_5 falling outside the scope of the claim but nevertheless resulted in a pipe with the required slow crack propagation resistance at 4.9 MPa hoop stress. In contrast example 3 having a MFR_5 value within the scope of the claim resulted in a pipe with slow crack propagation resistance at 4.9 MPa of 965 hours, i.e. below the limit of 1000 hours given in the claim. Arguments of the respondent that 965 hours would be considered as equivalent to 1000 hours by rounding were not consistent with the fact that in the patent the slow crack propagation resistance data was reported to a precision of four significant figures.
This evidence showed that properties of the polymer other than those specified in the claim were significant for the pipe properties, but the patent was silent as to which ones. Nor could this gap be filled by general knowledge.
Although example 4 showed a composition that satisfied the claimed slow crack properties, the

patent provided no teaching how to provide other compositions meeting said requirement.

(c) Also, the patent in suit provided no guidance how to prepare a polymer resulting in the specified pipe design stress. No example reported the design stress, hence there was no evidence that this requirement of the claims was even met.

The submission of the respondent that the compositions of the examples would inherently result in the required design stress was not credible. In making this argument the respondent had relied on the values of slow crack propagation resistance at 4.9 MPa. However the claim required that the composition resulted in pipes which exhibited both the specified slow crack resistance and the specified design stress, indicating that each of these properties related to different aspects of the composition's characteristics.

(d) D16 could not serve to overcome the lack of disclosure in the patent. D16 was not a general teaching and the technical considerations put forward therein concerning the influence of comonomer content on the polymer and pipe properties were inconsistent with published prior art teachings, in particular those of D17 which was, in contrast to D16, a general teaching and was not limited to properties at a given stress. D17 taught that increasing the comonomer content led to greater entanglement of the polymer chains and hence to improved mechanical properties of the polymer. The teaching of D17 was that the

conclusions relating to influence of the polymer constitution, in particular comonomer content, reported for PE80 and PE100 applied equally to higher grades of PE.

(e) Consequently the opposition division had been incorrect in finding the patent in suit to be sufficiently disclosed.

XI. The arguments of the respondent with respect to Art. 83 EPC can be summarised as follows:

(a) The claims employed a two-fold definition:
- the compositional properties of the polymer resin and
- a functional definition in terms of the required properties of the resulting pipes.

(b) The examples demonstrated how the polymer was to be prepared. The differing levels of comonomer incorporation arose from the different reaction conditions and thus different reaction rates employed in the two stages of the polymerisation. The reaction conditions were reported in the patent. The skilled person would understand from the examples how to prepare a polymer of a given comonomer content. Examples 3 and 4 showed that it was possible to obtain materials with the same density even if the comonomer content was different.

(c) The precise structure of the resin was not significant as long as it permitted the preparation of a pipe with the required properties.

Not each and every polymer composition meeting the compositional requirements of the claim would also satisfy the functional features in terms of pipe properties. If a pipe prepared from a polymer composition fulfilling the compositional requirements did not exhibit the required pipe properties then it would have to be concluded that the composition was not according to the patent.

Even if example 4 was formally the only example within the scope of the claims, this example clearly showed one way to prepare a polymer resulting in a pipe having the required properties, meaning that the requirements of Art. 83 EPC were satisfied. Regarding example 3, the value at Notch 4.9 MPa, although reported as being 965 hours, would be considered by the skilled person, after appropriate rounding, as being equivalent to 1000 hours and hence within the scope of the claim.

(d) Design stress was a known evaluation criterion for pipes, as explained in D12, referred to in the patent, and D13, which also gave the relationship between the Minimum Required Strength (MRS) and the hydrostatic design stress (page 4, section 3.6) as well as the design coefficient, which should be greater than 1,25. Even if design stress was not reported in the examples of the patent, the information contained in D13 demonstrated that it could be derived from other reported properties, in particular the slow crack propagation resistance values. These data showed that the materials of the examples would result in the specified design stress requirements.

(e) There was no contradiction between the statement D16 and document D17. D17 was a review article of PE100 resins, which were known for example from D11. Said resins were suitable for preparing pipes with a stress rating of 4.6 MPa. The patent and D17 confirmed that PE100 materials were tested at 4.6 MPa stress. The examples of the patent showed that while a material may exhibit good results at one stress, e.g. 4.6 MPa, as shown in D17, it was not possible to predict the behaviour at other stresses, e.g. 4.9 MPa, since there was no direct relationship. The examples of the patent - summarised in D16 - showed that the conclusions of D17 invoked by the appellant were not generally applicable.

XII. The appellant (opponent) requested that the decision under appeal be set aside and that the European patent No. 1 146 079 be revoked.

XIII. The respondent (patent proprietor) requested that the appeal be dismissed, i.e. that the patent be maintained in amended form as upheld by the opposition division. Alternatively, maintenance of the patent on the basis of the set of claims submitted as auxiliary request with the response to the statement of grounds of appeal was requested.

Reasons for the Decision

1. The appeal is admissible.

Main request

2. Article 83 EPC

2.1 In order to answer the question whether the patent in suit contains sufficient information for the skilled person to carry out the invention, i.e. produce the claimed polymer composition, an analysis of that information is necessary. As claim 1 is directed to a polymer composition, the conditions to obtain the claimed composition should be derivable from the patent in suit.

2.2 According to claim 1 the patent is directed to a polymer composition for the manufacture of pipes. Two groups of characteristics are employed in the claim for defining the polymer composition:

- Properties relating to the polymer composition (proportions of polymer and carbon black, MFR_5, density, proportions of low molecular weight homopolymer and high molecular weight copolymer);
- Properties relating to the pipe (design stress, slow crack propagation resistance under defined conditions).

2.2.1 Consistent with this definition, the problem addressed by the patent in suit is, according to paragraphs [0008] and [0009], to provide materials suitable for producing pipes having design stresses of 9.0 MPa (PE112) or 10 MPa (PE125).

2.2.2 According to paragraph [0009] of the patent in suit, the problem with achieving this aim had been that when increasing the density of the bimodal polyethylene to improve design stress, the slow crack growth properties had been lost. The patent then states in paragraph [0010] that this problem had now been overcome and that it was possible to attain a design stress of 9.0 MPA or even 10.0 MPA when the pipe comprised a composition including 92-99% by weight of a particular bimodal ethylene polymer and 1-8% by weight of carbon black.

2.2.3 More in detail, it is taught in paragraph [0011] of the patent that a polymer composition for the manufacture of such pipes comprises 92-99% wt of a bimodal ethylene polymer and 1-8% wt of carbon black, said composition being characterised by having MFR_5 in the range 0.15 to 0.40 g/10 min and a density in the range 955 to 965 kg/m^3, said polymer being composed of 42-55% wt of a low molecular weight ethylene homopolymer having MFR_2 in the range 350 to 1500 g/10 min and 58-45% wt of a high molecular weight copolymer of ethylene with 1-hexene, 4-methyl-1-pentene, 1-octene and/or 1-decene. According to paragraph [0019] the high molecular weight copolymer has a molecular weight of at least 3500, preferably at least 4000. According to paragraph [0036] the amount of comonomer is preferably such that it comprises 0.1-2.0 mol%, more preferably 0.1-1.0 mol% of the bimodal polyethylene. Further details of the composition are given in paragraphs [0024] to [0026].

2.2.4 The polymerisation conditions for obtaining the required polymer composition are described in paragraphs [0035] to [0040], a combination of loop reactor slurry polymerisation/gas-phase polymerisation

and the use of Ziegler-Natta or metallocene catalysts being preferred. No special requirements for obtaining the polymer compositions required for the claimed pipes are given.

2.2.5 In paragraph [0027] it is stated that "It should be noted that the composition of the present invention is characterised not by any single one of the above defined features, but by their combination. By this unique combination of features it is possible to obtain pressure pipes of superior performance, particularly with regard to design stress, processability, rapid crack propagation (RCP) resistance, design stress rating, impact strength, and slow crack propagation resistance."

2.2.6 The pipes are prepared from the polymer composition in a conventional manner, preferably by extrusion (paragraph [0034]). No further requirements regarding the pipe preparation are given.

2.2.7 This information leads to the conclusion that it is sufficient for obtaining pipes with the required properties to prepare the pipes from the polymer composition as indicated, which polymer composition is preferably prepared using a combined slurry/gas-phase polymerisation and a Ziegler-Natta or metallocene catalyst.

2.3 However, this conclusion is not supported by the evidence of the examples.

2.3.1 Example 1 relates to the preparation of the catalyst. Examples 2-4 relate to the preparation of the polymers.

However only Example 2 provides a detailed description of the preparation. Examples 3 and 4 merely state that "Polymer preparations similar to Example 1 [*sic*] were carried out under **slightly different conditions**" (emphasis of the Board)(paragraph [0052]).

2.3.2 Two tables are provided, Table 1 concerning the production of the polymer and Table 2 the properties of the compounded polymers and pipes prepared therefrom. These tables are reproduced below:

TABLE 1

	Example 2	Example 3	Example 4
Loop Production, kg/h	31	33	32
Loop H_2C_2, mol/kmol	620	620	610
Loop MFR_2, g/10 min	990	1010	1060
GPR Production, kg/h	38	40	41
GPR H_2/C_2 mol/kmol	9	7	8
GPR C_6/C_2 mol/kmol	41	37	37
MFR_5, powder g/10 min	0.27	.023	0.24
Density, powder kg/dm^3	0.953	0.953	0.953
Comonomer content, mol%	0.37	0.47	0.34

TABLE 2

	Example 2	Example 3	Example 4
MFR_5 g/10 min	0.33	0.27	0.22
MFR_{21} g/10 min	12.5	11.7	10.0
$FRR_{21/5}$	38	44	45
Notch 4.6 MPa, 80°C h	1217	2156	1881
Notch 4.9 MPa, 80°C h	1422	965	1384
Pent 4.6 MPa, 80°C h	2569		4040

TABLE 2 (continued)

	Example 2	Example 3	Example 4
RCP (T_{crit}), °C	-7	-7	-11
Impact strength, kJ/m^2	13	12	15
Density kg/dm^3	0.962	0.960	0.959

2.3.3 From the data in Table 1 concerning the polymerisation it appears that the "slightly different conditions" of examples 3 and 4 relate at least in part to the production parameters in the various stages (loop and gas phase reactor): the rate of production in the gas phase reactor, the ratio of hydrogen and ethylene monomer, and the proportions of monomers (ethylene and hexene) in this stage of the reaction.

2.3.4 There is no discussion or explanation in the patent of the reasons for the "slightly different" conditions between the examples nor is there any teaching in the patent relating to how to adjust the process conditions in order to obtain a particular composition of the polymer.

2.3.5 With respect to the comonomer content, from Table 1 it emerges that there is no direct correlation between the amount of hexene (comonomer) employed and the level of incorporation into the copolymer. Although examples 3 and 4 employ the same proportion of hexene in the gas phase reactor, different levels of incorporation in the copolymer resulted, example 3 having the highest level of comonomer content of all the examples (0.47 mol%) and example 4 the lowest (0.34 mol%). Therefore, the evidence of examples 3 and 4 suggests that the level of incorporation of comonomers into the copolymers is not straightforward but that various other factors play a role beside the proportions of monomer employed.

2.3.6 The description does not provide any explanation or discussion of these differing outcomes or the underlying causes thereof. Consequently the submission of the respondent that the skilled person would

understand from the examples how to prepare a polymer of a given comonomer content is not supported by the evidence. This conclusion is valid both for the specific compositions shown in the examples of the patent in suit - due to the uncertainty of the manner in which the conditions were "slightly different" - as well as, generally, for compositions falling within the scope of claim 1 - due to the absence of any generalisable teaching relating to the conditions to be applied.

2.3.7 Regarding Table 2 it is apparent that the value reported for MFR_5 of example 2 is outside the scope of the claims (0.33 g/10 min). Inconsistent with this, according to the text in paragraph [0050] the MFR_5 value is 0.29, which value is inside the scope of the claim. It is not possible to ascertain on the basis of the information in the patent in suit which of these values is correct. Accordingly example 2 cannot serve as a source of information for the purpose of Article 83 EPC.

2.3.8 The reported properties of the polymer composition of example 3 are all within the scope of claim 1. However as regards the pipe properties, the value for slow crack propagation resistance - "Notch 4.9 MPa, 80°C" - is reported as being 965 hours which is below the specified minimum value of 1000 hours defined in the claim.

The submission of the respondent that the value of 965 hours would, on the basis of rounding conventions, be interpreted as equivalent to 1000 and hence within the scope of the claims is inconsistent with the disclosure of the patent in suit. The data for slow

crack propagation resistance at both stresses investigated are reported to four significant figures suggesting that the method employed provides results to said level of precision. Consequently there is no reason or justification derivable from the data reported in the patent to interpret a value of 965 as being, within the limits of the precision of the measurement method employed, indistinguishable from a value of 1000 hours.

2.3.9 The properties reported in example 4 for the composition and for the pipe are all within the scope of the claims.

2.4 However the patent entirely lacks any discussion or analysis of the observed trends in the various properties of the compositions of the examples and the pipes manufactured therefrom in relation to the compositional features of the polymer.

Thus ordering the examples in order of increasing comonomer content, which in all examples is within the preferred range of 0.1-1.0 mol%, gives a sequence of 4→2→3 by the numbers of the examples. The trend exhibited by the properties of the compounded resin MFR_5 and MFR_{21} is however 4→3→2. On the other hand, the values reported for slow crack propagation at 4.6 MPa and 4.9 MPa do not follow this trend and furthermore each follows different trends:
Notch 4.6 MPa 2→4→3
Notch 4.9 MPa 3→4→2.

2.4.1 Thus based on the aforementioned observations it appears that:

– The compositional requirements defined in the claim and the further preferred ranges given in the description do not result necessarily and inevitably in pipes having the required properties.

– The influence of the compositional properties on pipe properties is seemingly complex and non-linear.

2.4.2 Thus all that the examples provide are a number of single point disclosures only one of which even produces a composition or pipe which is not *prima facie* outside the scope of claim 1. There is no discussion or analysis of the results of the examples that would provide the skilled person with the information necessary to be able to produce further compositions having the required spectrum of properties and yielding pipes with the required properties.

2.4.3 Similar considerations are valid for the design stress, which is not even reported in any of the examples of the patent.

2.4.4 According to the respondent, since the claim specifies that the pipes resulting from the claimed composition have a given design stress, it has to be assumed that this requirement is met by all the examples and further that the design stress can be inferred or derived from the reported value of crack propagation resistance.

2.4.5 However, in view of the fact that only one example of the four indicated as examples of the invention in fact does not *prima facie* fall outside the scope of claim 1,

it cannot be assumed that the design stress would always fall within the claim in all examples.

2.4.6 Moreover, the respondent himself stated that not all compositions fulfilling the compositional requirements would lead to the required pipe properties, which is confirmed by the information in the examples (example 3).

2.4.7 Also the reference by the respondent to a calculation from known properties, such as slow crack propagation resistance, based on D13, cannot be accepted since there is no indication of such a calculation in the patent in suit.

2.4.8 Finally, as with the other properties, there is no guidance in the patent in suit enabling the skilled person to know what to change if the produced pipe falls outside the claimed scope. The contradictory and erratic evidence of the examples, even if the design stress could be calculated, does not provide any assistance or guidance in that respect.

2.4.9 Consideration of D16 does not lead to any different conclusion regarding sufficiency of disclosure. D16 is a statement from inventor Bäckmann that fails to address the matter of why even with polymer compositions falling within the scope of the claims (example 3) the requirements set out for pipes in claim 1 are not attained. Accordingly, contrary to the submissions by the respondent, D16 does not provide an explanation of the results observed in the patent in suit.

2.4.10 The conclusions reached in D16 are furthermore inconsistent with the information provided in D17, a document cited in the patent itself, which teaches that in order to attain higher grade pipe resins it is necessary to increase the content of comonomer in the higher molecular weight fraction.

Therefore, D16 cannot serve to overcome the deficiencies in the disclosure of the patent.

2.4.11 In view of the above it has to be concluded that the general teaching of the patent in suit is inconsistent with the evidence of the examples with respect to the relationship between the nature of the composition and the properties thereof, in particular the properties of pipes prepared from the composition. As a result it is not feasible to draw any conclusions from the data in the patent in suit as to whether the exemplified compositions satisfy the design stress requirements of the claim.

2.5 In conclusion, the evidence on file shows that in order to achieve the subject-matter of the claims, in particular as far as attaining the defined pipe properties is concerned, it is not sufficient merely to prepare a polymer composition meeting the requirements set out in the claims or the further requirements (comonomer content) set out in the description, which preparation itself is not sufficiently disclosed, but that some other factor or factors are of significance.

There is no guidance in the patent as to how whichever such factors, even if identified, influence the outcome and how to select values for the identified parameters

in order to arrive in a structured, directed manner at the subject matter claimed.

The consequence of the foregoing is that the patent in suit does not meet the requirements of Art. 83 EPC.

3. Since both requests rely on the same properties of the polymer composition and the pipes, this conclusion applies to both the main and the auxiliary requests.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The European patent No. 1 146 079 is revoked.

The Registrar The Chairman

M. Schalow B. ter Laan