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## Honeywell International, Inc. v. U.S. International Trade Commission

Carl P. Bretscher

Victor N. Balancia

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# ***HONEYWELL INTERNATIONAL, INC. V. U.S. INTERNATIONAL TRADE COMMISSION***

**Carl P. Bretscher and Victor N. Balancia**

## **I. INTRODUCTION**

In its recent decision in *Honeywell Int'l, Inc. v. U.S. Int'l Trade Commission*,<sup>1</sup> the U.S. Court of Appeals for the Federal Circuit affirmed a final determination by the U.S. International Trade Commission (“ITC” or “Commission”) that the claims of Honeywell’s U.S. patent<sup>2</sup> (“‘976 patent”) were invalid as indefinite under 35 U.S.C. § 112, second paragraph. *Honeywell* is unique in that the dispute was not so much over the meaning of the term at issue, “melting point elevation” (“MPE”), as it was over how to determine its value. Finding that where there were multiple methods known in the art for determining the melting point of polyethylene terephthalate (“PET”) yarn, and that different methods yielded significantly different results, the Federal Circuit concluded the claims were indefinite because they failed to reasonably apprise competitors whether their products were within the scope of the claims. This case should serve as a warning to patentees and practitioners to ensure that any quantitative parameters or formulae in their claims have single, well-understood meaning in the art or are clearly defined in the patent or prosecution history, particularly where the patentees have invented that parameter or formula for the purpose of drafting their claims.

## **II. FACTUAL BACKGROUND**

Honeywell’s ‘976 patent is directed to processes for making dimensionally stable, multifilament polyester yarn.<sup>3</sup> Briefly, molten PET polymer is extruded under high pressure through a plate with multiple openings (a spinneret) to form a molten spun yarn. The spun yarn is then solidified by gradually passing it through a cooling zone

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1. 341 F.3d 1332 (Fed. Cir. 2003).  
2. U.S. Patent No. 5,630,976 (issued May 20, 1997).  
3. *Id.* at col. 13, line 32–col. 14, line 63.

and withdrawing it to form a partially crystalline (amorphous) yarn having certain prescribed properties. This “undrawn” yarn is then stretched under appropriate temperature conditions to form a “drawn” yarn that has the requisite crystalline properties to be twisted, plied, and treated to form a cord having high tenacity and dimensional stability.<sup>4</sup> The resultant cord can be used for reinforcing tires, conveyor belts, seat belts, and in other industrial applications.<sup>5</sup>

All of the independent claims of the ‘976 patent require that the drawn or undrawn yarns have a “melting point elevation” within a prescribed range. For example, independent claims 1 and 7 require that the undrawn yarn have a melting point elevation between 2–10° C, while claim 14 requires that the drawn yarn have a melting point elevation between 10–14°.

The ‘976 patent defines the melting point elevation as the difference between the melting point of a PET yarn sample and the melting point of a sample that has been melted and then rapidly quenched by liquid nitrogen.<sup>6</sup> The patent explains that the melting point elevation, provides a “direct quantitative measure” of the yarn’s “internal morphological structure.”<sup>7</sup> The specification goes on to state that a more sensitive measure of the morphological structure is the formulaic melting point characteristic “Z.”<sup>8</sup> However, the claims themselves refer only to the “melting point elevation”; they make no mention of the yarn’s morphological structure or “Z” factor.

It was undisputed that at the time Honeywell filed its patent application, there were at least four known methods for preparing the yarn samples to measure their melting points—the so-called “cut,” “coil,” “restrained ends,” and “ball” methods.<sup>9</sup> In the cut method, as the name implies, the yarn fibers are cut into small, i.e., 0.5 mm, segments before being melted. The coil method involves coiling the fibers around an object, such as tweezer tips, before placing them in the melting pan. In the restrained ends method, the ends of the fibers are tied to a spool or other device for testing. Finally, the ball method requires coiling the fibers and then rolling them into a ball between

4. *Id.* at col. 1, line 54–col. 2, line 4.

5. *Id.* at col. 1, lines 16–23.

6. *Id.* at col. 5, lines 2–6.

7. *Id.* at col. 5, lines 40–46.

8. U.S. Patent No. 5,630,976, *supra* note 2, at col. 4, line 64–col. 5, line 15.

9. In the Matter of Certain Polyethylene Terephthalate Yarn and Products Containing Same, Order No. 61: Initial Determination Granting in Part and Denying in Part Respondents’ Motion for Summary Determination of Non-Infringement and Invalidity of U.S. Patent No. 5,630,976, USITC Inv. No. 337-TA-457 at 5 (Feb. 4, 2002) [hereinafter *Initial Determination*].

one's fingers. Although there was some evidence that all four methods were known in the art, only the first three methods—the cut, coil, and restrained ends methods—were described in published materials. The fourth, or ball method, was described only in Honeywell's confidential, proprietary papers, which it produced during the litigation under a protective order.

The evidence showed that not only were there multiple testing methods for determining the melting point of PET yarn, but the four methods yielded significantly different results. Only Honeywell's confidential ball method yielded MPE values for Hyosung's accused PET yarn that were within the ranges recited in the claims. The three other sample preparation methods yielded MPE values for Hyosung's yarn that were well outside the claimed ranges.

The '976 patent, however, does not explicitly or inherently describe any of these particular methods, let alone specify which method should be used to perform the examples in the specification or to determine the MPE ranges in the claims. The only information provided in the patent are that the examples were run using 2 mg samples and a Perkin-Elmer Differential Scanning Calorimeter ("DSC").<sup>10</sup> The claims themselves, however, do not require the use of either the Perkin-Elmer DSC or a 2 mg sample size.

### III. PROCEDURAL BACKGROUND

In April 2001, Honeywell filed a complaint in the U.S. International Trade Commission alleging that Hyosung Corporation and its American subsidiary, Hyosung (America), Inc. (collectively "Hyosung") were violating the Tariff Act of 1930, § 337, as amended (19 U.S.C. § 1337), by importing into the United States, selling for importation, or selling in the United States after importation, PET yarns manufactured by processes infringing Honeywell's '976 patent. After reviewing the complaint for sufficiency and conformance with the rules, the Commission determined in May 2001 to institute an investigation *In re Certain Polyethylene Terephthalate Yarn and Products Containing Same*, USITC Inv. No. 337-TA-457.

The ITC is a quasi-judicial, administrative agency with exclusive jurisdiction to conduct section 337 investigations. Although the ITC employs the same substantive patent law as a federal district court, there are some important procedural differences. For example, the ITC assigns an attorney from its Office of Unfair Import

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10. U.S. Patent No. 5,630,976, *supra* note 2, at col. 4, line 64–67.

Investigations (“OUII”), also known as the investigative attorney or staff attorney, who is intended to represent the public interest. The investigative attorney initially participates in the investigation as a neutral party, but eventually takes a position on issues of infringement, invalidity, and other issues before the administrative law judge (“ALJ”). After the ALJ makes an initial determination on a dispositive issue, an aggrieved party can petition the Commission to review the determination and, as appropriate, adopt, modify, reverse, or remand that determination before it becomes final and appealable.

*A. Hyosung's Motion For Summary Determination*

Hyosung subsequently moved for summary determination that Honeywell’s patent claims were invalid and not infringed due to the vagaries of the MPE measurement methodology. Hyosung argued that Honeywell could not carry its burden of proof on infringement because, even though the ball method yielded MPE values within the claimed ranges for some yarns, Hyosung could present equally valid evidence of non-infringement by using the published cut, coil, or restrained-ends methods. Also, without knowing which of the conflicting sample preparation methods to use, a competitor would find it impossible to determine the scope of the claims, how to practice the claimed invention, or whether the inventors had possession of the invention at the time they filed their application, according to Hyosung. Accordingly, Hyosung argued that the claims were invalid for failing the definiteness, enablement, and written description requirements of 35 U.S.C. § 112, paragraphs 1 and 2.<sup>11</sup>

Honeywell responded that even though the ‘976 patent does not expressly disclose or claim any particular method, a person of ordinary skill in the art would have interpreted the patent to require the use of the ball method because the other three sample preparation methods (the cut, coil, and restrained ends methods) could not be used practically with the Perkin-Elmer DSC or 2 mg sample sizes described in the specification, or were otherwise undesirable. In the alternative, Honeywell argued that a claim should be found as infringing if any one of the four sample preparation methods yielded an MPE value within the claimed range, regardless of the MPE values yielded by the other methods. This theory later became known as the “any one” construction of the claims.

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11. 35 U.S.C. § 112 (2000).

*B. ALJ Found the '976 Patent Claims to be Valid but Not Infringed*

On February 4, 2002, the ALJ issued his initial determination (Order No. 61) on Hyosung's motion. He concluded that the patent claims were valid, but not infringed.

The ALJ found the essential facts undisputed by either party, i.e., that several sample preparation methods were known in the art but none was expressly disclosed or claimed in the patent; that the various methods yielded different MPE values; and that only one of those four methods—the ball—yielded MPE values within the claimed ranges.<sup>12</sup> Nonetheless, he believed that the choice of sampling method was a mere detail well-known in the art, and not an essential or novel element of the invention; thus, the sampling method did not need to be disclosed in the specification.<sup>13</sup> The variation among those methods, he further wrote, was immaterial because a person of ordinary skill would probably use several different sample preparation methods to verify the melting point elevation of a yarn sample. Therefore, the absence of any description of that detail in the patent did not render the claims unknowable, unworkable, or otherwise invalid under 35 U.S.C. § 112's first or second paragraphs.<sup>14</sup>

The lack of any mention of a sample preparation method was found to be fatal to the question of infringement, however. Honeywell's only evidence that the claims should be limited to the ball method was the declaration of its expert, Dr. Weigmann. But according to the ALJ, without adequate support in the specification, the expert's declaration proved to be too conclusory, convoluted, and speculative to be reliable. The ALJ thus rejected Honeywell's theory that the claims should be read to require the use of the ball method to determine MPE values.<sup>15</sup>

With no basis to narrow the claims, the ALJ concluded that the claims allowed any sample preparation method known in the art as of the priority date of the '976 patent. Even though Honeywell could demonstrate infringement by the ball method, Hyosung could present equally valid evidence of non-infringement by using the cut, coil, or restrained ends methods. Accordingly, the ALJ found that Honeywell could not meet its burden of proof on literal infringement. Further,

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12. *Initial Determination*, *supra* note 9, at 4–6, 38–39.

13. *Id.* at 10.

14. *Id.* at 12–16.

15. *Id.* at 23–27.

establishing infringement through the doctrine of equivalents was held to be barred by prosecution history estoppel.<sup>16</sup>

*C. Commission Determined the Claims are Invalid and Not Infringed*

Since the ALJ had “split the baby” in ruling on Hyosung’s summary determination motion, the parties filed cross-petitions seeking Commission review of portions of the ALJ’s initial determination.<sup>17</sup> Honeywell petitioned the Commission to review the ALJ’s non-infringement determination, while Hyosung and the Commission investigative attorney petitioned for review of the determination of no invalidity.

The review petitioned for is an internal ITC process that permits the Commission to examine and, if appropriate, adopt, reverse, modify, or remand an ALJ’s initial determination before that initial determination becomes final and appealable. Although Commission review is somewhat similar to an appeal, the Commission is not an appellate court, but is the body responsible for making the final agency decision, and thus, the Commission does not defer to the ALJ, even on questions of fact. Rather, Commission review is *de novo* on all issues, for it has all the powers the agency would have in making the initial decision, except as it may limit the issues by notice or rule.<sup>18</sup>

In March 2002, the Commission determined that it would review only the ALJ’s finding that the claims were not indefinite, but would not review the findings on non-infringement, written description, or enablement.<sup>19</sup> Those unreviewed findings became the final determinations of the Commission under the Commission’s rules.<sup>20</sup>

Two months later, the Commission reversed the ALJ and concluded that the ‘976 patent claims were indeed indefinite.<sup>21</sup>

16. *Id.* at 25–36.

17. *See* 19 C.F.R. § 210.43 (2002) (Commission rule regarding petitions for review).

18. *See* Commission Opinion at 9, citing Administrative Procedure Act, 5 U.S.C. § 557(b).

19. In the Matter of Certain Polyethylene Terephthalate Yarn and Products Containing Same, Notice of Commission Determination to Review In Part An Order Granting-In-Part And Denying-In-Part A Motion For Summary Determination Of Invalidity And Non-Infringement Of The Only Patent At Issue In The Investigation; Determination to Grant Two Motions to Strike Exhibits, USITC Inv. No. 337-TA-457 (Mar. 21, 2002); *see also* Commission Opinion at 1–3.

20. *See* 19 C.F.R. § 210.42(h)(2) (2003).

21. In the Matter of Certain Polyethylene Terephthalate Yarn and Products Containing Same, Notice of Commission Determination To Reverse The Decision Of The Presiding

Although the Commission agreed with the ALJ that the claims allowed any method of sample preparation, the Commission found that this rendered the claims indefinite because the different methods had a “substantial effect” on the melting point elevation, and thus, on the scope of the claims. The Commission also found that the claims were not as precise as they could be, given that publications in the art typically describe the sample preparation method that was used. The Commission concluded that the claims were indefinite because they did not adequately inform competitors of their scope.

*D. The Federal Circuit Affirmed the Commission's Finding of Indefiniteness*

Honeywell appealed the Commission's final determination of non-infringement and indefiniteness to the U.S. Court of Appeals for the Federal Circuit. Briefly, Honeywell argued that the term “melting point elevation” was susceptible to three constructions. First, there was Honeywell's preferred construction that the claims are limited to the ball method, based on the declaration of its expert, Dr. Weigmann. Second, there was the Commission's construction that the claim term covers any sample preparation method. Honeywell argued it had proved infringement under this construction by using the ball method, regardless of any contrary evidence presented by Hyosung. Finally, Honeywell argued that the Commission had, in effect, adopted a third construction that required proving infringement by all four methods. This “all methods” construction, Honeywell argued, was improper because it rendered the claims inoperative. As for indefiniteness, Honeywell argued that a person skilled in the art need only conduct minor testing to conclude that the examples were performed using the ball method.

The Federal Circuit disagreed, and in a precedential opinion, affirmed the ITC's determination that the claims were indefinite under 35 U.S.C. §112, second paragraph.<sup>22</sup> The Court vacated the Commission's non-infringement finding as moot, however, on the basis that infringement cannot be properly determined where the claims lack a clear and definitive construction.<sup>23</sup>

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Administrative Law Judge On The Issue Of Indefiniteness; Termination Of The Investigation With A Finding Of No Violation, USITC Inv. No. 337-TA-457 (May 17, 2002).

22. *Honeywell*, 341 F.3d at 1334.

23. *Id.* at 1342 (“Because the claims are indefinite, the claims, by definition, cannot be construed (citations omitted). Without a discernable claim construction, an infringement analysis cannot be performed.”).



In so holding, the Federal Circuit summarily disposed of Honeywell's theory that the claims should be limited to the "ball" method of sample preparation.<sup>24</sup> Like the Commission before it, the Federal Circuit found nothing in the intrinsic evidence to support such a limitation. The only remaining evidence in support of this construction was the extrinsic testimony of Honeywell's expert, Dr. Weigmann.<sup>25</sup> "Adopting Honeywell's proffered construction," the court wrote, "would require the court to impose a limitation that is not only outside the bounds of the claims, the written description, and the prosecution history, but is also outside the scope of any written publication."<sup>26</sup> Moreover, the court did not find the brief references to a Perkin-Elmer DSC and 2 mg samples in the examples compelling because those conditions did not actually exclude the use of any of the other methods.<sup>27</sup>

Just as the claims cannot be limited to the ball method only, the court concluded that the claims could not be construed to mean that infringement can be proven by considering "any one" method of sample preparation. The sample preparation method is "critical in determining MPE," the court wrote, because different sample preparation methods yield different results. Without knowing which method to use, competitors could not discern whether their yarns fell inside or outside the claims, i.e., whether they were practicing the invention or successfully designing around it.<sup>28</sup>

That left only the "all method" construction, which supposedly meant that the claims could be found infringed only if all of the sample preparation methods yielded MPE values within the claimed ranges. Despite Honeywell's argument that such a construction would render the claims inoperable, the Federal Circuit refused to construe the claims to preserve their validity. Rather, the Court held the '976 patent claims were invalid, either by indefiniteness or by lack of enablement.<sup>29</sup>

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24. *Id.* at 1340.

25. *Id.* at 1340.

26. *Id.* at 1341.

27. *Id.* at 1329-40.

28. *Honeywell*, 341 F.3d at 1341, citing *Morton Int'l v. Cardinal Chem. Co.*, 5 F.3d 1464, 1470 (Fed. Cir. 1993) (claims are indefinite when person skilled in the art could not discern whether a given compound was within the scope of the claims).

29. *Id.* at 1341.

IV. SIGNIFICANCE OF THE *HONEYWELL* DECISION

The problem with Honeywell's claims was not simply that there were multiple methods for preparing the yarn samples to measure their MPE, or even that the '976 patent did not identify which of those various methods should be used. The central problem was that those sample preparation methods yielded significantly different results. One method yielded an MPE value that fell inside the claimed ranges, while the other methods yielded MPE values outside those ranges for any given yarn. It was this fact that rendered the multiplicity of methods and lack of description so significant.

It was this fact that also distinguished the *Honeywell* case from *PPG Industries, Inc. v. Guardian Industries Corp.*,<sup>30</sup> one of the cases cited by Honeywell and discussed by the Federal Circuit.<sup>31</sup> In *PPG*, the claims were directed to a tinted, ultraviolet-absorbing glass having an ultraviolet transmittance of 31% or less.<sup>32</sup> The accused infringer argued that the claims were indefinite because the patentees failed to specify which of several conventional methods should be used to measure the ultraviolet transmittance.<sup>33</sup> The court found that the multiplicity of methods made no difference because they all yielded essentially the same result.<sup>34</sup> On that basis, the Federal Circuit concluded that the claims were sufficiently definite as to put the public on notice as to their scope, and affirmed the lower court's ruling of no invalidity.<sup>35</sup>

Only after it became clear that different sample preparation methods yielded different MPE values did the absence of any limitation on those methods in the Honeywell patent become significant. Honeywell attempted to construct such a limitation from a few clues in the patent specification, namely, the use of a Perkin-Elmer differential scanning calorimeter and 2 mg samples. Yet none of those supposed limitations was included in the claims themselves. This led the Federal Circuit to reject Honeywell's argument that the claims should be limited to its confidential, proprietary ball method. Left unmentioned in the Court's opinion was the sheer impracticality, even impossibility, of Honeywell's assertion that a person of ordinary skill in the art could: rerun all of the examples in patent using all four

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30. 75 F.3d 1558 (Fed. Cir. 1996).

31. *Honeywell*, 341 F.3d at 1341.

32. *PPG*, 75 F.3d at 1561.

33. *Id.* at 1562.

34. *Id.* at 1563.

35. *Id.*

sample preparation methods; accomplish the same results presented in the patent's examples, even though the methods are far from precise; and thereby determine which method was used.

The absence of any meaningful discussion in the Honeywell patent of the sample preparation method distinguishes this case from *Exxon Research and Engineering Co. v. United States*, which was discussed in the Commission's opinion.<sup>36</sup> In *Exxon Research*, the claims recited the term "U subL," which is the velocity of a liquid along a reactor column. The claims did not explain, however, whether "U subL" referred to interstitial velocity (the true or accurate velocity at which the liquid rises in a column) or the superficial velocity (the ideal velocity, without consideration of the internal structures, gas bubbles, particles, or other impediments to liquid flow).<sup>37</sup> Even though the interstitial and superficial velocities could be significantly different, the Federal Circuit concluded that the claims were not indefinite because there were sufficient indications in the claims and specification to lead a person of ordinary skill to conclude that "U subL" referred to interstitial and not superficial velocity.<sup>38</sup> The court concluded that "the degree of ambiguity injected into the claims by the patentees' lack of precision is therefore not fatal."<sup>39</sup> In *Honeywell*, however, there were no such meaningful indications at all. Thus, even though *Honeywell* and *Exxon Research* both involved quantitative parameters that varied significantly with the manner in which they were measured, the cases reached opposite results due to the presence or absence of any discussion in the patent that might narrow the parameter at issue.

*Honeywell*, *PPG*, *Exxon Research*, and other such cases emphasize the importance of closely examining the clarity, definiteness, and completeness of any quantitative parameters or formulae that are recited in or related to the claims. This examination does not stop with the claim terms themselves, but requires looking behind each quantitative term to determine whether a person skilled in the art would know how to measure or calculate that parameter. For example, the term melting point elevation in the *Honeywell* case did not itself appear indefinite since it was defined in the specification. Yet, it was rendered indefinite in light of the fact that there are different methods of determining MPE and those methods yielded

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36. 265 F.3d 1371 (Fed. Cir. 2001).

37. *Id.* at 1382-83.

38. *Id.* at 1383-84.

39. *Id.* at 1384.

significantly different results. The case turned, then, not so much on the claim term itself but on *how that term could be measured*, and not so much on what was *in* the claim but on what was *left out* of the claim or specification.

This issue will become increasingly important as more and more patentees create new parameters to describe or claim their invention. In those cases in particular, the patent applicant must carefully define each new parameter and scrutinize the manner in which it is to be measured or calculated in order to ensure that the patent satisfies the definiteness, enablement, and other requirements of 35 U.S.C. § 112. But this problem may also arise even when using established terms, as when they have multiple meanings (*e.g.*, *Exxon Research*) or can be measured by different means (*e.g.*, *PPG*). In *Honeywell*, both situations were in play. The patentees invented the term “melting point elevation” (the difference between two melting point values) but failed to recognize that those melting point values could be measured through different means, with substantially different results. That failure cost the patentees their claims.

## V. CONCLUSION

Patentees should not be beguiled by the use of quantitative parameters or formulae in their claims. The facial clarity or precision of such terms may be only an illusion, as when the parameter is susceptible to more than one meaning or can be measured in more than one way. Indefiniteness may be a particular problem when patentees invent their own parameters if they fail to clearly define that term and the manner in which it is to be measured or calculated. Avoiding this problem requires scrutinizing and clarifying not only the meaning of the claim term itself, but also any other parameters, formulae, test methods, or other factors that may affect the definition, measurement, calculation, or determination of that claim term.

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