



## Review of EPO Parameter Decisions in 2021

Parameters are characteristic values of a product or process which are generally based on directly measurable properties. Typical examples of such features are the melting point of an alloy, the particle size of a powder or the performance of a material when subjected to stress in a particular way.

Parameters can usefully be relied upon to define an invention before the EPO and they can be the most effective way of ensuring that the claims provide an adequate scope of protection for an inventor's contribution. They are commonly used within the chemical field, but could find applicability in a wide variety of different technological areas.

In general, the EPO will consider the allowability of an application in a similar way irrespective of whether the claims are defined using structural features or parameters. Thus, an appropriate determination will be made to ensure that the requirements of clarity and sufficiency are fulfilled and that the relevant characterising features of the claim provides it with novelty and an inventive step. However, there are some interesting aspects to the approach used by the EPO in assessing whether parametric features fulfil the requirements clarity and sufficiency. It is on such requirements that the present review will concentrate.

### Clarity (Article 84 EPC)

#### *General Principles*

Article 84 EPC requires that the claims shall be clear and concise and be supported by the description. A third party needs to know if they are infringing a patent, so the claims need to be defined in such a way that their boundaries are clearly defined.

If an invention is defined using parameters, the Guidelines for Examination state that the method for measuring the parameter (or at least a reference thereto) must appear completely in the claim itself. The only situations where such a method need not be included are when there is only one method for measuring the feature, or at least only one method that is commonly used, or where all methods would result in the same value to the appropriate limits of accuracy.

Examiners routinely raise objections if a claim includes a parameter but does not specify the method of its determination, and such objections have become more prevalent over the last few years. If suitable action is not taken to include the relevant protocol, or to explain why the feature falls within the narrow limits of the exemptions, the application can be refused on that basis. The relevant requirements are illustrated in [T 1156/19 \(PUROLITE\)](#). This concerned a method of reducing the iodine content of a liquid using a macroporous resin with a certain percentage of acid-exchanged functional groups and ranges for the dry weight capacity, mean pore diameter, pore volume and surface area. The Board commented that claim 1 was silent as to

the measuring methods of the five parameters and the description also did not provide any direct or indirect information as to how to measure them. Since there were at least two methods to measure the porosity which would not necessarily yield the same results, the claims were found to be unclear and the application refused in view of Article 84 EPC.

#### *Type of Measurement*

If you are going to rely on a parameter to define the claims, it is important that the specification fully defines the nature of the feature as well as how to determine it. [T 2395/16 \(GLAXOSMITHKLINE\)](#) related to a composition comprising a toll-like receptor (TLR) agonist and insoluble metal salt. The claims defined features such as the percentage of agonist adsorbed onto the metal salt. However, they were found not to comply with the requirements of clarity since it was not specified whether this feature was in wt% or mol% nor how the adsorption was to be determined. [T 1286/16 \(ALBERT HANDTMANN\)](#) concerned a device for producing and filling fine sausages. The claims were amended during opposition to include a feature relating to adjusting the output of the feed pump to a specific filling quantity per time. However, it was considered unclear whether this referred to a volume measurement, as perhaps suggested by the patent, or a weight measurement, as would be more usual for sausages, and the feature was found to lack clarity.

In assessing such matters, the Boards will take account how features are considered in the relevant field. Thus, [T 25/18 \(UPM-KYMMENE\)](#) related to a process for purifying a mixture and the claim was adapted during opposition to introduce a range of 15 to 80% for the amount of terpene material. The opponents argued that such a feature was unclear since it failed to indicate the nature of the value which could refer to wt%, vol% or mol%. However, on the basis that the unit conventionally used for describing relevant amounts in this technical field was wt% and since such an interpretation was consistent with its use in the specification, the claims were found to be clear.

#### *Unusual Parameter*

Particular care needs to be taken if the claims include an unusual parameter which has not previously been relied upon to define a particular property. In this case, it is critical that a disclosure is provided in the specification which will enable the parameter to be determined accurately. [T 2700/17 \(DAIKIN\)](#) concerned a modified PTFE which was defined by six parameters and contained numerous references to standards. However, one of these, the aggregate dispersion degree, was considered to be an unusual parameter. A protocol to determine this was provided in the description, but was found to lack some detail. On the basis that this feature could not be determined unambiguously, the application was found to lack clarity.

## **Aspect Ratio**

Even in the situation where a feature could be considered to be relatively commonplace, difficulties can arise if an appropriate method of determination is not provided in the specification. [T 624/17 \(KCI\)](#) related to a device for treating a tissue site and was amended during opposition to include the aspect ratio of the length to the width of each encapsulated leg member. It was undisputed that the terms “length” and “width” were everyday terms that would be understood by the skilled person. However, there were various interpretations as to where each leg could be considered to start and the legs were also considered not to have a unique width. The length and width of the leg members were not unequivocally clear such that the aspect ratio was found to be ill-defined.

Problems relating to the aspect ratio were also encountered in [T 2237/18 \(WILHELM FROHS\)](#). This related to a polystyrene rigid foam with non-graphitic anthracite coke particles. A dependent claim referred to the particles having an aspect ratio greater than 2, but did not define which two dimensions were to be relied upon in determining this feature. There was a suggestion from the specification that it was the circular diameter and the thickness which should be taken into account, but these were not specified in the claim and it was not clear how they could be determined for a particle with an irregular shape.

## **Approach of the Boards**

Even though a full protocol should be provided in the specification to allow the skilled person to determine the value of any parameter, the Boards generally will take a practical approach in considering whether the relevant requirements have been fulfilled. In [T 1831/20 \(ENDRESS\)](#), a method was defined which included a step of removing a partial volume of a stiffening body such that there was a relationship between the interim bending stiffness and the target bending stiffness. The application was refused by the Examining Division on the basis that the specification did not specify where the bending strength should be measured. The Board accepted the relevant measurements would be performed at the same place and that this could be located anywhere along the pipe provided that a reduction did take place. It was recognised that the scope of protection afforded by the claim was broad, but the wording was determined to be clear.

## **Sufficiency (Article 83 EPC)**

### **General Principles**

The requirements of sufficiency are fulfilled if the skilled person is able to practice the invention across the scope of the claims. If a claim relies upon a parameter, the question to be asked is whether the skilled person is able to determine an appropriate value for the relevant feature. In order to do so, they can rely upon the teaching of the specification together common general knowledge.

If the parameter is based on a feature known to the skilled person, the requirements of sufficiency will in general be found to be met even if there is the possibility of some variation in the method which is used or the results obtained. Numerous decisions have issued in the last year which have followed such an approach.

[T 1583/17 \(TAGHLEEF\)](#) concerned the use of a film in the lamination of printed matter. The claim specified the thickness of an extruded film, but the method to measure this was not

mentioned in the claims nor in the description. It was recognised that different methods were available which might lead to different results. However, this was not shown to affect the whole claimed area but instead to be a matter which could only have an impact at the edges of the claim. This was considered to be a clarity problem which could not be discussed during the opposition.

In [T 1326/19 \(NANJING\)](#) the patent referred to a mesoporous composition which was defined by specific surface area and pore volume. These parameters would be known to the skilled person who would also be aware that several methods exist for their determination. In the specification, there was reference to a journal article and it was considered that the skilled person would recognise this as the starting point of the claimed invention. It was considered that use would be made of the method disclosed in the journal article and the accompanying calculations.

In [T 211/17 \(ARKEMA\)](#) it was argued that the patent did not disclose a method for accurately determining the average particle diameter of polyamide and silica particles. It was recognised that different methods could be used and could produce different results. It was also shown by an experimental report that, even with the instrument mentioned in the patent, differences of up to 30% could be observed depending upon the procedure used. The Board recognised that there could be uncertainty as to whether the skilled person knows whether he is working in the claimed domain. However, there was no evidence that such uncertainty would make it impossible to implement the invention nor would it prevent the skilled person from solving the problem underlying the invention. The requirements of sufficiency were thus found to be met.

Similar considerations and results were found in a number of other decisions, including [T 1244/17](#) (particle size), [T 2666/17](#) (surface tension), [T 398/19](#) (BET), [T 485/18](#) (amount of acid sites), [T 1245/18](#) (Hansen solubility parameter), [T 1251/16](#) (% of amino acids present in the secondary structure), [T 1257/18](#) (temperature), [T 812/16](#) (double bond density and glass transition temperature) and [T 1166/19](#) (volume fraction).

There is, in general, a relatively high burden upon an opponent to demonstrate that a given parameter lacks sufficiency. However, if the skilled person does not know how to determine a particular feature or if fulfilment of that feature is critical to attaining the technical effect, such objections can be successful. [T 59/18 \(KUREHA\)](#) related to a heat shrinkable multi-layer film which referred to the film having been stretched and subjected to a heat relaxation treatment to give it a relaxation ratio of 2 to 40%. However, no indications were provided in the specification as to the film property to which this ratio referred, which was determined to be essential to solving the technical problem addressed by the patent. It was considered that this feature could relate to a dimensional variation, such as the length or the width, it could relate to an area or even to properties of the film such as the shrink tension or free shrink. Reliance on this resulted in a lack of clarity which necessarily affected sufficiency of disclosure.

[T 1291/18 \(INCOTEC\)](#) concerned a seed coating composition with a limit on the mean particle size of inorganic particles as measured by laser obscuration time technology. This technique involved measuring the time that the individual particles obscured a laser beam and converting the measured values into a volumetric distribution. It was accepted that the technique would be applicable for compositions comprising only one type of particle.

However, the Board could not see how this approach could differentiate between two types of particles having differing densities. The patent was found not to comply with Article 83 EPC.

[T 153/18 \(SUMITOMO SEIKA\)](#) related to a water absorbing sheet structure having a peeling strength as measured as described in the specification. A method was provided which involved measuring the peeling strength of five samples, discarding the highest and lowest values and providing an average over the remaining three samples. However, it was considered that the product would have non-uniform properties such that the value of the peeling strength would be dependent on the position where the samples were taken. The test method was not considered to be able to reliably establish whether a given sample fulfilled the requirements of the claim since it did not specify where from the structure the test samples should be taken.

The Board will undertake a careful technical analysis of features in determining whether the requirements are fulfilled. [T 1807/19 \(JAPAN TOBACCO\)](#) related to a cigarette filter which made use of a paper with a longitudinal rigidity which was 30 or higher as measured in accordance with a particular standard. An objection was raised that the claim did not specify whether it was the measurement should be taken in the machine-direction or the cross-direction of the paper, and that this would lead to very different results. The Board found that the skilled person would know in general that the value in the machine direction would be higher. However as the claim did not define the direction, a paper having a longitudinal rigidity of 30 or higher in any of the directions would satisfy the requirements of claim 1. There was considered to be no undue burden to measure in an appropriate direction and determine if the claim features were fulfilled.

[T 2608/16 \(ST. JUDE MEDICAL\)](#) concerned a frame structure for a prosthetic heart valve which specified that at least 75% of a space between the arms of Y-shaped structures would be maintained when the array is subjected to a force that collapsed it to 50% of its initial size. It was considered that the term “space” could represent a one-dimensional, two-dimensional or even three-dimensional quantity. Only the one- and two-dimensional meanings were considered to make technical sense and thus be covered by the claims. The description gave a clear indication as to how to implement the one-dimensional aspect and it was found that the skilled person would know how to measure the two-dimensional area. It was therefore considered that the claim was formulated broadly but that the skilled person would be able to measure the space for every possible interpretation.

### **Standards**

It is common practice to rely on standards to provide the protocol to determine a particular parameter. There have been various cases in the last year where questions have been raised as to whether reliance upon standards does provide the necessary level of information.

[T 1829/19 \(BENECKE-KALIKO\)](#) concerned a claim where the flexibility was measured according to DIN 53 351. An objection was raised that this standard existed in several forms such that it was not clear which should be followed. It was considered that the skilled person would understand that the correct standard would be that which was valid at the time of filing, the relevant version having been in force for four years at that time. In [T 720/17 \(NESTLÉ\)](#), an argument that the mention of a standard without a further indication such as the publication year or

version was not found to affect the sufficiency of the patent. In [T 842/18 \(DEXCOM\)](#), the patent taught to use ASTM D2240 to measure Shore A hardness. It was recognised that there may be factors which could influence the results obtained, but it was found that the results would not diverge so much that the disclosure would be considered insufficient. In [T 223/17 \(CRYOVAC\)](#), the tear strength was said to be determined by an ASTM method as stated in the claims. The standard suggested that there could be some variation of the results obtained, but these were more to do with irregularities in the tested samples rather than the procedure itself. It was found that there was no evidence of significant variation nor that the skilled person would be prevented from working the invention.

In all of these cases, the patents were found to fulfil the requirements of sufficiency. However, these are appeals against decisions of the opposition division. If similar arguments were raised during examination to support an objection of lack of clarity, they could perhaps result in a different outcome.

### **Effect on Claim Scope**

If a specific protocol to determine a parameter is not provided in the claims, the patent could be found to be sufficient but the lack of direction as to how to determine the feature can have an effect upon the scope of the claims. Thus, the lack of an accurate method of determination can lead to the feature being interpreted broadly. This was illustrated in [T 1982/18 \(UNILEVER\)](#) where the parameter ClogP was indicated in the description to be calculated using a particular program. No limitation was provided in the claim as the method to be used so it was decided that any method could be employed. It was therefore irrelevant whether the measured value would vary depending on which version of the software was used. A similar situation arose in [T 1291/17 \(TREOFAN\)](#). In this case, the claims contained a feature relating to the roughness of a surface. The fact that this was defined generically meant that the claim was considered to cover all polyethylene films which met the numerical requirements for any generally-known, standardised roughness parameter.

### **Classical Sufficiency**

Even if the parameters relied upon in the claim are considered to be properly defined, it is still important to ensure that the specification provides an appropriate disclosure as to how to practice the invention. Thus, objections of classical insufficiency can also be raised against claims which rely upon parameters. For example, [T 1585/18 \(INEOS\)](#) related to a polymer which was defined as fulfilling multiple parametric properties. It was found that the teaching of the patent did not allow the skilled person to produce a product which did in fact fulfil those properties. Similar problems were encountered in [T 2575/17 \(BOREALIS\)](#) and in [T 1272/18 \(FRAUNHOFER-GESELLSCHAFT\)](#) where difficulties arose in producing a polymer which fulfilled features relating to a yellow index and hardness parameter. [T 1838/17 \(FRITZ EGGGER\)](#) concerned a multilayer OSB board (oriented strand board) with a specified compression modulus of elasticity in the longitudinal direction. It was undisputed that the claimed range was well above the values for OBS boards in the prior art, but the patent was found not to provide at least one way of producing a product which achieved such a value.

### **Other Matters**

#### **Limits of Ranges**

There have been a number of interesting cases in 2021 which have related to the limits of a claimed range.

**T 1907/17 (KONE)** concerned an elevator with a set of hoisting ropes. In the Auxiliary Request, it was specified that the ropes had a diameter of the order of 3 to 5 mm. The term “*of the order*” was considered to lack clarity since the limits of the claim were undefined. For example, it was unclear whether a hoisting rope with a diameter of 2.5 mm would fall within the claimed range

In **T 1976/19 (BOLTON MEDICAL)**, a claim to a stent was amended during opposition to indicate that one set of radii were “*significantly*” smaller than another. On the basis that the term “*significantly*” is a relative term and since there was no recognised meaning as to how much smaller the particular radii would need to be, the claim was found not to be allowable. In **T 713/14 (KOREA ADVANCED INSTITUTE)** a claim to a composition was amended to indicate that specific components were present in “*high*” and “*little*” concentrations. These were recognised to be relative terms and the specification was considered for guidance as to their meaning, but they were found to be unclear.

**T 783/17 (PHILIP MORRIS)** concerned a wrapper for a smoking article. The claims were amended to introduce expressions that there were “*statistically few or no occurrences*” and “*statistically reduced occurrences*” of self-extinguishment and total burn through. These were also considered to be a relative term. However, it was recognised that smouldering is an inherently chaotic process that would lead to non-uniform and to a certain extent unpredictable behaviour which could only be represented by a statistical approach. The relevant terms were considered to be understood by the skilled person as meaning they would not occur to an extent to prejudice compliance with safety

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requirements and were therefore found to be acceptable.

There have also been some cases in which the parameters which have been relied upon have contained errors. Again, the Boards will generally consider the relevant issue from the viewpoint of the skilled person. **T 2515/17 (UPM-KYMMENE)** referred to a boiling point measured at NTP *i.e.* normal temperature and pressure. It was contended that the skilled person would not understand how to determine a boiling point under such conditions. The Board decided that it would be recognised that the claim contained an error and would be interpreted as referring to determining the boiling point under normal pressure. At most, this was considered to be a minor clarity issue and not something which affected sufficiency. In **T 1423/17 (SAINT-GOBAIN)** glass compositions were defined based on a conversion between W/m.K to BTU/hr.ft.<sup>2</sup>F which was determined to be obviously incorrect. It was considered that the skilled person would recognise the error and would instead rely on standard values.

## Summary

Parameters remain a very useful way of defining the subject matter of a claim. The EPO will provide a detailed level of consideration as to the nature of any parameter and the Boards have consistently adopted a practical approach in assessing how any feature would be understood by the skilled person. Provided the specification appropriately provides the information needed to obtain the appropriate values, no problems should result. However, without proper consideration of the relevant aspects relating to such features right at the outset of drafting the specification, significant difficulties can arise later in prosecution.