



Patenting polymers – EPO practice regarding molecular weight

The European Patent Office (EPO) takes a strict approach to the examination of the clarity of molecular weight parameters in claims, which should be taken into account when drafting patent applications in this field

It is routine to define a polymer by reference to its molecular weight. However, there are different ways of expressing the molecular weight depending on how the statistical analysis of the polymer distribution is performed. Two common approaches are the number-average molecular weight and the weight-average molecular weight, which typically give different numerical results for the same polymer. When defining a polymer by its molecular weight it is good practice to specify which type of molecular weight is intended (e.g. number- or weight-average). This reduces the risk of a patent office examiner deeming that parameter to be unclear. However, the EPO takes a particularly strict approach to the assessment of molecular weight parameters that leads to further considerations.

While EPO practice has long been strict on the examination of the clarity of parameters, the last round of revisions to the EPO's Guidelines for Examination has codified this practice (in particular, Section [F-IV 4.11](#), revised in November 2019). The Guidelines now require that a method for measuring a parameter must appear completely *in the claim itself* for that parameter to be clear. The Guidelines provide two exceptions to this rule: (a) if the measurement method for that parameter is common general knowledge, or (b) if all measurement methods give the same result. However, EPO examiners, at least at the early stages in examination, are typically of the view that neither of these exceptions apply to molecular weight parameters. The revisions to the Guidelines thus have particular implications for patent applications that characterise polymers by their molecular weight.

EPO examiners commonly express the view that exception (a) does not apply since they consider there to be different methods of measuring the molecular weight, without one method being known as the default approach (e.g. size-exclusion chromatography (SEC), gel permeation chromatography (GPC), light scattering etc.). It may be the case that one such method is commonly used in a particular polymer technical field and that this is common general knowledge. However, an examiner may not be aware that this is the case, leading to an objection that will need to be addressed.

Regarding exception (b), there are decisions from the EPO Board of Appeal which conclude that the value of the molecular weight depends not only on the *general* measurement approach, but also on the *specific* conditions used for the measurement method (e.g. T 0541/09, followed in T 2063/12). In some cases it has been concluded that the molecular weight obtained by GPC is highly dependent on conditions such as the sample concentration and calibration standard. In light of these decisions, a European examiner may be of the view that exception (b) does not apply to molecular weight parameters.

The consequence of this is that a molecular weight parameter is vulnerable to a clarity objection at the EPO if a measurement method is not specified in the claim. Moreover, even if a general measurement method is provided (e.g. "a number-average molecular weight of x to y when measured by GPC"), an examiner may still deem the molecular weight to be unclear because the conditions of that measurement method are not sufficiently defined. We are already seeing an increased number of such objections, following the revisions to the Guidelines.



Clearly, one way to address such an objection is to amend the claim to include a reference to a measurement method for molecular weight with sufficient detail on the measurement conditions.

However, in view of the strict European rules on amendments, this information will need to have been present in the application when it was originally filed, or such an amendment is unlikely to be allowable.

Therefore, when drafting an application which characterises a polymer by its molecular weight, it is important to include detailed information on a measurement method that can be used to deal with possible clarity objections that may be raised during examination in Europe. Failure to do so may be fatal to the prospects of protecting your invention at the EPO.

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