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# United States Court of Appeals for the Federal Circuit

2005-1542

DOW AGROSCIENCES LLC,

Plaintiff-Appellee,

v.

CROMPTON CORPORATION and  
UNIROYAL CHEMICAL COMPANY, INC.,

Defendants-Appellants.

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DECIDED: May 5, 2006

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Before SCHALL, Circuit Judge, CLEVINGER, Senior Circuit Judge, and GAJARSA, Circuit Judge.

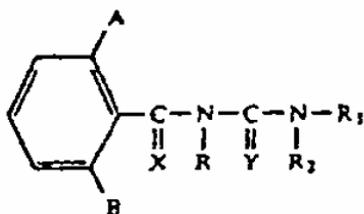
CLEVINGER, Senior Circuit Judge.

Defendants-Appellants Crompton Corporation and Uniroyal Chemical Company, Inc. (collectively, Crompton) appeal the decision of the United States District Court for the Southern District of Indiana, granting summary judgment in favor of Plaintiff-Appellee Dow AgroSciences LLC (Dow). Dow AgroSciences LLC v. Crompton Corp., 381 F. Supp. 2d 826 (S.D. Ind. 2005) (Summary Judgment). We agree with the district court that Dow's products do not infringe any of the claims of Crompton's patents, U.S. Patent No. 4,607,044 (the '044 patent), U.S. Patent No. 4,833,151 (the '151 patent), and U.S. Patent No. 5,142,064 (the '064 patent) (collectively, the patents-in-suit). Crompton also appeals the district court's denial of its motion to transfer,

requesting that we transfer this case upon remand to the United States District Court for the District of Connecticut. Dow AgroSciences LLC v. Crompton Corp., No. 1:03-CV-654 (S.D. Ind. April 14, 2004) (Motion to Transfer). However, because we affirm the district court's grant of summary judgment, we need not determine whether transfer would be appropriate on remand. Thus, we affirm.

I

The patents-in-suit claim compounds derived from urea or thiourea for use as insecticides. Representative claim 1 of the '044 patent,<sup>1</sup> recites:



wherein

A is a hydrogen atom, a halogen atom, a methyl group, or a methoxy group;

B also is a hydrogen atom, a halogen atom, a methyl group, or a methoxy group, with the proviso that A and B are not both a hydrogen atom;

R is a hydrogen atom, an alkyl group, a hydroxy group, an alkoxy group, an alkoxy methyl group, an acyl group, or an alkoxy carbonyl group;

X and Y each are an oxygen atom or a sulfur atom;

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<sup>1</sup> Of the three patents in suit, the '044 and '151 patents expired during this action on August 19, 2003, while the '064 patent remains active until August 25, 2009. However, the district court, in its decisions, primarily discussed representative claim 1 of the '044 patent. Neither party argues that there is any relevant distinction between the language of claim 1 of the '044, '151 and '064 patents. Further, each of the asserted claims depends on claim 1 of the relevant patent. Thus, unless otherwise noted, we will refer to the same claim language as the district court, namely, claim 1 of the '044 patent. In addition, as the three patents-in-suit have a common specification, all references are to the specification of the '044 patent.

R<sub>1</sub> is a hydrogen atom, an alkyl group that may be substituted with halogen, with alkoxy, with alkylthio, or with cyano, a 1-cycloalkenyl group, a benzyl group that may be substituted with halogen, a hydroxy group, an alkoxy group, an acyl group, an alkoxy carbonyl group, an alkoxythiocarbonyl group, an alkylsulfonyl group, or a phenylsulfonyl group; and

**R<sub>2</sub> is a substituted or non-substituted phenyl group** of a pyridyl group that may be substituted with halogen, with nitro, with cyano, or with halogenated alkyl;

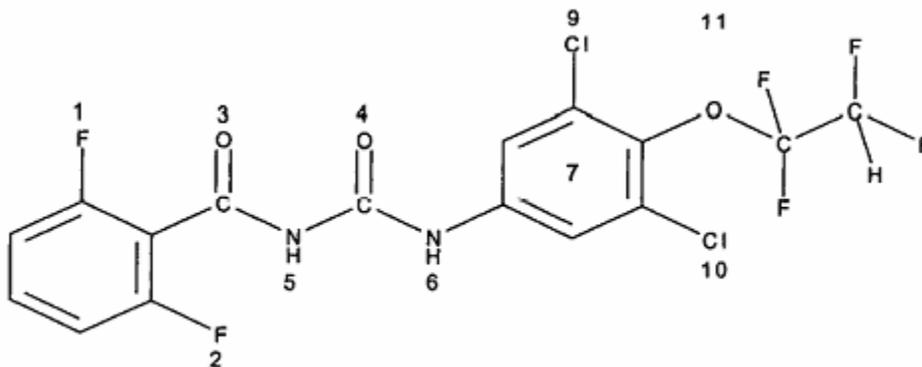
with the proviso that the active ingredient comprises a compound that is not included in either of the following paragraphs:

(1) A and B are each independently selected from the group consisting of chlorine, fluorine, and methyl, R<sub>1</sub> is selected from the group consisting of hydrogen and lower alkyl, R<sub>2</sub> is a phenyl group substituted at at least one position with a moiety selected from the group consisting of halogen, alkyl of 1-15 carbons, halogen derivatives of said alkyl, cycloalkyl, and halogenated cycloalkyl, nitro, and phenyl, X and Y are both oxygen atoms, and R is a hydrogen atom;

(2) N-(2,6-dichlorobenzoyl)-N'-(4-cyanophenyl) urea.

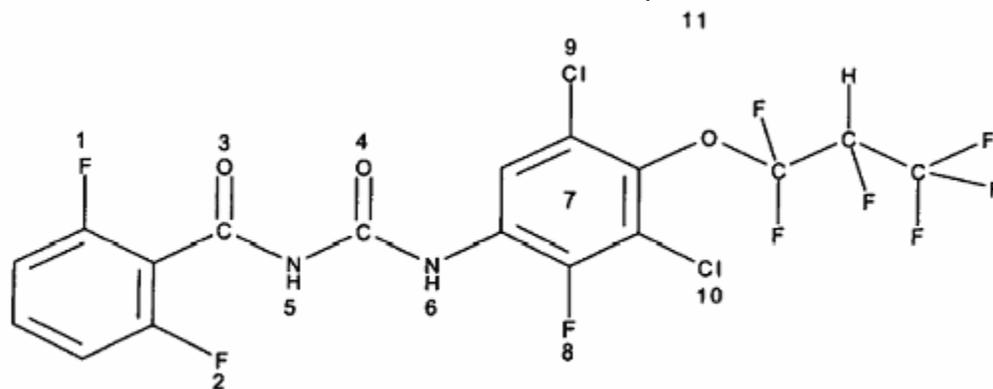
'044 patent, col. 28, ll. 1-53 (emphasis added)

The accused chemicals are hexaflumuron and noviflumuron. The chemical structure of hexaflumuron, which is undisputed, is as follows:



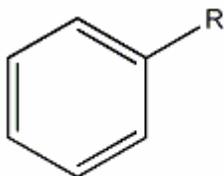
Hexaflumuron

The chemical structure of noviflumuron, which is undisputed, is as follows:



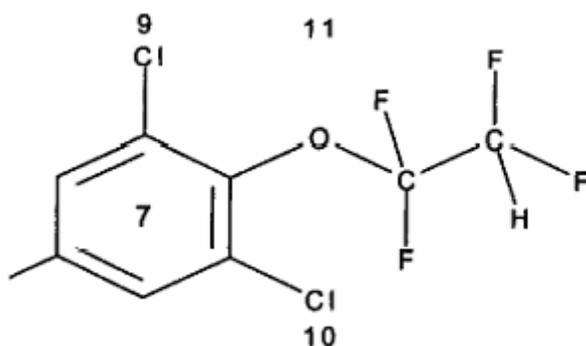
Noviflumuron

As a preliminary note, it is helpful to understand several chemistry terms. First of all, a "phenyl group" refers to a functional group with formula C<sub>6</sub>H<sub>5</sub>.



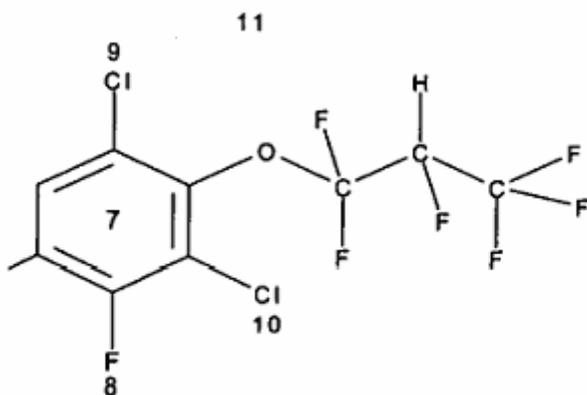
Phenyl group (attached to molecule R)

Each carbon on a phenyl group has one hydrogen atom; if any hydrogen atom is substituted with other atoms or groups, the phenyl group becomes a "substituted phenyl group." Both of the compounds in suit, hexaflumuron and noviflumuron, substitute one or more of the hydrogen atoms on their respective phenyl groups with another functional group. In particular, hexaflumuron substitutes two of its hydrogen atoms with chlorine and one of its hydrogen atoms with OC<sub>2</sub>HF<sub>4</sub>.



Hexafluoron phenyl group, substituted in three places

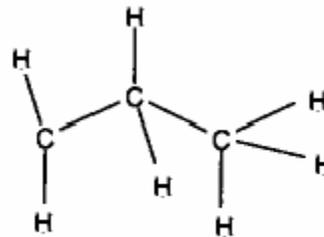
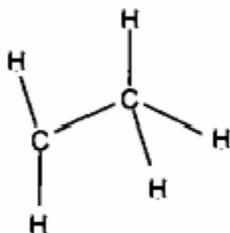
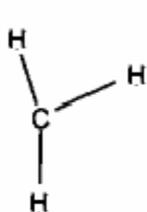
Noviflumuron substitutes two of its hydrogen atoms with chlorine, one of its hydrogen atoms with fluorine, and one of its hydrogen atoms with  $\text{OC}_3\text{HF}_6$ .



Noviflumuron phenyl group, substituted in four places

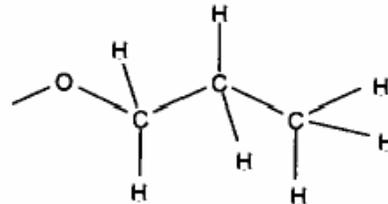
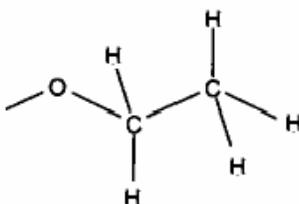
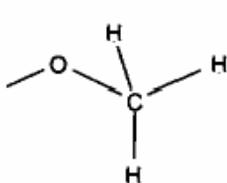
Secondly, an alkoxy group is an alkyl group linked to oxygen. An alkyl group is a univalent radical containing only carbon and hydrogen atoms; it has a general formula  $\text{C}_n\text{H}_{2n+1}$ . Thus,  $\text{CH}_3$ ,  $\text{C}_2\text{H}_5$ , and  $\text{C}_3\text{H}_7$  are all alkyls.

### Alkyls



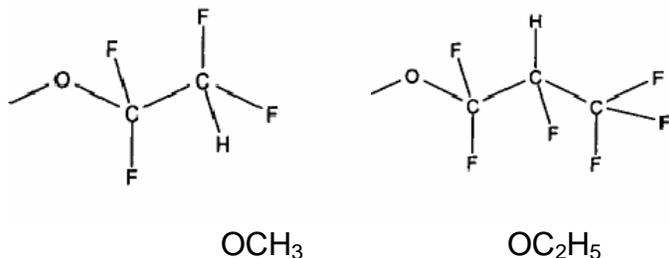
Correspondingly,  $\text{OCH}_3$ ,  $\text{OC}_2\text{H}_5$ , and  $\text{OC}_3\text{H}_7$  are alkoxy groups.

### Alkoxy groups



As with the phenyl groups described above, it is possible to substitute other atoms or chains of atoms for the hydrogen atoms in an alkyl or an alkoxy group to form substituted alkyls or substituted alkoxy groups. For example, the hydrogen atoms in  $\text{OCH}_3$  and  $\text{OC}_2\text{H}_5$  can be substituted with fluorine to create the substituted alkoxy groups  $\text{OC}_2\text{HF}_4$  and  $\text{OC}_3\text{HF}_6$ , respectively.

### Substituted alkoxy groups



Hexaflumuron substitutes one of the hydrogen atoms on its phenyl group with OC<sub>2</sub>HF<sub>4</sub>, a substituted alkoxy group. Similarly, noviflumuron substitutes one of the hydrogen atoms on its phenyl group with OC<sub>3</sub>HF<sub>6</sub>, a substituted alkoxy group.

## II

On May 6, 2003, Dow filed a declaratory judgment action requesting that the district court declare that all claims of the patents-in-suit are invalid and that no Dow product infringes any valid claim of the patents-in-suit. On January 30, 2004, Crompton filed a motion to transfer venue pursuant to 28 U.S.C. § 1404(a). That motion was denied on April 14, 2004, following a Markman hearing on claim construction. Motion to Transfer, slip op. at 1.

Claim 1 of each of the patents-in-suit, upon which each of the asserted claims depends, provides that "R<sub>2</sub> is a substituted or non-substituted phenyl group . . . ." The claims themselves do not define a "substituted phenyl group" or otherwise indicate what atoms or groups of atoms may be used as substituents on the phenyl group. However, during the Markman proceeding, the parties stipulated to define the term "substituted phenyl group" by including the recitation of substituents in column 2 of the patents:

If R<sub>2</sub> is a substituted phenyl group, the phenyl group contains at least one substituent chosen from the group consisting of:

- (a) 1-3 halogen atoms,<sup>2</sup>
- (b) 1-2 alkyl groups, possibly substituted with halogen, hydroxy, alkoxy, alkylthio, dialkyl amino, alkylsulphonyl and phenyl,
- (c) tri- or tetramethylene,
- (d) a cycloalkyl group, possibly substituted with halogen or cyano,
- (e) 1-2 nitro groups or cyano groups or alkoxy groups,
- (f) a dioaxymethylene or dioxyethylene group,
- (g) an acyl group, which may be substituted with halogen,
- (h) an alkyl sulfonyl, phenyl sulfonyl, alkylthio, phenylthio or phenoxy group, which groups may be substituted with halogen,
- (i) a sulfonamide group, which may be alkylated, and
- (k) a phenyl group, which may be substituted with halogen.

'044 patent, col. 2, ll. 30-49.

Shortly after the Markman hearing, on April 28, 2004, Crompton filed counterclaims asserting that Dow's sale of hexaflumuron and noviflumuron infringed claims 1, 2, 3, 4, 6, and 7 of the '044 patent, claims 1, 2, 4, 5, and 6 of the '151 patent, and claims 1, 2, 3, and 4 of the '064 patent. Crompton further alleged that Dow breached a 1994 Settlement Agreement granting a license under the patents-in-suit to one of Dow's compounds and that Dow engaged in unfair competition.

The district court entered its initial claim construction on May 13, 2004, in which it construed the phrase: "If R<sub>2</sub> is a substituted phenyl group, the phenyl group contains at least one substituent chosen from the group consisting of: . . ." In particular, the court found that this language requires that each and every substituent on a substituted phenyl group must come from the enumerated list. First Claim Construction Order, slip op. at 28.

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<sup>2</sup> The '064 patent specifically recites "1-13 halogen atoms" but the parties agree that this was a typo and that consistent with the other patents-in-suit, the specification should read "1-3 halogen atoms."

On June 28, 2004, both parties moved for summary judgment on the issue of infringement. On July 6, 2005, the court granted Dow's motion and denied Crompton's motion. Summary Judgment, slip op. at 1-2. As part of its opinion on summary judgment, the court elaborated upon its initial claim construction by construing the term "alkoxy" as used in the enumerated list of phenyl group substituents. The court found that the term "alkoxy" refers only to unsubstituted alkoxy groups and does not refer to substituted alkoxy groups. Id., slip op. at 10-22. The court noted that the structures of the accused chemicals, hexaflumuron and noviflumuron, were not disputed. Id., slip op. at 22. In addition, the court noted that both hexaflumuron and noviflumuron contain phenyl groups substituted with alkoxy substituents, which are in turn substituted with a halogen, fluorine. As the court had determined that the term "alkoxy" in the enumerated list does not refer to a substituted alkoxy group, the substituted alkoxy group substituents on the accused compounds were not among the enumerated list of possible substituents for the phenyl group. Because the court's initial claim construction required that all substituents on the phenyl group be on the enumerated list, the court determined that neither product literally infringed the patents-in-suit. Id. Further, the court determined that the doctrine of equivalents was not applicable. Id., slip op. at 23-24.

Thus, the court granted Dow's motion for summary judgment of noninfringement and denied Crompton's cross-motion for summary judgment of infringement. Pursuant to Fed. R. Civ. P. 54(b), the court entered final judgment on its summary judgment determination and its denial of the motion to transfer. Crompton timely appealed both decisions to this court and we have jurisdiction under 28 U.S.C. § 1295(a)(1).

### III

Claim construction is a question of law, reviewed de novo. Cybor Corp. v. FAS Techs. Inc., 138 F.3d 1448, 1451 (Fed. Cir. 1998). Infringement is a question of fact. Biovail Corp. Int'l v. Andrx Pharms., Inc., 239 F.3d 1297, 1300 (Fed. Cir. 2001). When a district court grants summary judgment, we review de novo both whether there are disputed material facts and whether the prevailing party is entitled to judgment as a matter of law. SunTiger, Inc. v. Scientific Research Funding Group, 189 F.3d 1327, 1333 (Fed. Cir. 1999) (citing Conroy v. Reebok Int'l, Ltd., 14 F.3d 1570, 1575 (Fed. Cir. 1994)).

Summary judgment is appropriate when no genuine issue of material fact exists and the moving party is entitled to judgment as a matter of law. Fed. R. Civ. P. 56(c). "In determining whether there is a genuine issue of material fact, the evidence must be viewed in the light most favorable to the party opposing the motion, with doubts resolved in favor of the opponent." Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus., 145 F.3d 1303, 1307 (Fed. Cir. 1998).

### IV

On appeal, Crompton argues that the district court improperly construed the claim language in two respects. First, Crompton argues that the phrase "If R<sub>2</sub> is a substituted phenyl group, the phenyl group contains at least one substituent chosen from the group consisting of: . . ." does not require that all of the substituents on the phenyl group be from the enumerated list. Rather, Crompton argues that only one of the substituents on the phenyl group must come from the enumerated list and that all other substituents are unbounded. It is undisputed that other than the substituted

alkoxy groups, all the substituents on the phenyl groups of hexaflumuron and noviflumuron are on the enumerated list. Thus, Crompton argues that under its claim construction, both compounds literally infringe the patent.

Second, Crompton argues that the term "alkoxy" refers to both substituted and unsubstituted alkoxy groups. As such, Crompton argues that the substituted alkoxy groups on each compound are "alkoxy[s]" as referred to on the enumerated list. Again, because it is undisputed that the remaining substituents on the phenyl groups of hexaflumuron and noviflumuron are on the enumerated list, Crompton argues that under its claim construction, both compounds literally infringe the patent.

However, we agree with the district court with regard to both claim construction issues. First of all, the phrase "the phenyl group contains at least one substituent chosen from the group consisting of: . . . ." requires that all substituents on the phenyl group be chosen from the enumerated list. Crompton itself proffered this construction in connection with the similarly phrased provisos of the claim. The proviso of claim 1 of the '044 patent serves to exclude certain compounds from the claim language, stating that a compound is not included in the claim if "R<sub>2</sub> is a phenyl group substituted at least one position with a moiety selected from the group consisting of . . . ." Crompton argued before the district court that this meant "compounds wherein all moieties substituted onto the R<sub>2</sub> phenyl group are selected from the group consisting of . . . ." First Claim Construction Order, slip op. at 21-22.

Further, as the district court noted, this construction gives meaning to the numerical limitations on substituents contained within the enumerated list. Id., slip op. at 19-20. The relevant language states that "the phenyl group contains at least one

substituent chosen from the group consisting of: (a) 1-3 halogen atoms, (b) 1-2 alkyl groups . . . (e) 1-2 nitro groups or cyano groups or alkoxy groups . . . ." '044 patent, col. 2, ll. 30-49. Under Crompton's proposed construction, a compound would infringe if the phenyl group was substituted with four or five halogen atoms, even though the enumerated list limits the number of halogen substituents to three. Because at least one of the substituents (the first halogen atom) would be on the enumerated list, it would not matter that two of the other substituents (the fourth and fifth halogen atoms) are not on the enumerated list. As a result, Crompton's proposed claim construction would render the "1-3" limitation on halogen atoms surplusage. As such, we agree with the district court that phrase "the phenyl group contains at least one substituent chosen from the group consisting of: . . . ." requires that all substituents on the phenyl group be chosen from the enumerated list.

Secondly, we agree with the district court that the term "alkoxy" refers only to unsubstituted alkoxy groups. Neither the claim language nor the specification explicitly indicates whether the term "alkoxy" includes substituted as well as unsubstituted variations. However, throughout both the claims and the specification, the patentee explicitly indicated which functional groups can be substituted. Thus, those functional groups which are not explicitly indicated as being capable of substitution cannot be substituted.

For example, claim 1 of the '064 patent distinguishes between substituted and unsubstituted variations of functional groups such as alkyl, cycloalkyl, benzyl, and phenyl groups. Claim 1 states:

R<sub>1</sub> is a hydrogen atom, an alkyl group, a halogen substituted alkyl groupk [sic], an alkoxy substituted alkyl group, an alkythio substituted alkyl group,

a cyano substituted alkyl group, a 1-cycloalkenyl group, a benzyl group, a halogen substituted benzyl group, an acyl group . . .

'064 patent, col. 29, ll. 9-14. Thus, claim 1 indicates that R<sub>1</sub> may be an alkyl group substituted with certain substituents, an unsubstituted benzyl group, or a halogen substituted benzyl group. Similarly, claim 1 of the '064 patent states that "R<sub>2</sub> is a substituted or non-substituted phenyl group." Id. at col. 29, ll. 15. Continuing this pattern, claim 2 of the '064 patent distinguishes between those groups which may be substituted (i.e., "a halogenated cycloalkyl group") and those which are not substituted (i.e., "a cycloalkyl group"). Id. at col. 30, ll. 11-30.

In addition, the enumerated list setting out the possible substituents for the substituted phenyl group, the list in which the term "alkoxy" is found, repeatedly distinguishes between those functional groups which may be substituted and those which may not be substituted. Six of the ten substituent groups, (a)-(k), list potential substitutions. '044 patent, col. 2, ll. 30-50. If the phenyl group is substituted with an alkyl, acyl, alkyl sulfonyl, phenyl sulfonyl, alkythio, phenylthio, phenoxy, or phenyl functional group, that functional group may itself be substituted. However, if the phenyl group is substituted with a nitro, cyano, dioxymethylene, dioxyethylene, or alkoxy functional group, that group may not be substituted.

Further, substituent group (h) states that a "phenoxy" group can be substituted with halogen. Id. at col 2, ll. 44-47. A phenoxy group is an oxygen with a phenyl group attached. Thus, it is similar in structure to an alkoxy group; both have the same oxygen-connected-to-hydrocarbon structure and both may be substituted in a similar manner. The patentee explicitly noted when and in what manner a phenoxy group serving as a substituent on the phenyl group may itself be substituted. Therefore, the lack of an

express recitation of possible substituents for an alkoxy group serving as a substituent on the phenyl group indicates that the alkoxy group must be unsubstituted.

V

Having determined that the district court's claim construction was correct, we must determine whether the court properly granted summary judgment of noninfringement under that claim construction. Hexaflumuron and noviflumuron both contain phenyl groups substituted with alkoxy substituents, which in turn are substituted with halogens. Because an alkoxy group substituted with halogens is not an "alkoxy" as the term is used in the enumerated list of substituents, at least one of the substituents on the phenyl group of both hexaflumuron and noviflumuron is not on the enumerated list of possible substituents for the phenyl groups. The phenyl groups on the accused compounds are not "substituted phenyl group[s]" within the meaning of the claim language. As a result, we agree with the district court that there can be no literal infringement of the claims.

On appeal, Crompton argues that the district court erroneously granted summary judgment of noninfringement, claiming that there are genuine issues of material fact as to whether the accused products infringe under the doctrine of equivalents. However, Crompton's arguments as such are essentially a restatement of its claim construction arguments. Crompton does not explain how the accused products "perform[] substantially the same function in substantially the same way to obtain the same result," such that we might find the accused products are the equivalent of the claimed invention. Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605, 608 (1950). Rather, Crompton relies on mere allegations that there are genuine issues of material

fact regarding infringement by equivalents. Such allegations are insufficient to survive a motion for summary judgment. See Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 248-49 (1986). Thus, we discern no error in the district court's grant of summary judgment on the issue of infringement.

Finally, Crompton argues that the district court erred in denying its motion to transfer. However, the only relief sought by Crompton is a transfer upon remand to the United States District Court for the District of Connecticut. Because we are affirming the decision of the district court granting summary judgment of noninfringement to Dow, we need not determine whether a transfer is appropriate on remand.