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Intellectual Property Alert: Federal Circuit Weighs in on Burden-Shifting and Result Effective Variables in IPR Proceedings

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In *E.I. DuPont de Nemours & Co. v. Synvina C.V.*, the Federal Circuit recently reversed a finding of non-obviousness in an *inter partes* review (IPR) decision issued by the USPTO Patent Trial and Appeal Board (board).

Synvina's patent claims a method of producing 2,5-furan dicarboxylic acid (FDCA) by oxidizing 5-hydroxymethylfurfural under specific reaction conditions (temperature, oxygen partial pressure, catalyst, and solvent). The prior art disclosed broad ranges overlapping with the claimed ranges for the reaction conditions, but the board determined that the claims were non-obvious because DuPont failed to prove that 1) reaction temperature and oxygen partial pressure were recognized as result-effective variables in the prior art, or 2) the adjustment of those parameters to within the claimed ranges would have been a matter of routine experimentation.

In its appeal, DuPont argued that the board erred by not applying the burden-shifting framework used in prior cases involving overlapping ranges and by invoking a result-effective variable requirement inconsistent with precedent. The Federal Circuit agreed with DuPont in view of the old principle that "it is not inventive to discover the optimum or workable ranges by routine experimentation."

The Federal Circuit explained that its previous decisions clearly showed that the overlapping of a claimed range with a range disclosed in the prior art creates a presumption of obviousness (*prima facie* case of obviousness) and that such a presumption may be rebutted by the patentee by showing any of the following:

1. Unexpected results of the claimed "critical" range;
2. Teaching away by the prior art;
3. Parameter for the range not recognized as "result-effective;" or
4. Too broad range not inviting routine optimization.

With respect to the issue of burden shifting, the Federal Circuit showed that this well-known procedural framework had been consistently applied in the context of district court litigation as well as during the examination phase at the USPTO. The difference here is that this issue was involved in the IPR context. In its decision, the board only considered two recent Federal Circuit cases, *Dynamic Drinkware*^[1] and *Magnum Oil*,^[2] finding that they prohibited burden-shifting in an IPR. The Federal Circuit, however, explained that neither case was applicable as they did not address the procedural framework in IPR proceedings in the context of obviousness of overlapping ranges. More specifically, the Federal Circuit confirmed that in overlapping range cases, “in the absence of evidence indicating that there is something special or critical about the claimed range, an overlap suffices to show that the claimed range was disclosed in – and therefore obvious in light of – the prior art.” Accordingly, the burden-shifting framework widely used in district court adjudications and USPTO examinations also applies to IPR proceedings.

The Federal Circuit also found that the board did not apply the proper standard in finding that the temperature and oxygen partial pressure of a known oxidation reaction were not “result-effective variables.” More specifically, the board erred in requiring DuPont to prove that the prior art’s disclosure “necessarily required” a variable to be within the claimed range or that the variables “predictably affected” the yield of the oxidation product FDCA. In contrast, the Federal Circuit held that the correct applicable standard for a variable to be result-effective is that the prior art recognizes expressly or implicitly that the variable affects the relevant property or result. In this case, the prior art’s disclosure of preferred temperatures and air pressures for the reaction indicated that a person of ordinary skill in the art understood that the reaction was affected by these variables.

The *DuPont v. Synvina* decision provides clarity in the application of the burden-shifting approach at the IPR level and may impact various areas of chemical patent practice dealing with obviousness of ranges and result-effective variables.

[1] *Dynamic Drinkware, LLC v. National Graphics, Inc.*, 800 F.3d 1375 (Fed. Cir. 2015).

[2] *In re Magnum Oil Tools International, Ltd.*, 829 F.3d 1364 (Fed. Cir. 2016).