

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

THE DOW CHEMICAL COMPANY, :
 :
 Plaintiff, :
 :
 v. :
 : Civil Action No. 05-737-JJF
 NOVA CHEMICALS CORPORATION :
 (CANADA), and NOVA CHEMICALS :
 INC. (Delaware), :
 :
 Defendants. :
 :

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MEMORANDUM OPINION

September 24, 2009
Wilmington, Delaware


Farnan, District Judge.

Pending before the Court are the parties' supplemental claim construction briefs regarding the claim term "homogeneously branched linear ethylene/ α -olefin interpolymer" in United States Patent Nos. 5,847,053 and 6,111,023. (D.I. 296; D.I. 297.) This Memorandum Opinion provides the Court's construction of this disputed claim term.

I. BACKGROUND

This patent infringement action is brought by The Dow Chemical Company ("Dow") against NOVA Chemicals Corporation (Canada) and NOVA Chemicals, Inc. (Delaware) (collectively, "NOVA") alleging infringement of United States Patent Nos. 5,847,053 ("the '053 patent") and 6,111,023 ("the '023 patent"), which pertain to specific ethylene/ α -olefin blends comprising (1) at least one homogeneously branched ethylene/ α -olefin interpolymer and (2) a heterogeneously branched ethylene/ α -olefin interpolymer. ('053 patent at 1:25-35.) The parties briefed their respective positions on claim construction, and the Court conducted a Markman hearing on the disputed terms. On June 25, 2009, the Court issued a Memorandum Opinion (D.I. 270) providing constructions for five of the six disputed claim terms and requesting supplemental briefing for the disputed claim term "homogeneously branched linear ethylene/ α -olefin interpolymers"

On July 14, 2009, the parties submitted their supplemental briefs for this claim term.

The parties dispute whether the claim term "homogeneously branched linear ethylene/ α -olefin interpolymers" should be explicitly characterized as having a composition distribution branch index ("CDBI") of greater than about 30 percent (Nova's position) or not (Dow's position). In an effort to resolve this dispute, the Court requested clarification as to whether the specification's guidance that "substantially all of the interpolymer molecules" in "homogeneously branched linear ethylene/ α -olefin interpolymers" have "the same ethylene/comonomer ratio within that interpolymer" could be squared with its guidance that such interpolymers could have a CDBI as low as 30 percent. (See D.I. 270 at 26.) More specifically, the Court expressed concern that requiring "substantially all" interpolymer molecules to have "the same" ethylene comonomer ratio was unduly stringent and, to those of skill in the art, irreconcilable with a CDBI as broad as 30 percent. (See id.)

II. DECISION

The Court agrees with Dow that "homogeneously branched linear ethylene/ α -olefin interpolymers" should not be construed in terms of CDBI, a parameter the patents-in-suit define as the "weight percent of the polymer molecules having a comonomer

content within 50 percent of the median total molar comonomer content." '053 patent at 3:38-40. Although CDBI is often used in the art to characterize interpolymers, the Court concludes that the CDBI parameter alone does not carry sufficient information to consistently and accurately distinguish between homogeneous and heterogeneous interpolymers. In particular, because the CDBI is defined relative to the "median total molar comonomer content," interpolymers having comonomer distributions of similar width may nonetheless have very different CDBI values. (See D.I. 291 at 6.) Thus, although, as NOVA notes, during prosecution the patentee referred to CDBI when distinguishing the polymers of the patents-in-suit from those of the prior art, (see D.I. 143, Exh. U at 103), the Court cannot conclude that this necessitates a definition of "homogeneously branched linear ethylene/ α -olefin interpolymer" in terms of the CDBI parameter.

In this regard, the Court cannot agree with NOVA that the specification characterizes the CDBI parameter as a tool that can be used to establish a bright line between homogeneous and heterogeneous polymers. Indeed, the specification explains only that the "homogeneity of the interpolymers is typically described" by the CDBI. '053 patent at 3:35-36 (emphasis added). Likewise, the specification explains that the "CDBI for linear and for the substantially linear olefin polymers of the present invention is preferably greater than about 30 percent, especially

greater than about 50 percent.” Id. at 3:49-51 (emphasis added). In the Court’s view, this, at most, indicates that the CDBI parameter has some utility in characterizing polymers, not that the claims of the patents-in-suit should be limited to particular CDBI ranges.

Having concluded that the term “homogeneously branched linear ethylene/ α -olefin interpolymer” should not be construed in terms of CDBI, the Court must now consider whether it is appropriate to define it as being, in part, an “interpolymer in which the comonomer is randomly distributed within a given interpolymer molecule and wherein substantially all of the interpolymer molecules have the same ethylene/comonomer ratio within that interpolymer.” This definition is supported by the specifications of the patents-in-suit, which state that “[t]he homogeneously branched ethylene/ α -olefin interpolymers useful for forming the compositions described herein are those in which the comonomer is randomly distributed within a given interpolymer molecule and wherein substantially all of the interpolymer molecules have the same ethylene/comonomer ratio within that interpolymer.” Id. at 3:29-35.

Although the Court expressed reservations that this definition does not adequately reflect that interpolymers contain a distribution of polymer molecules, on reviewing the parties’ supplemental claim construction briefing, the Court is satisfied

that, in context, those of skill in the art would not understand this definition so narrowly. Indeed, though maintaining that the term "homogeneously branched linear ethylene/ α -olefin interpolymer" should be defined in terms of CDBI, NOVA directs the Court to literature in the field of polymer science explaining that "the statistical nature of polymerization . . . forces the composition of any synthetic copolymer chain to be always distributed around a certain average value." (D.I. 296, Exh. AM at 4.) Likewise, NOVA explains that "[f]undamentally, the short chain branching within a group of interpolymer molecules, even those considered to have 'homogeneous' branching, can never be identical." (D.I. 296 at 3.) Similarly, Dow explains that "[p]ersons skilled in the art in 1993 and now understand that all polyethylene polymers have a distribution of branching. That is true for homogeneously branched polymers." (D.I. 297 at 9.) In view of the above, the Court concludes that, in the context of the relevant art, it is not inappropriate to define "homogeneously branched linear ethylene/ α -olefin interpolymers" as being interpolymers in which "substantially all" of the interpolymer molecules have "the same" ethylene/comonomer ratio.

III. CONCLUSION

For the reasons discussed, the Court will construe the term "homogeneously branched linear ethylene/ α -olefin interpolymer" to

mean "ethylene α -olefin interpolymer in which the comonomer is randomly distributed within a given interpolymer molecule and wherein substantially all of the interpolymer molecules have the same ethylene/comonomer ratio within that interpolymer. Such interpolymer has no long chain branching."

An appropriate Order will be entered.