

Patenting Polymers in EP – A Practical Advice

How do we draft a product claim for a polymer if the polymer cannot be expressed in terms of structural features?

The following offers practical advice. We will first review the requirements for patenting polymers in EP, followed by check lists for successfully handling polymer claims in examination and opposition proceedings.

The EPC requires that the claims shall define the matter for which protection is sought in terms of the technical features of the invention (Rule 43(1) EPC). The technical features are in the case of chemical compounds generally the structural features of said compounds. However, in the case of polymers, in many cases, the microstructure of the polymer is not known and the definition of polymers by structural features is therefore generally not possible.

I. REQUIREMENTS FOR PATENTING POLYMER PRODUCT CLAIMS

The question arises: How do we draft a product claim for a polymer if the polymer cannot be expressed in terms of structural features?

There are basically three possibilities:

- i) Parameter claim
- ii) Product-by-process claim
- iii) A combination of i) and ii)

PARAMETER CLAIM

Generally, parameters can relate to features that can be measured directly, such as the molecular weight, measured indirectly, such as activity of a polymer, properties in relation to compounds which are in an interdependency with the polymer, or even features defined by mathematical combinations of different variables, for example in the form of mathematical formulae.

However, as pointed out in the Guidelines for Examination (November 2019), part F, Chapter IV, 4.11: *"The characteristics of a product may be specified by parameters related to the physical structure of a product, provided that those parameters can be clearly and reliably determined by objective procedures which are usual in the art."* (Emphasis added).

This statement makes it clear that an applicant filing a "parameter claim" will be faced with the challenge to describe

the parameter that it will meet the clarity requirements¹ according to Art. 84 EPC and the sufficiency requirements according to Art. 83 EPC.

Clarity (Art. 84 EPC)

Art. 84 EPC (the basic legal provision of clarity) requires:

“The claims shall define the matter for which protection is sought. They shall be clear and concise and be supported by the description.”

For fulfilling the clarity requirements, the following points have to be considered:

- i) The claims must be clear in themselves when read by the skilled person;
- ii) The method for measuring a parameter (or at least a reference thereto) must appear completely in the claim itself² or the method to be employed belongs to the skilled person’s “as common general knowledge”, or all the methodology known in the relevant technical field for determining this parameter yields the same result within the appropriate limit of measurement accuracy;
- iii) The applicant who chooses to define the scope of the claim by parameters should ensure that a skilled person can easily and unambiguously verify whether he is working inside or outside the scope of the claim.

(T 849/11, Guidelines for Examination November 2019), part F, Chapter IV, 4.11)

An unusual parameter (i.e. a parameter not commonly used in the field of the invention) is allowable, if it is evident from the application that the skilled person would face no difficulty in carrying out the presented tests, and would thereby be able to establish the exact meaning of the parameter and to make a meaningful comparison with the prior art.

How can an applicant fulfill the clarity requirement?

The most convenient and common way for fulfilling the clarity requirement by the EPO is the reference to a standard measurement method, like ASTM standard or ISO standard. However, in order to avoid any ambiguity, not only the standard measurement method should be mentioned in a patent application, but also the year of its publication as well as additional information regarding the measurement conditions in case that variable conditions are given in the standard method (e.g. determination of the melt flow rate (MFR) by ASTM D 1238, but no unique temperature and no unique load under which the test must be carried out is mentioned (T 0412/02)).

In the following, an example for a suitable parameter description is given using the example of the molecular weight, which is a widely used parameter in the description of polymers:

¹ Clarity (Art. 84 EPC) is not a ground for opposition (Art. 100 EPC), i.e. the “clarity requirement” is mainly discussed in examination proceedings, or is (often) “hidden” as “sufficiency requirement” (Art. 83 EPC) in opposition proceedings.

² If the description of the method for measuring a parameter is too long, the requirement ii) can be met by including in the claim a reference to the description (Rule 43(6) EPC).

“A weight average molecular weight of from X to Y g/mol, determined by means of gel permeation chromatography using a polystyrene standard and tetrahydrofurane as diluent in accordance with DIN 55672-1:2016-03”.

In addition to the description of the parameter in the claim as mentioned above, it is advisable to include a detailed method description for determining the respective parameter in the description, e.g. in the example part in the application.

Just for completeness: Objections of lack of novelty may arise if it is not possible to determine that the parameter differentiates over the prior art. The burden of proof then lies in the examination proceedings with the applicant / in opposition proceedings generally³ with the opponent to show that the parameter indeed acts as a distinguishing feature or not.

Sufficiency of disclosure (Art. 83 EPC)

Art. 83 EPC (the basic legal provision of sufficiency) requires:

“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.”

The subject matter of the application must be sufficiently disclosed at the date of the application, based on the application as

³ Exceptions are: unusual parameters (see for example T 63/06).

a whole, including examples, and taking into account the common general knowledge of the skilled person. At least one way of enabling the person skilled in the art to carry out the invention must be disclosed, but this is sufficient only if it allows the invention to be performed in the whole range claimed (Case Law of the Boards of Appeal, 9th edition, July 2019, II, C.1).

In the case of a parametric definition of a polymer in the claims, it has to be ensured that the parameter is so defined that a person skilled in the art could identify, without undue burden, the technical measures leading to the claimed subject matter (based on the disclosure of the patent application as a whole and using common general knowledge).

Also, regarding sufficiency, it is therefore advisable to use – in the definition of a parameter – a reference to a standard measurement method (with the year of its publication and additional information regarding the measurement conditions, if necessary), as mentioned above regarding clarity.

The relationship between “sufficiency of disclosure” and “clarity”

When undefined parameters are used in the claims and no details of the measuring methods are supplied, the question arises whether there is a problem with “sufficiency of disclosure” or “clarity”. The answer to this

question is relevant, because “sufficiency of disclosure” is a ground for opposition but “clarity” not. “Clarity” can only be examined in opposition proceedings, where there has been a claim amendment.

In T 2290/12, the Boards of Appeal summarized the case law on “sufficiency of disclosure” versus “clarity” and concluded: *“that a broad consensus, or at least a prevailing view had now been reached (in the Boards of Appeal – explanation added) that a skilled person’s ability to establish whether or not a subject fell within the claimed scope was a requirement for clarity and not for sufficient disclosure”*.

If it is argued that insufficiency arises from a lack of clarity, it is generally not sufficient to establish a lack of clarity of the claims in order to establish insufficiency of disclosure. Rather, it is necessary to show that the patent, as a whole, does not enable the skilled person, relying on the description and on his common general knowledge to carry out the invention (T 417/13 citing T 1811/13 and T 646/13).

Whereas the sufficiency requirement in Art. 83 EPC generally concerns the disclosure (the “technical teachings”) of the application or of the patent, the clarity requirement (Art. 84 EPC) relates to the claims, which “shall define the subject matter for which protection is sought” (T 593/09).

PRODUCT-BY-PROCESS CLAIM

A further option besides the parameter-based definition of polymers is the definition of the polymers by a product-by-process claim, such as:

“A polymer obtainable (or obtained)⁴ by the process according to any one of claims 1 to X.”

Requirements of product-by-process claims

- (a) Product-by-process claims are only allowable in EP, if it is impossible to define the claimed product other than in terms of a process of manufacture (clarity requirement, Art. 84 EPC);
- (b) The Guidelines for Examination (November 2019) Part F, chapter IV, 4.1.2 state that a product-by-process claim is to be construed as a claim to the product as such. The technical content of the invention lies not in the process per se, but rather in the technical properties imparted to the product by the process.

Regarding requirement (a)

Generally, product-by-process claims are accepted by the EPO in the polymer field, since typical polymers do not have a clearly defined structure and it is therefore acknowledged that it is in many cases impossible to define the claimed product completely other than in terms of manufacture.

⁴ According to the jurisdiction of the Boards of Appeal of the EPO, there is no difference in the claim interpretation by using “obtainable” or “obtained”. Both alternatives are considered as “product-by-process” claims.

Regarding requirement (b)

The question to be answered is whether the product claimed by the product-by-process claim is identical to known products. The burden of proof lies – in the examination proceedings – with the applicant. The applicant has to provide evidence that the modification of the process parameters results in another product, for example by showing that distinct differences exist in the properties of the products. This generally requires experimental data reproducing the prior art teaching. It is therefore sometimes helpful to provide suitable comparative data directly in the application as filed and/or to provide at least some information about the difference between the product claimed by the product-by-process claim and known products directly in the application as filed.

However, in opposition proceedings – once a patent is granted – the burden of proof generally shifts to the opponent.

A COMBINATION OF (i) AND (ii)

It is also possible and common to file a claim comprising product-by-process features as well as parametric features to fully distinguish a claimed polymer over the prior art.

In this case, the clarity and sufficiency requirements mentioned regarding parameter claims as well as the requirements mentioned regarding product-by-process claims have to be fulfilled.

An example for a claim comprising parameter features as well as product-by-process features reads as follows:

“A polymer X obtainable (or obtained) by a process Y, wherein the polymer X has a property Z determined according to ISO xyz-2020.”

**II. PRACTICAL ADVICE
(CHECK LIST FOR EXAMINATION AND
OPPOSITION PROCEEDINGS)**

The statements mentioned above make clear that with regard to the definition of a polymer by parameters and/or by a product-by-process claim, some specific aspects are to be considered when filing a patent application or in an opposition proceeding regarding a granted patent. Therefore, we have prepared the attached

- a check list for drafting polymer claims and
- a check list for opposition.



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I) Check list for drafting polymer claims (polymer claim specific checkpoints)

Check list for drafting polymer claims	YES	NO	NOTES
Is there a possibility for a structural definition of the polymer?			
Are there relevant parameters characterizing the polymer?			
<p>Are all parameters mentioned in the application (not only in the claims) clearly and sufficiently described (standard norm, further measuring conditions if the standard norm is not sufficient, detailed description of measuring in the case of unusual parameters, detailed description of unusual equipment for measuring the parameter)?</p> <p>It should be considered that it may be necessary to add a parameter mentioned in the description into a claim during examination/ opposition proceedings. Said parameter has also to fulfill the patentability requirements (especially the clarity and sufficiency requirements mentioned above).</p>			
<p>Are the characterizing properties of the polymer based on its (specific) preparation process?</p> <p>It should be considered to add a description of the polymer by product-by-process features into the description (as a precautionary measure), in case that the claimed parameters are not sufficient to distinguish the polymer over the prior art.⁵ It is then possible to add said product-by-process feature into the claim during examination and/or opposition.</p>			
The present article concerns claims directed to polymers itself, however, ideally, we want protection of all suitable types of claims (e.g. product, process, composition, use).			
In the case that the polymer itself is not novel/inventive over the prior art, you may consider to file a claim relating to a composition and/or a device comprising the polymer and any further component(s) making the composition particularly suitable for an intended use.			
In EP, use claims are allowable. You may consider to include sufficient disclosure for drafting a use claim at least into the description of the application.			

⁵ Vice versa: In case of a product-by-process claim, it is recommendable to add parameters which may be suitable for a further characterization of the polymer into the description if a further distinction over the prior art becomes necessary (during examination and/or opposition).

II) Check list for opposition - 1 (polymer claim specific checkpoints)

A As an opponent

Check list for opposition - As an opponent	YES	NO	NOTES
If a third party application defines a polymer by parameters, it may be advisable to file a third party observation during examination regarding the clarity of the claims, rather than filing an opposition of the granted patent since the clarity of the claims (Art. 84 EPC) is not a ground of opposition.			
In opposition proceedings: consider whether or not a clarity issue of a claim leads to an insufficiency of disclosure. In this case, the sufficiency of disclosure of the claim (Art. 83 EPC) may be attacked.			
In the case that the patentee adds parameters from the description into the claims during opposition proceedings, check carefully if the newly added parameter fulfills the clarity (Art. 84 EPC) and sufficiency (Art. 83 EPC) requirements of the EPC.			
In case of a granted product-by-process claim, the burden of proof that the product-by-process parameters result in the same product as mentioned in the prior art generally lies with the opponent. Therefore, often experimental data are required reproducing the prior art teachings. The provision of the data may be in some cases difficult or even impossible. Therefore, consider discussing the provision of comparative examples with the inventor as early as possible.			

III) Check list for opposition – 2 (polymer claim specific checkpoints)

B As a patentee

Check list for opposition - As a patentee	YES	NO	NOTES
In case that the sufficiency of disclosure of a granted patent (according to Art. 83 EPC) is attacked in opposition proceedings, check carefully if the parameter is not "only" an unclear parameter (Art. 84 EPC), which is not a ground of opposition.			
Do not add unclear parameters from the description into the claims during opposition proceedings. Unclearities of the claims introduced during claim amendments in opposition proceedings (not present in the claims as granted) can be rejected based on Art. 84 EPC.			
In case of a granted product-by-process claim the burden of proof that the polymer is not novel/inventive over the prior art generally lies with the opponent.			