United States District Court,
N.D. New York.

SEARS PETROLEUM & TRANSPORT CORP., et al,
Plaintiffs.
v.
ARCHER DANIELS MIDLAND COMPANY, et al,
Defendants.

Civ. Action No. 5:03-CV-1120 (DEP)

July 24, 2007.

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DECISION AND ORDER

DAVID E. PEEBLES**, U.S. Magistrate Judge.**

Among the cornerstones upon which the American justice system rests is the principle of *stare decisis,* under which a court faced with an issue will ordinarily give considerable deference to an earlier, undisturbed decision addressing the same issue and examining the same arguments. Nowhere is the concept more apposite than in the field of patent law, where predictability of results is critical to insuring that once contested patent claims are construed, both the inventor and others within the field are on notice and reasonably apprised of the scope and extent of the protections afforded by the patent. For this reason, absent extraordinary circumstances militating otherwise, two courts presented with the same patent, reviewing the same intrinsic evidence and, to the extent necessary, similar extrinsic materials, ideally should arrive at the same result, thereby promoting the desirable ends of predictability, uniformity and solicitude.

Plaintiffs Sears Petroleum & Transport Corp. and Sears Ecological Applications Co., LLC (collectively, "Sears") have commenced this action alleging patent infringement on the part of the various defendants sued. At the heart of this controversy is United States Patent No. 6,299,793 (the "'793 patent"), issued in October of 2001 and assigned to Sears, as well as its offspring, United States Patent No. 6,582,622 (the "'622 patent), issued on June 24, 2003 and similarly assigned to Sears. Both of those patents describe

compositions developed principally to combat roadway icing, including as their chief ingredients a low molecular weight carbohydrate or a sugar, and a chloride salt.

Currently pending before the court is an application by the parties for construction of certain terms within the '793 and '622 patents. Many of the '793 terms now in dispute have previously been construed by the court in the context of a separate action also involving that patent. *See* Cargill, Inc. v. Sears Petroleum and Transport Corp., 334 F.Supp.2d 197 (N.D.N.Y.2004) ("*Cargill*"). Sears now argues that the constructions attributed to the disputed claim terms in that opinion, which was not reviewed on appeal by the Federal Circuit, should also apply in this case and that the court should interpret the remaining, unconstrued terms of the '793 patent and the corresponding '622 claims in a manner consistent with the meanings adopted in *Cargill* . Defendants, by contrast, urge the court to reconsider various of its rulings in *Cargill* and to construe the disputed terms in such a way as to narrow considerably the scope of the protections offered by the two patents.

I. *BACKGROUND*

Development of the invention which formed the basis of the '793 patent was driven by a perceived need within the snow and ice removal industry for an improved roadway de-icing agent lacking in certain undesirable characteristics inherent in previously available commercial products. According to background information set forth in the patent, products used in the past by municipalities and others for preventing or removing ice and snow buildup on pavement surfaces were known to possess inherently undesirable traits, including the tendency to promote corrosivity and cause environmental contamination.

Prompted by a desire to develop de-icing agents which did not exhibit these deleterious features, the industry turned to alternative formulations including those utilizing agricultural waste materials and by-products as base constituents. Prior art cited in the '793 patent references de-icing products derived from such sources as 1) a wet milling process of shelled corn, soaked in a hot solution containing sulphurous acid, yielding steep water solubles; 2) a composition which included an "admixture of waste concentrate of alcohol distilling"; and 3) a mixture "formed from a waste product of the process of removing sugar from sugar beet molasses, also known as desugared sugar beet molasses" as ingredients. '793 Patent, col. 1, lns. 28-48.

The problems associated with these earlier organic products using agricultural residues, including brewers condensed solubles ("BCS"), as a base element resulted largely from their extreme fluxuations in composition, viscosity, FN1 film forming tendency, freezing temperature, and other functional aspects, often leading to greatly varied performance from batch to batch. The presence of "highly undesirable or unnecessary ingredients", including high organic contents, phosphorous compounds and heavy metals, in such earlier products also led to additional problems such as "stratification in storage, biological degradation, odor, plugging of filters and spray nozzles and environmental difficulties[.]" ' 793 Patent, col. 1, ln. 67; col. 2, lns. 1-5, 24.

FN1. As will be seen, the viscosity of a substance generally describes its flow characteristics. *See* pp. 24-25, *post*.

To address these undesirable qualities associated with earlier formulations, the co-inventors of the '793 patent-David Wood, a Sears employee, and Robert A. Hartley, a Canadian chemist-set out to meet "an

immediate need for synthetic, chemically modified thickeners, and carefully purified materials which can be substituted for the currently used agricultural residues ... [to] improve performance and reduce metal corrosion, spalling of concrete, toxicity and [address] environmental concerns." '793 Patent, col. 2, lns. 8-13. Among the objects of the invention listed in the '793 patent is the desire to provide 1) "a de-icing formulation which exhibits improved performance standards which overcomes [sic] the prior art problems described above"; 2) "a de-icing formulation which utilizes a synergistic combination of a low molecular weight carbohydrate and an inorganic freezing point depressant"; 3) "for improved ice melting properties and ... less corrosion"; 4) "consistent physical and chemical properties, thereby assuring consistent quality and performance"; and 5) "an economical, highly effective de-icing formulation." ' 793 Patent, col. 2, lns. 14-32.

Perceiving that the principal organic components of the prior art formulations consisted of carbohydrates, the '793 inventors set about testing to probe the efficacy of the use of carbohydrates to formulate a more consistent and effective de-icing agent. In one set of tests BCS was diluted and divided into several fractions, which were then added to a mixture of ethanol and methanol, mixed with magnesium chloride in varying proportions, and assayed to determine their effects upon freezing point depression. Testing, including that calculated to identify the active constituents of BCS, revealed to the inventors that low molecular weight carbohydrates had the greatest impact on freezing point depression when mixed with magnesium chloride.

The inventors next identified several potential sources of carbohydrates in the low molecular weight range of less than 1,000, including glucose/fructose (180), disaccharides (342), trisaccharides (504), tetrasaccharides (666), centasaccharides (828), and hexasaccharides (990). Among the commercially available products listed by the inventors in the ' 793 patent as potential sources of such low molecular weight carbohydrates were Corn Syrup Solid DE 44, high maltose corn syrup, high fructose corn syrup, and glucose.

Inventors Wood and Hartley initiated the patent prosecution process by the filing of provisional patent application no. 60/070,636 on January 7, 1998. That application disclosed the concept of using the combination of three key elements, including a freezing point depressant, a film former, and water in a refined form to overcome the problems associated with then-existing de-icer formulations, as was the subject of the earlier parent non-provisional application. Those components were described to include a freezing point depressant, consisting of "any suitable inorganic or organic material and mixtures thereof", which could include either a chloride and/or an organic substance such as, notably, sugars (hexoses, saccharides) and an array of other potentially suitable components; a film former, comprised of "any suitable water soluble or water resoluble material"; and water. While the film former is reported in that application as intended to immobilize the freezing point depressant to prevent runoff from the road surface to which it is applied, it is also described as "itself a freezing point depressant" with the resulting effect of "further improv[ing] the efficiency of ice melting and aid[ing] in the reduction of metal corrosion[.]"

While not altogether abandoning its claim of priority dating back prior to that provisional parent application, Sears has acknowledged experiencing the serendipity which ultimately led to the issuance of the '793 patent, when in December of 1998, it received a report from Bodycote Ortech, Inc. ("Bodycote"), a Canadian materials testing laboratory engaged at the request of inventors Wood and Hartley to conduct testing regarding the characteristics of Ice Ban-an existing, commercially available de-icing product. That report disclosed a synergism between magnesium chloride and the Ice Ban. In analyzing the Ice Ban product Bodycote isolated five primary constituents, and discovered that one of those five components, identified as "Fraction E", consisted predominantly of carbohydrates appearing to be low molecular weight saccharides,

or sugars. On December 31, 1998 Sears received a supplemental report confirming that "lower molecular weight [carbohydrates] appear[ed] to produce the greatest influence on the freezing point of the solution."

Wood and Hartley filed a provisional application, referred to by Sears as a parent, non-provisional application and ultimately abandoned, on January 4, 1999 disclosing their invention in greater detail. The inventors later submitted continuation-in-part ("CIP") application no. 09/755,587, the application which ultimately resulted in issuance of the '793 patent, on January 5, 2001. In that application, the inventors disclosed ten references to prior art, including nine de-icer patents containing agricultural waste product constituents.FN2

FN2. Among the prior art disclosed were patent nos. 4,664,832, issued to Sandvig ("waste products such as sawdust"); 4,676,918, issued to Toth, *et al*. ("waste concentrate of alcohol distilling"); 5,135,674, issued to Kuhajek ("gelling agent such as hydroxethyl cellulose"); 5,635,101, issued to Janke, *et al*. (by-products of a wet milling process of shelled corn); 5,709,812, issued to Janke, *et al*. ("liquids that remain after the coagulated cheese has been removed from the milks"); 5,709,813, issued to Janke, *et al*. ("by-products from the fermentation and production of wine"); 5,849,356, issued to Gambino ("carbohydrates produced by wet processing"); 5,922,240, issued to Johnson ("by-products from a commercial beer brewing"); and 6,080,330, issued to Bloomer ("waste product of the process of removing sugar" from sugar beet molasses).

Following review of the application by Patent and Trademark Office ("PTO") Examiner Greene, certain of the claims in the application were initially rejected based upon that prior art, including the Janke '813, Johnson and Gambino patents. Examiner Greene commented that the prior art already taught the use of products containing carbohydrates in de-icing products and that the choice of molecular weight range is "a matter of obvious choice or design best determinable through routine experimentation and optimization within the art and producing no unexpected results absent a showing otherwise."

In response to these concerns, Wood cited research by co-inventor Hartley, reflecting that the prior art involved components with "any number of extraneous, and frequently undesirable, compounds" that "either alone or in combination with magnesium chloride, ... were producing the various problems" encountered with the prior products. Wood went on to note that the invention practiced by Wood and Hartley was designed to "develop a more pure liquid for combining with the magnesium chloride (or other chloride salts) that would eliminate the problems noted ... as well as provide uniform performance and quality to the market." After amendment of the application to specify not only the molecular weight range of the carbohydrate component, but additionally a listing of potential sources for that element, the claims were subsequently allowed, and the '793 patent was issued on October 9, 2001.

On June 24, 2003 a '622 patent issued to inventors Hartley and Wood, with Sears listed as the assignee. Like the '793 patent, the '622 patent taught a "de-icing solution", in this instance specifying sugars in the molecular weight range of between one hundred eighty and sixteen hundred and thirty eight as the key constituent. The '622 patent represents a continuation-in-part of prior applications and the '793 patent, and discloses a further embodiment of the invention included within the '793 patent.

Principally at issue in this case is the manufacture and sale of a road deicer known as CALIBER, and comprised of an aqueous solution including, as ingredients, magnesium chloride and corn syrup. After discovering in or about May of 2000 that Minnesota Corn Processors, LLC ("MCP"), one of the defendants named in this action, was selling CALIBER, and following the issuance of the ' 793 patent upon which,

Sears maintains, it reads, Sears wrote to MCP advising of the issuance of the patent and its claim that the product CALIBER infringed. In response, Sears was informed of defendants' position that the ' 793 claims do not cover CALIBER, and that in any event the patent is invalid.

Following an initial exchange of communications regarding CALIBER and the ' 793 patent, discussions ensued between Sears on the one hand, and MCP and its affiliates on the other, commencing in December of 2001, to explore the possibility of a joint venture to market both the Sears ICE B'GONE II plaintiff product and CALIBER throughout North America, under license to the '793 patent. Those discussions effectively ended, however, in or about September of 2002, when MCP merged into or was acquired by defendant Archer Daniels Midland Company ("ADM").

On October 22, 2002 the PTO issued United States Patent No. 6,468,442 (the "'442 Patent"), based upon an application filed on December 19, 2001 by MCP. The '442 patent describes various liquid de-icing compositions including, *inter alia,* one whose chief ingredients are corn syrup, magnesium chloride and a corrosion inhibitor. MCP has also obtained a federal registration for the trademark "CALIBER" for use in connection with "de-icing preparations for use on roads and other outdoor surfaces."

II. *PROCEDURAL HISTORY*

Sears commenced this action on September 12, 2003. Dkt. No. 1. In its third amended complaint-the currently operative pleading on behalf of the plaintiffs-filed on February 16, 2006, Sears asserts claims of infringement under both the '793 and the '622 patents, stemming from the development and marketing of the roadway deicer marketed as CALIBER, alleged to comprise an aqueous solution including magnesium chloride admixed with corn syrup-a product which, in turn, is said to be composed chiefly of low molecular weight carbohydrates, within the ranges cited in the '793 patent claims. Named as defendants in the action are ADM, Deicer USA, LLC, ("DUSA"), Glacial Technologies ("GT") and MCP, collectively, (the "ADM Defendants") as well as MLI Associates, LLC ("MLI"), a defendant which is separately represented. Plaintiffs' complaint asserts infringement of the '793 and '622 patents, as well as a pendent claim of fraudulent misrepresentation against defendant MLI. Dkt. No. 119. In separately filed answers the ADM defendants, Dkt. No. 143, and MLI, Dkt. No. 144, have generally denied plaintiffs' allegations of infringement and their misrepresentation claims and, in addition to asserting various defenses, have counterclaimed against Sears in essence seeking a declaration of invalidity and/or unenforceability, as well as of non-infringement of the '622 and '793 patents.

Following completion of pretrial discovery, the parties cross-moved seeking to elicit the court's assistance with regard to claim construction. A hearing was conducted on May 4, 2007 to address the disputed claim terms, at the close of which decision regarding claim construction was reserved by the court.

III. *DISCUSSION*

A. *Claim Construction*

Patent claim construction implicates an issue of law, to be decided by the court. Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (Fed.Cir.1995), *aff'd,* 517 U.S. 370, 116 S.Ct. 1384 (1996); *see also* Pitney Bowes, Inc. v. Hewlett-Packard Co., 182 F.3d 1298, 1304 (Fed.Cir.1999) (citing *Markman*). When engaged in patent construction, a court must define claim terms as one of ordinary skill in the relevant art would understand and interpret them. Markman, 52 F.3d at 986; *see also* K-2 Corp. v.. Salomon S.A., 191 F.3d 1356, 1365 (Fed.Cir.1999).

Perhaps the most comprehensive discussion to date by the Federal Circuit of the claim construction calculus came in its *en banc* decision in Phillips v. AWA Corp., 415 F.3d 1303 (Fed.Cir.2005). In *Phillips,* though with extensive illuminating discourse regarding the relative importance of intrinsic and extrinsic evidence, the Federal Circuit in essence endorsed its earlier decision in Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576 (Fed.Cir.1996), previously regarded by the courts and patent practitioners as defining the contours of the claim construction inquiry, and a case which heavily guided my earlier determination in *Cargill.* Phillips, 415 F.3d at 1324.

The principal teaching of *Phillips*-and not a significant departure from earlier claim construction jurisprudence-is that the claims of a patent define the scope of protection afforded to the inventor. *Phillips,* 415 F.3d at 132. It therefore follows that the language of a claim itself generally provides the most definitive source of guidance concerning construction. Vitronics, 90 F.3d at 1582. Words contained within a patent normally should be given their ordinary and customary meaning, considered from the perspective of a person of ordinary skill in the art in question at the time of the invention-that is, the effective filing date of the patent application. Phillips, 415 F.3d at 1313 (citing, *inter alia* Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc., 381 F.3d 1111, 1116 (Fed.Cir.2004)).

In their presentation, the ADM defendants present a three-tiered hierarchy of claim interpretation tools ranging in diminishing importance from claim terms, to intrinsic evidence, and lastly to extrinsic evidence. Defendants' approach, however, elevates claim terms to a position of paramount importance, impermissibly relegating the patent specification to a level of secondary importance, overlooking the significance of the specifications of the patent as a definite source of guidance regarding the inventor's interest.FN3

FN3. Indeed, the end result of defendants' tortured analysis, which focuses solely on the words of the patent claims, is exclusion of all but one of the examples cited in the '793 claim from coverage of its terms. Surely such a result cannot be what the law intends; a claim construction which excludes not only one but indeed the vast majority of the examples cited in a patent's specification simply cannot be correct. *See* Vitronics, 90 F.3d at 1583-84.

While it is true that the words of a patent's claims will generally control, they should not be interpreted in isolation, casting aside other portions of the patent including the specification; instead "the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." Phillips, 415 F.3d at 1313. In this regard a patent specification, which some liken to an internal dictionary, must be reviewed to determine whether the inventor has used any term in a manner inconsistent with its ordinary meaning. Id. at 1313-14; *see also* Vitronics, 90 F.3d at 1582 (*citing Markman, 52* F.3d at 979). A patent's specification often constitutes the "single best guide to the meaning of a disputed term." Vitronics, 90 F .3d at 1582.

When resorting to a patent's specification for guidance with respect to disputed claim terms one must consider it as a whole, and all portions should be read in a manner that renders the patent internally consistent. Budde v. Harley-Davidson, Inc., 250 F.3d 1369, 1379-80 (Fed.Cir.2001). "Where the specification makes clear that the invention does not include a particular feature, that feature is deemed to be outside the reach of the claims of the patent, even though the language of the claims, read without reference to the specification, might be considered broad enough to encompass the feature in question."

SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc., 242 F.3d 1337, 1341 (Fed.Cir.2001).

"[W]hile it is true that claims are to be interpreted *in light of* the specification and with a view to ascertaining the invention, it does not follow that limitations from the specification may be read into the claims[.]" *See* Sjolund v. Musland, 847 F.2d 1573, 1581 (Fed.Cir.1988) (emphais in original). Moreover, as another judge of this court has observed, "[n]or should particular embodiments in the specification be read into the claims; the general rule is that the claims of a patent are not limited to the preferred embodiment." Cornell Univ. v. Hewlett-Packard Co., 313 F.Supp.2d 114, 126 (N.D.N.Y.2004) (Mordue, C.J.) (citing, *inter alia,* Texas Digital Sys., Inc. V. Telegenix, Inc., 308 F.3d 1193, 1204 (Fed.Cir.2002)).

In addition to the claim terms themselves and the patent's specification, a third category of relevant intrinsic evidence to be considered is the history surrounding the prosecution of the patent. That history, which is customarily though not always offered to assist a court in fulfilling its claim construction responsibilities, is generally comprised of the complete record of proceedings before the PTO including, significantly, any express representations made by the applicant regarding the intended scope of the claims being made, and an examination of the prior art. Vitronics, 90 F.3d at 1582-83. Such evidence, which normally chronicles the dialogue occurring between an inventor and the PTO, and thus acts as a reliable indicator of any limitations or concessions on the part of the applicant, can often be highly instructive on the issue of claim construction. Accordingly, courts supplied with such evidence strive to avoid definitions upon which the PTO could not reasonably have settled in order to ensure against the possibility of an applicant obtaining a scope of protection which encompasses subject matter that, through the conscious efforts of the applicant, the PTO did not examine. Genentech, Inc. v. Wellcome Found. Ltd., 29 F.3d 1555, 1564 (Fed.Cir.1994). Similarly, representations made in an attempt to overcome objections by the patent examiner can provide enlightenment in construing claims and estopping inventors from later attempting to broaden the dimensions of their claimed invention beyond the scope of the claims presented before the PTO. Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd., 535 U.S. 722, 733-34, 122 S.Ct. 1831, 1838-39 (2002).

If analysis of the available intrinsic evidence resolves a perceived ambiguity in a disputed claim term, the inquiry ends there. Vitronics, 90 F.3d at 1583. When, on the other hand, there remains uncertainty regarding a claim after consideration of all intrinsic evidence, the court should turn to examination of such available extrinsic sources as expert testimony, inventor testimony, dictionaries, and technical treatises and articles, for guidance in reconciling any conflicting intrinsic indicators. Id. at 1584. It should be noted, however, that extrinsic evidence may only be used to aid the court in understanding patent claims, and cannot be relied upon to justify any departure from or contradiction with the actual claim language employed by the applicant. *Id*. To assist in resolving an ambiguity, in its discretion, a court may admit and rely on prior art, whether or not cited in the specification or file history. *Id*. at 1584-85. Prior art and dictionaries, as publicly accessible, objective information, are for obvious reasons preferable to expert testimony as tools for resolving ambiguity. *Id*. at 1585; *see also* Texas Digital Sys., 308 F.3d at 1202-03.

Ultimately, interpretation of the terms of a patent claim can only be determined with a full understanding of what the inventor actually invented and intended to envelop within the claim. Renishaw PLC v. Marposs Societa' per Azioni, 158 F.3d 1243, 1250 (Fed.Cir.1998). For this reason, when inventors distinguish their invention from prior art, that prior art is properly excluded from the claims' coverage. Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc., 267 F.Supp.2d 533, 543 (N.D.W.Va.2003) (citing SciMed Life Sys., Inc., 242 F.3d at 1343).

B. *Stare Decisis*

Many of the terms drawn into controversy by the defendants in this action were interpreted by the court in *Cargill*. Sears readily acknowledges that the court's claim construction in that case is not entitled to preclusive effect in this instance, since the ADM and MLI defendants were neither parties to nor in privity with any party to the *Cargill* action. Sears nonetheless urges application of the doctrine of *stare decisis* to the court's claim construction analysis in *Cargill,* asserting that the defendants have failed to provide any persuasive reason for the court to revisit its rulings, which to date stand unchallenged. Defendants, by contrast, assert that the rule of *stare decisis* is not so rigid and inviolate, contending that the court's claim constructions in *Cargill* were largely dependent upon the arguments made in that case and heavily focused upon the source of the low molecular weight carbohydrates involved, and that in light of the fact the defendants in this action have raised new arguments in this case, different constructions should apply.

Stare decisis teaches that determinations involving the same legal question presented under similar circumstances should not ordinarily be reconsidered, absent manifest unfairness. *See* Texas Instruments, Inc. v. Linear Technologies Corp., 182 F.Supp.2d 580, 589 (E.D.Tex.2002). The deference dictated by *stare decisis* plays a prominent role in the patent claim construction calculus, given the "importance of uniformity in the treatment of a given patent". Markman, 517 U.S. at 390, 116 S.Ct. 1394. As one of the reasons offered in support of its decision to relegate claim construction to the court, the Court in *Markman* observed that the policy of uniformity would be furthered by its prescribed approach, noting that "treating interpretive issues as purely legal will promote (though it will not guarantee) intrajurisdictional certainty through the application of *stare decisis* on those questions not yet subject to interjursidictional uniformity under the authority of the single appeals court." Id. at 390-91, 116 S.Ct. 1384.

In support of the request that I revisit my claim construction rulings from *Cargill,* the defendants contend that they raise new arguments not presented and considered in that case. When, during claim construction, parties fail to raise new arguments not previously presented, deference is ordinarily required to a court's prior construction of the same patent claims. KX Indus., L.P. v. PUR Water Purification Products, Inc., 108 F.Supp.2d 380, 387 (D.Del.2000) (*citing* Markman, 517 U.S. 370, 116 S.Ct. 1384). In the event that new contentions are urged, however, a court may opt to reconsider its prior rulings construing the same patent terms, although even under such circumstances considerable deference should be given to those prior decisions unless overruled or undermined by subsequent legal developments, including intervening case law. Collegenet, Inc. v. XAP Corp., No. CV-03-1229, 2004 WL 2429843, at (D.Ore. Oct. 29, 2004). As the court in *Collegenet* noted, " 'a court must give considerable weight to [its own previous decisions] unless and until they have been overruled or undermined by the decisions of a higher court or other supervening developments, such as a statutory overruling.' " *Id*. at (citing and quoting Colby v. J.C. Penney Co., 811 F.2d 1119, 1123 (7th Cir.1987)).

C. *Person of Ordinary Skill in the Art*

Before turning to the task of claim construction, the court must first determine the relevant prism to be employed when construing the disputed claim terms. In addressing claim construction, a court must ascertain how a person of ordinary skill in the art would have understood the disputed claim terms at the time of the invention. Markman, 52 F.3d at 986. Significantly, patent claims must be construed not through the eyes of the court, or those of any proffered experts, but rather from the standpoint of a person skilled in the art. Interactive Gift Express, Inc. v. Compuserve, Inc., 256 F.3d 1323, 1332 (Fed.Cir.2001). In constructing the hypothetical of person of ordinary skill in the art, a court should consider the educational level of the inventor, the type of problems encountered in the art, the prior art solutions to the problems, the rapidity with which innovations are made in the field involved, the sophistication of the technology, and the

educational level of workers in the field. Helifix Ltd. v. Blok-Lock, Ltd., 208 F.3d 1339, 1347 (Fed.Cir.2000) (citation omitted).

In *Cargill* the parties differed somewhat markedly concerning the applicable relevant art to be applied to the case. While both parties agreed that the field in question was that of chemical road use of an invention and anti-icing, the positions diverged significantly when addressing the required level of practicable experience in road de-icing and anti-icing, as well as the degree of sophistication necessary in the area of chemistry. Rejecting a more generalized approach by Sears, focused heavily upon education and post-graduate work in the field of chemistry or chemical engineering, in *Cargill* I defined a person of ordinary skill in the art as possessing a bachelor's degree, or the equivalent, in chemistry or chemical engineering, with some course work in the field of organic chemistry, and additional post-graduate involvement in research or practical experience in the field of roadway ice management. Cargill, 334 F.Supp.2d at 214-16.

While Sears now endorses that description, the ADM defendants urge a broader definition to eliminate the necessity of roadway de-icing experience, arguing that education and experience in other areas where low molecular weight carbohydrates are encountered, including as a practicing chemist or someone engaged in the area of food science, should suffice. Having carefully considered the arguments of the parties, I adhere to my earlier definition and, in light of the unique nature of the '793 patent as well as the separate but related '622 patent, will include the requirement of experience or education in the field of roadway ice management when considering the patent claims from the perspective of a person of ordinary skill in the art.

D. *Claim Construction in this Case*

Sears and the ADM defendants have submitted extensive briefs and supporting materials urging competing constructions of various of the claim terms included within the '793 and '622 patents.FN4 Those submissions disclose apparent agreement regarding the need for the court to construe terms "aqueous solution", "carbohydrates", "chloride salt", "balance", "colorant", and "thickener." FN5 While the term "de-icing and anti-icing composition" was construed in *Cargill,* the defendants assert that as utilized in the ' 793 patent the phrase was intended only as preambulatory, and thus requires no construction. Defendants also seek construction of the terms "sugars", as utilized in the ' 622 patent, as well as "constituents", "about", "low molecular weight" and "high molecular weight" and "said carbohydrate."

FN4. In a separate submission defendant MLI Associates, LLC has joined in the ADM defendants' claim construction position, except with regard to the term "carbohydrate", on which it takes no position. *See* Defendant MLI Associates, LLC Opening Claim Construction Brief (Dkt. No. 173).

FN5. In *Cargill,* at Sears' request, guidance was also provided concerning the term "viscosity", which was construed as describing the fluidity of a liquid, sometimes defined as "internal resistence to flow exhibited by a fluid[.]" Cargill, 334 F.Supp.2d at 216, n. 11 (citing Hawley's Condensed Chemical Dictionary 1321 (15th ed.2007)). Since the defendants in this case appear to accept this definition, no further discussion concerning this claim term is necessary.

The '622 and '793 patents are closely aligned, addressing a similar de-icing agent and comprised of claims having in common a majority of their material terms. The '793 patent presents four independent claims, including claims one, four, seven and eight, each describing a "de-icing and anti-icing composition

comprising an aqueous solution which contains a low molecular weight carbohydrate", together with chloride salt in constant proportions, by weight, of between three and sixty percent of carbohydrates and five to thirty-five percent chloride salt. '793 Patent, col. 9, lns. 47-67-col. 12. Claims one and four limit the molecular weight of the carbohydrate ingredient to a range of one hundred and eighty to fifteen hundred, while claims seven and eight refine the maximum allowable carbohydrate molecular weight to one thousand. Independent claims four and eight further provide for an inclusion of a thickener within specified weight ranges, while dependent claims three and six allow for inclusion of a "colorant to provide visual aid in applying the composition to a surface." '793 Patent, col. 9, lns. 65-67 and col. 10, lns. 27-29. Dependent claims two and five narrow the chloride salt component of the solution to be "at least one selected from the group consisting of sodium chloride, magnesium chloride and calcium chloride." Id.

The '622 patent embodies two independent claims specifying "[a] de-icing and anti-icing composition comprising an aqueous solution which contains mixtures of sugars" together with a chloride salt, again in specified proportions, with claim five also adding the presence of a thickener. '622 Patent, col. 12. In both instances the molecular weight of the sugars included within the composition must fall within the range of "about 180-1638." Id. Dependent claims three and seven provide for an addition of a colorant, while dependent claims four and eight specify a range of viscosity for the claimed product. Id. Dependent claims two and six provide that the chloride salt included as a constituent within the de-icing and anti-icing composition must be selected from a group consisting of sodium chloride, magnesium chloride, and calcium chloride. Id.

In their *Markman* presentations, the ADM defendants have asked that the court eschew the definitions fixed in *Cargill* for the terms "aqueous solution", "balance", "carbohydrate", "de-icing and anti-icing composition", "thickener", and "colorant", and instead craft new definitions for those claim terms. Additionally, the ADM defendants request that the court address several terms not construed in *Cargill,* including "constituent", "low molecular weight", "high molecular weight", said "carbohydrates", "about" and "sugars." For its part, Sears urges that for the sake of continuity the court adopt the *Cargill* construction for the disputed terms addressed in that decision, and employ similar reasoning to address the undefined, disputed terms including those set forth in the '622 patent.

1. *De-icing and Anti-Icing Composition*

The first disputed claim term to be construed is "de-icing and anti-icing composition." In *Cargill* the chief battleground with respect to this term concerned whether the composition specified was limited to direct application to roadways, as Cargill argued, or instead was susceptible to indirect application by means of spraying the specified composition onto rock salt, which could then be applied to roadways. The more narrow approach advocated by Cargill was rejected, in favor of the more expansive reading advocated by Sears, resulting in the phrase being construed to mean "a composition whose intended purpose, through direct or indirect application, is to keep roadways free or rid of ice, or to prevent its formation on such surfaces." FN6 Cargill, 334 F.Supp.2d at 217.

FN6. It should be noted that in *Cargill* Sears offered a more expansive interpretation of the term "de-icing and anti-icing composition", suggesting that the use of the patent invention should not be limited to roadways but instead was susceptible to use in other settings where icing occurs.

The defendants urge the court not to construe the term de-icing and anti-icing composition at all, arguing

that the phrase is purely preambulatory and thus does not serve to limit the scope of the patent's claims. In support of their argument, defendants offer the Federal Circuit's observation that

[i]n general, a preamble limits the invention if it recites essential structure or steps, or if it is necessary to give life, meaning, and vitality to the claim. Conversely, a preamble is not limiting where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.

Catalina Mktg. Int'l, Inc. v. Coolsavings.com, Inc., 289 F.3d 801, 808 (Fed.Cir.2002) (quotations and citations omitted). This statement is consistent with the principle that it is the body of a claim, rather than the intended use specified in such introductory language, that controls and provides the critical attributes of a patented device.FN7 *See id.; see also* Schumer v. Lab. Computer Sys., Inc., 308 F.3d 1304, 1310 (Fed.Cir.2002).

FN7. Defendants also quarrel with the court's reference to the specification in order to limit the construed term more narrowly than under its generally understood meaning. While it is true that reference only to a single or preferred embodiment to circumscribe a patent claim term would be improper, *see, e.g,* Phillips, 415 F.3d at 1323 (noting that "[w]e have expressly rejected a contention that if a patent describes only a single embodiment, the claims of the patent must be construed as to being limited to that embodiment"), the specification nonetheless remains a critical element of the patent, and resorting to it in order to shed light on the intended meaning of the claim terms is a means of interpretation explicitly approved by the Federal Circuit in its *en banc* decision in *Phillips*.

There is no particular bright line test to be followed in every case when determining whether preambulatory language is limiting; there are, however, guideposts which can inform a court's analysis. Catalina Mktg., 289 F.3d at 808. Among them is the principle that "when the preamble is essential to understand limitations or terms in the claim body, the preamble limits claim scope." *Id*. (citing Pitney Bowes, 182 F.3d at 1306). Critically, in *Catalina Mktg*. the Federal Circuit noted that "preambles describing the use of an invention generally do not limit the claims because the patentability of apparatus or composition claims depends on the claimed structure, not on the use or purpose of that structure. *Id*. at 809 (citing *In re:* Gardiner, 36 C.C.P.A. 748, 171 F.2d 313-16, 80 UPSQ 99, 101 (1948)). As an illustration of the point being made, the Federal Circuit in that case hypothesized an invention of "a composition for polishing shoes", noting that a subsequent inventor determining that the very same composition could be used to grow hair "cannot invoke this use limitation to limit [the patent holder's] composition claim because that preamble phrase states a use or purpose of the composition and does not impose a limit on [the patent holder's] claim." *Id*. at 809-10.

In support of its argument that I should define the phrase "de-icing and anti-icing composition" as I did in *Cargill,* Sears relies principally upon cases which are inapposite, involving preambulatory language that is both clearly limiting and gives life to particular claim terms. In *Loctite Corp. v. Altraseal Ltd.,* for example, the Federal Circuit noted that the phrase "[a]naerobic curing sealant composition" was not merely preambulatory, but instead should be construed as interposing a limitation, providing life and meaning to the patent claims, in the face of infringement claims against the defendant which had developed a similar composition and process which was not anaerobic. 781 F.2d 861, 867 (Fed.Cir.1985), *overruled on other grounds,* Nobelpharma AB v. Implant Innovations, Inc., 141 F.3d 1059 (Fed.Cir.1998). Similarly, in *Poly-America, L.P. v. GSE Lining Tech., Inc.,* which involved method claims for manufacturing a texture landfill liner, the court determined that the introductory phrase "blown-film" was a critical limitation of the claims

of the patent in suit, thereby providing a basis to distinguish the accused device, which was not a "blown-film" liner, finding that the preambulatory term "represented an important characteristic of the claimed invention." 383 F.3d 1303, 1310 (Fed.Cir.2004)

In this case the phrase in dispute is more closely akin to that involved in *Catalina Mktg.,* as well as the shoe polish example cited by the Federal Circuit in that instance. The claims of both the '793 and '622 patents describe a complete composition structure, with the disputed phrase only being offered to specify the intended use of the composition.

It is true that at the outset I noted the importance of being faithful to the doctrine of *stare decisis*. That precept, however, does not constrict the court when considering new arguments not raised in the prior relevant proceeding. *See* Collegenet, 2004 WL 2429843, at *6. In the prior action involving the ' 793 patent, both Cargill and Sears sought a construction of the phrase "de-icing and anti-icing composition", urging competing definitions, without arguing over whether in fact it provided a limitation to the '793 patent claims. Under the circumstances currently presented, I find a sufficient basis to reconsider my early ruling, and will consider the phrase in issue as constituting mere preambulatory language not requiring construction by the court.FN8

FN8. The defendants' challenge of my construction of the term de-icing and anti-icing composition in *Cargill* appears to have legal significance only in the context of a separate re-examination proceeding brought in the United States Patent and Trademark Office ("PTO"), based upon the contention that an earlier radiator anti-freeze patent anticipated both the '793 and '622 patents.

2. *Aqueous Solution/Balance*

The independent claims of the '793 patent disclose an aqueous solution, with constituents falling in ranges of percentages by weight specified for carbohydrate and chloride salt content, and with water identified as constituting the "balance". As was the case in *Cargill,* the parties in this action disagree over the terms "aqueous solution" and "balance" and whether, in combination with the specification of the carbohydrate and chloride salt content range, they permit inclusion of any incidental impurities or additional ingredients other than the colorants and thickeners specified in some of the claims, and if so to what extent .FN9

FN9. Cargill urged a confined, closed-ended reading of the terms, to the exclusion of other, non-specified ingredients. Sears, on the other hand, maintained that they should be interpreted in such a fashion as to allow for some incidental, unspecified ingredients.

With the parties' focus upon issues of purity and limitations as to non-essential ingredients, the phrase "aqueous solution", while seemingly non-controversial, became a significant point of contention in *Cargill*. Cargill urged a definition requiring a "uniformly disbursed liquid mixture containing water as the primary solvent." Cargill, 334 F.Supp.2d at 217. Sears offered a more relaxed requirement of a "single-phase, liquid mixture of two or more components, one of which is water and with possible incidental amounts of insoluble components." *Id*.

The term "solution" is defined in one source as constituting a "homogeneous mixture of two or more substances, which may be solids, liquids, gases, or a combination of these." American Heritage Dictionary

1655 (4th ed.2000). The term "homogeneous" is defined elsewhere as "often loosely used to describe a mixture or solution composed of two or more compounds or elements that are uniformly disbursed in each other." Hawley's Condensed Chemical Dictionary 655 (15th ed.2007). While both of those sources associate the term "homogeneous" with "solution," the Hawley's definition goes on to observe that "[a]ctually, no solution or mixture can be homogeneous; the situation is more accurately described by the phrase 'uniformly disbursed.' " *Id.*

Use of the term "aqueous" constricts the solution in issue in the '793 patent to a liquid with water as a component, or even the primary solvent. This much is not in dispute. The critical issue presented is the degree of homogeneity required in the aqueous solution. As even the Hawley's dictionary definition recognizes, no solution or mixture can be entirely homogeneous. In practice, there are no solutions which are completely free of extraneous materials, however microscopic they may be. Indeed, even contemporary drinking water standards provide for inclusion of certain impurities including asbestos particles, albeit within exceedingly narrow defined limits.

In consideration of the patent claim language and use of the term aqueous, derived from "aqua"-which means "[w]ater", American Heritage Dictionary at 89, in *Cargill* I interpreted the phrase "aqueous solution" to mean a uniformly disbursed liquid mixture of two or more components, one of which is water, and which can contain incidental amounts of insoluble components.

Taking the terms aqueous solution and balance together, the ADM defendants now argue for a different interpretation, asserting that for the '793 patent the term should be read together to mean that

[a]side from the specified low molecular weight carbohydrate, chloride salt, [and thickener, for claims reciting a thickener], and impurities ordinarily associated therewith, the solution shall contain only water. The aqueous solution may not include additional ingredients included for purposes related to de-icing or anti-icing.FN10

FN10. Defendants assert that for purposes of the '622 patent a similar definition should apply, with the word "sugars" being substituted for the phrase "low molecular weight carbohydrate."

ADM's Opening Brief on Claim Construction (Dkt. No. 172) at 17. Defendants' argument is bottomed upon what they claim to be ordinary principles of sentence construction, as well as the Federal Circuit's intervening decision in Conoco, Inc. v. Energy & Envtl. Int'l, L.C., 460 F.3d 1349 (Fed.Cir.2006).

Having carefully considered the argument of the parties in *Cargill,* and discerning no material difference in this case, I find no basis to revisit my ruling regarding the term "aqueous solution."

Turning to the term "balance", I note that although not necessarily restricted to the art of chemistry, it is generally accepted to mean "the remainder or rest", Random House Webster's College Dictionary 101(2d ed.1991), or "something left over, remainder", Merriam-Webster Collegiate Dictionary 87 (10th ed.1995). Strictly construed, use of the closed-ended term "balance" in the formulation specified indicates that other than the low molecular weight carbohydrate source and chloride salts, as well as possible addition of thickeners and colorants, the remainder of the solution practiced in the '793 patent is water only. Such a strict definition, however, ignores the realities associated with the patent, and in particular the designated sources of its carbohydrate and chloride salt constituents. Commercially available sources for the low

molecular weight carbohydrates and the chloride salts, as well as the water, specified within the invention by definition all include impurities by their very nature. Clearly, what the term "balance" was intended to exclude were the harmful, unlisted ingredients associated with the prior art, based on agricultural waste products which

utilize materials which have highly undesirable or unnecessary ingredients leading to practical difficulties by manufacturers and users, such as stratification in storage, biological degradation, odor, plugging of filters and spray nozzles and environmental difficulties e.g.... high organic contents (about 40% by weight), presence of phosphorus compounds and heavy metals.

'793 patent, col. 1, ln. 66-col. 2, ln.6.

Defendants' argument, while addressing the term "balance", in reality focuses upon use of the term "comprising" in the two patents in suit. It should be noted that while the use of such partially open-ended terms as "consisting essentially of" can allow for the presence of "unlisted ingredients that do not materially affect the basic and novel properties of the invention," PPG Indus. v. Guardian Indus. Corp., 156 F.3d 1351, 1354 (Fed.Cir.1998), the phrase "comprising" is traditionally regarded under patent law as having special meaning, defining the scope of the claim and providing an indication of what additional, unrecited components are intended to be excluded from its scope. Conoco, 460 F.3d at 1359-60. As the Federal Circuit noted in *Conoco,* however, the restriction associated with phrases such as "comprising" is not absolute; instead, use of the phrase does not exclude "impurities that a person or ordinary skill in the relevant art would ordinarily associate with the component on the 'consisting of' list." *Id.* at 1360. Similarly, the phrase does not exclude other components unrelated to the invention. *Id.*

In light of these considerations, and the language of the '793 patent itself, I adhere to my earlier construction, and will interpret the term "balance", as used in the '793 patent and '622 patents, to mean that aside from the other specified ingredients, including low molecular carbohydrates (or sugars) and chloride salts, and with the possible addition of colorants and thickeners, as well as incidental impurities or harmless ingredients associated with the commercial sources of the key components in the invention, the solution shall contain only water. To hold otherwise would be to reject the reality of impurities in all of the stated '793 and '622 ingredients.

It should be noted that in seeking the exclusion of even a single molecule of a high molecular weight carbohydrate outside of the ranges specified in the ' 793 and '622 patents, defendants rely upon the patent prosecution history which shows that it was not until the inventor identified specific low molecular weight carbohydrate ranges that the PTO determined it had sufficiently distanced itself from prior art, which did not contain any carbohydrate weight limitations. While it is true that the patentee cannot adopt inconsistent positions before the PTO and in a subsequent infringement litigation, that has not occurred in this case. Instead, the inventor, in response to PTO concerns, identified a specific range of low molecular weight carbohydrates as required constituents in its composition but noted the possible presence of impurities, including high molecular weight carbohydrates, which a person of ordinary skill in the art would associate with the sources of those low molecular weight carbohydrates.

In this regard my construction in *Cargill* gave recognition to the reality that absolute purity in a composition such as that specified in the '793 patent is a virtual impossibility, particularly in light of the likely sources of its constituents. Indeed, during the prosecution of the underlying applications and in the patent itself, corn syrup was prominently mentioned as a potential source of a low molecular weight carbohydrate identified in

the patent claims. Those of ordinary skill in the art, I am convinced, would have known at the time of the filing of the patent application that the low molecular weight carbohydrate specified would principally be derived from corn syrup through hydrolysis from starches, leaving high molecular weight carbohydrates as impurities associated with those constituents. For this reason, in *Cargill* I read "balance" as a closed term, but with room for the possibility of such impurities. Finding that this approach is consistent with the Federal Circuit's case law, including *Conoco,* I adhere to my prior decision defining the terms "aqueous solution" and "balance."

3. *Carbohydrate*

Once again the parties disagree appreciably on the definition to be attributed to this word.FN11 The term "carbohydrate" itself is not a controversial one; its definition specifies a "compound of carbon, hydrogen, and oxygen ... in which the ratio of hydrogen to oxygen is the same as in water." Hawley's at 231 As used in the ' 793 patent, however, the term is restricted to a carbohydrate with a "low molecular weight," and the carbohydrate source is further specifically limited as being "selected from the group consisting of glucose, fructose, and higher saccharides based on glucose and/or fructose and mixtures thereof." FN12 ' 793 Patent, col. 9, lns. 47-67-col. 12. The controversy in this instance centers around the source, including its purity and consistency, of the carbohydrate constituent.

FN11. While the '793 patent specifies a low molecular weight carbohydrate, it is only the term "carbohydrate" that needs definition, since the claims themselves contain specific parameters addressing the permissible molecular weight range for the carbohydrate constituent. The likely sources of carbohydrates falling within those ranges must nonetheless be considered, however, when determining the intended degree of purity, or refinement of the carbohydrate source, to ascribe to the framers of the '793 patent claims.

FN12. With a specified molecular weight range of between 180 and 1500, the carbohydrates referred to in the '793 patent can fall within a polymerization range of between hexoses or monosaccharides, of which glucose and fructose are common examples, up to nine, thus limiting the "higher saccharides" specified to a nonasaccharide. The largest molecule that falls within the more restrictive range of between 180 and 1000, which is specified in claims seven and eight, is a hexasaccharide, with a molecular weight of 990. *See* Nauman Second Decl. (Dkt. No. 183-2) para. 12; *see also* Nauman First Decl. (Dkt. No. 174-16) para. 16.

While the term "carbohydrate" is readily definable, its use in the ' 793 patent must be considered in light of the limitations expressed, including the molecular weight range and the potential origins or sources of the designated carbohydrates.FN13 The ' 793 patent stresses the importance of the requirement that the carbohydrates utilized be derived from sources with "consistent physical and chemical properties", ' 793 patent, col. 2, lns. 28-29, and distinguishes prior art teaching de-icing agents derived from agricultural waste products with famously poor consistency. " '[A] claim term will not carry its ordinary meaning if the intrinsic evidence shows that the patentee distinguished that term from prior art on the basis of a particular embodiment, expressly disclaimed subject matter, or described a particular embodiment as important to the invention.' " Altiris, Inc. v. Symantec Corp., 318 F.3d 1363,1370 (Fed.Cir.2003) (quoting CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1366 (Fed.Cir.2002)).

FN13. The '793 patent and its parent application cite several examples of the kind of sources of "low molecular weight carbohydrates" commonly available, including glucose, fructose, maltose, lactose, corn

syrup DE44, corn syrup DE20, molasses, and maltodextrin.

Consistent with this approach, the six specific embodiments set forth in the ' 793 patent utilize refined agricultural products with just such properties as a designated low molecular weight carbohydrate source. As the Federal Circuit has noted, "the written description of the preferred embodiments 'can provide guidance as to the meaning of the claims, thereby dictating the manner in which the claims are to be construed, even if the guidance is not provided in explicit definitional format.' " Bell Atlantic Network Servs., Inc. v. Kovad Commc'ns Group, Inc., 262 F .3d 1258, 1268 (Fed.Cir.2001) (quoting SciMed, 242 F.3d at 1344).

From the terms of the '793 patent, including the specified embodiments, consideration of the potential sources of low molecular weight carbohydrates listed, and the prior art referenced, I concluded in *Cargill* that a person of ordinary skill in the art would construe the term "low molecular weight carbohydrate", as used in the '793 patent, as "a material which includes carbon, hydrogen, and oxygen where the ratio of hydrogen to oxygen is the same as in water, and which is obtained from a refined and consistent source." FN14 Cargill, 334 F.Supp.2d at 219. I have been presented with no new argument calling into question the court's construction, which was based upon the reality, as would have been well known to a person or ordinary skill in the art at the time of the invention, that under the specification and the prosecution history, in large part what distinguished the invention in question from prior art was the fact that the carbohydrate in question was derived from a consistent and refined source. Accordingly, I will adhere to my prior definition regarding this term.

FN14. In *Cargill,* Sears' expert also proposed a requirement that the carbohydrate source has a recognized CAS registry-a numerical identifier maintained under the auspices of the American Chemical Society. The CAS registry assigns a number to each new substance registered to describe such properties and information as molecular formula, structure diagram, systemic names, generic names, proprietary or trade names for registered substances. Because there was no intrinsic evidence in the record suggesting the additional requirement of a CAS number, I rejected this additional suggested definitional provision.

4. *Chloride Salt*

The term "chloride salt", as utilized in the '793 patent, does not seem to be controversial. In *Cargill* I defined this term, based upon agreement of the parties, as a salt in which the anion, or negatively charged portion, is comprised of chlorine, and can include sodium chloride, magnesium chloride and calcium chloride .FN15 Cargill, 334 F.Supp.2d at 220. The parties appear to be in agreement with regard to my construction of this term.

FN15. A salt is generally accepted by one of ordinary skill in the art as a neutralization product of an acid and a base.

5. *Thickener*

Claims four through six and eight of the '793 patent and claims five through eight of the '622 patent provide for inclusion of a thickener with the previously described solution and, unlike the case with regard to colorants, also provide weight by percentage limits for such thickeners. The parties also disagree upon the definition of this term, and specifically whether it must be a separately added ingredient, or instead can be

inherent in the other materials included within the composition.

A "thickening agent" is described by one source as "[a]ny of a variety of hydrophilic substances used to increase the viscosity of liquid mixtures and solutions". Hawley's at 1234. The '793 patent describes the use of thickeners envisioned by the inventors as follows:

Thickeners are used in certain applications as the third key component to increase the viscosity of the composition so that the liquid remains in contact with the road surface or with the solid particles in piles of rocksalt/sand, or rocksalt/aggregates, or salt alone, or sand or aggregate. Thickeners are mainly cellulose derivatives or high molecular weight carbohydrates.

'793 Patent, col. 2, ln. 63-col. 3, ln. 2. To be sure, inclusion of the phrase "the third key component" in the '793 patent does provide reason for pause. Nonetheless, it is generally understood-and indeed spelled out in the patent-that thickeners, whose sole function is to increase viscosity of a solution, are typically polymers, high molecular weight carbohydrates or cellulose derivatives, including carbohydrates.

In *Cargill,* the parties vigorously contested the question of whether the thickener described in claims four through six and eight of the claims of the ' 793 patent must be additives to the solution otherwise described, or instead could be inherent in the composition itself. After reviewing the patent and considering the opinions of experts, I concluded that a person of ordinary skill in the art would not understand that the thickener had to be a discrete, separately added constituent, as distinct from comprising a substance or material inherent in the composition. Accordingly, I construed the term to mean "a substance or material, whether inherent in or separately added to a composition, which causes an increase in the composition's viscosity." Cargill, 334 F.Supp.2d at 222. The ADM defendants urge me to reverse fields and now hold that the thickener contemplated by the inventors must be separately added.

When originally presented to the PTO, the claims ultimately included within the '793 patent did not make reference to a molecular weight range for the specified thickener. This fact led the examiner to reject the claims as being impermissibly indefinite, noting that

it is unclear as to the types of carbohydrates encompassed by the claim. Since the types are not recite[d] the claim is vague and indefinite *since the carbohydrate and thickener can be one in the same*

ADM Exhibits (Dkt. No. 172), Exh. H, at ADM 10210 (emphasis added). To overcome this objection the applicants added a provision defining the molecular weights for the thickeners, the specification language now providing that

[t]hickeners are mainly cellulose derivatives or high molecular weight carbohydrates. Typical molecular weights for cellulose derivatives are for methyl and hydroxy propyl methyl celluloses from about 60,000 to 120,000 and for hydroxy ethyl celluloses from about 750,000 to 1,000,000. Carbohydrate molecular weights range from about 10,000 to 50,000.

'793 Patent, col. 3, lns. 1-7; '622 Patent, col. 3, lns. 9-15. In their response to the examiner's rejection, the applicants noted that the thickener contemplated was separate from other components, observing that as a result of the amendment,

[w]ith respect to the thickener, claim 5 and claim 14 now recite that the thickener is selected from the group

consisting of cellulose derivatives and carbohydrates, and recites the specific molecular weight range for both of these components which clearly distinguish them by molecular weight from the carbohydrate component now specifically recited as to its type, and in the range of 180 to 1,000.

ADM Exhibits (Dkt. No. 172), Exh. H, at ADM 10254.

It is true, as the ADM defendants now argue, that through prosecution estoppel a party may disavow coverage of a certain subject matter. *See* Omega Eng'g, Inc. v. Rayteck Corp., 334 F.3d 1314, 1333 (Fed.Cir.2003) ("[P]rosecution disclaimer may arise from disavowals made during the prosecution of ancestor patent applications.") (citations omitted). It does not follow from this history, however, that because the thickener specified in the '793 and '622 patents must be of a distinctly different molecular weight than the carbohydrates and sugars involved it must by definition derive from a separately added ingredient. At no time during the prosecution process associated with the two patents in suit did the applicants state to the PTO that the thickener must be separately added. There are in fact many carbohydrate sources which contain both low and high molecular weight carbohydrates; indeed, example two, recited in both the '793 and '622 patents, reveals an inherent thickener increasing the specified composition's viscosity through the addition of high maltose corn syrup which is also a potential source of low molecular weight carbohydrates.

While I reject the ADM defendants' argument that the prosecution history bars Sears from now claiming inherency, as opposed to the requirement that the thickener be a separately added ingredient as they contend, I do agree that refinement of my original definition is necessary to reflect the specification of weight ranges for the thickeners. Accordingly, I will define the term "thickener" as "a substance or material, whether inherent in or separately added to a composition, separate from the low molecular weight carbohydrate and chloride salt, which consists of either 1) a cellulose derivative with molecular weights of about 60,000 to 1,000,000 or 2) a carbohydrate with molecular weights of about 10,000 to 50,000, which causes an increase in the composition's viscosity."

6. *Colorant*

Dependent claims three and six of the '793 patent and three and seven of the '622 patent provide for the inclusion of a colorant in the invention described in claims one and four, respectively, in order "to provide visual aid in applying the composition to a surface." Once again, the parties differ concerning this term, their disagreement centering upon whether the colorant must be a separately added ingredient, or instead can be inherent in one of the other prescribed constituents.

According to one authoritative chemical dictionary, the term "colorant" is described as a "substance that imparts color to another material or mixture. Colorants are either dyes or pigments and may be (1) naturally present in a material ... (2) admixed with it mechanically ... or (3) applied to it in a solution". Hawley's at 322. As can be seen, this definition does not appear to limit the term to color additives, but instead is sufficiently broad to allow for inclusion of pigmented or dyed materials already included within the formulation.

To be sure, there is some facial appeal to the argument that use of the phrase "further includes" in the relevant claims suggests that the addition of a separate colorant as an ingredient was envisioned by the inventors. This proffered interpretation, however, is belied by the illustrations given in the patent. Certain of the examples cited in the '793 patent describe materials which are in some way colored in appearance

without the introduction of a separate ingredient to instill color. While in examples I and II a colorant (Caramel YT25) is added, example III describes a solution, with high maltose corn syrup and industrial grade magnesium chloride solution as the key ingredients, which has an appearance described as "[c]lear, light brown" without the addition of any separate colorant.

Based upon the cited examples, the stated objective of including a colorant, and the Hawley's definition of the term, in *Cargill* I defined the term "colorant" to include "a substance or material, whether inherent in or separately added to the specified composition, which imparts color to the composition," rejecting the restrictive reading of the term "further" which would exclude the possibility of a colorant already inherent and present in the solution described in claims one and four of the '793 patent. Because the ADM defendants raise no arguments not previously considered in connection with my *Cargill* interpretation of this term, I will adhere to that construction.

7. *Sugars*

While not construed in *Cargill,* of necessity the parties both seek construction of the term sugars, a critical term predominating in the '622 patent. Like the word "carbohydrates", "sugars" is a commonly understood term among organic chemists. In this instance, however, the inventor has once again chosen, by employing specific language within the patent's specification, to define sugars more narrowly for purposes of the patent, to "include mono-to decasaccharides which have molecular weights from 180 to 1638." *See* '622 Patent, col. 9, lns. 63-67. As defendants acknowledge, a patentee is entitled to act as his or own lexicographer and give special definition to a particular claim term, in which instance that definition controls even if it "differs from the meaning [the claim term] would otherwise possess." Phillips, 415 F.3d at 1316.

I have reviewed carefully the '622 patent, and in particular the specification, in an effort to discern the intent of the inventors and the interpretation of the term "sugars" to a person of ordinary skill in the art. Generally speaking, sugars are defined to mean monosaccharides and oligosaccharides. The '622 patent, however, limits the qualifying monosaccharides to hexoses, or sugars each containing six carbon atoms with a resulting molecular weight of 180. The upper limits placed by the '622 patent corresponds to a polymerization of ten, which equates to a decasaccharide. Based upon the '622 patent, and consistent with the approach taken with respect to the related '793 patent, I construe the term "sugars" to mean "hexoses and higher saccharides based on hexoses up to decasaccharides, which are obtained from a refined and consistent source."

8. *Constituents*

Although one might anticipate that the term "constituents" would be relatively non-controversial, taking on its ordinary meaning as the functional equivalent of "elements" or "ingredients", the parties also differ as to its meaning. At the heart of their disagreement is a dispute over whether the term denotes the ingredients of the de-icing and anti-icing composition, as Sears argues, or instead the aqueous solution, a position espoused by the defendants.

Ordinarily, unless compelling circumstances dictate otherwise, a term of common usage such as "constituents" should be given its ordinary and customary meaning when used in a patent claim. *See* Kagel Co., Inc. v. AMF Bowling, Inc., 127 F.3d 1420, 1427 (Fed.Cir.1997) (noting that absent "an express intent to impart a novel meaning to a claimed term, the term takes on its ordinary meaning"); CCS Fitness, 288 F.3d at 1366 (stating that a court construing patent terms should "indulge a 'heavy presumption' that a claim term carries its ordinary and customary meaning"). While the term "constituents" does not appear to be

susceptible to widely varying definitions from a lay point of view, the appropriate point of reference is a person of ordinary skill in the art. That the term "constituents" is no more controversial or ambiguous among those of ordinary skill in the art than with the lay population, however, is confirmed in this case by the declaration of Dr. Bruce Nauman. *See* Nauman Second Decl. (Dkt. No. 183-2) para. 7.

The rub comes with the question, as squarely presented by the parties, of whether the term "constituents" relates to the "aqueous solution" specified in the two patents in suit, or instead the entire composition. I find it unnecessary to resolve this issue, since the question was laid to rest with the earlier determination of the meaning of the term "balance". Addressing that term in *Cargill,* I essentially found that although the composition specified in the '793 patent-a circumstance which would apply with equal vitality to the '622 patent-was in fact the aqueous solution specified, when addressing the definition of the term "balance" I concluded that in addition to the carbohydrates, chloride salts, water, colorants and thickeners as specified, the composition could also include "incidental impurities or harmless ingredients associated with the commercial sources of the key components in the invention ...." Cargill, 334 F.Supp.2d at 220-21. Accordingly, I will define constituents in accordance with its ordinary meaning, to include ingredients of the de-icing and anti-icing composition specified.

9. ***About***

The parties further quarrel over the term "about", despite its relatively benign nature and acceptance in common parlance. Ordinarily, as Sears notes, the term would simply mean "approximately", and would not require further construction. Defendants argue, however, that the term should not be construed to permit expansion of the specified molecular weight ranges to cover decasaccharides outside of the specified Markush group comprised of "glucose, fructose, higher saccharides based on glucose and fructose and mixtures thereof." FN16

FN16. As the Federal Circuit has recognized,
[a] Markush group is a listing of specified alternatives of a group in a patent claim, typically expressed in the form: a member selected from the group consisting of A, B, and C.

Abbott Laboratories v. Baxter Pharm. Products, Inc., 334 F.3d 1274, 1280 (Fed.Cir.2003). Markush group listing is generally considered to signify a closed category; "[i]f a patentee desires mixtures or combinations of the members of the Markush group, the patentee would need to add qualifying language while drafting the claim" such as occurred in this action. *See* id. at 1281.
While stressing the importance of intrinsic source guidance for patent claim terms, the Federal Circuit has not altogether abandoned other, previously well-accepted sources, including dictionaries, to assist in the claim construction exercise. That court confirmed the continued availability of such sources in *Phillips,* stating that

[a]s we have noted above, however, we do not intend to preclude the appropriate use of dictionaries. Dictionaries or comparable sources are often useful to assist in understanding the commonly understood meaning of words and have been used both by our court and the Supreme Court in claim interpretation.

Phillips, 415 F.3d at 1322 (citations omitted).

In this case the term "about" is defined in one as meaning "reasonably close to", "almost", or "in the

vicinity." Merriam Webster's Collegiate Dictionary (10th ed.1995). The need for the use of the term "about" was explained by Professor Nauman in his declaration, to address the common practice of those of ordinary skill in the art to attribute whole numbers for atomic weights of hydrogen, carbon and oxygen despite the fact that such weight would actually vary depending upon the specific isotopes within those molecules. *See* Nauman Second Decl. (Dkt. No. 183-2) para.para. 18-19. Accordingly, while it is true that the term "about" lacks universal meaning in patent claim jargon, depending upon the particular facts of the case, *see* Pall Corp. v. Microne Separations, Inc., 66 F.3d 1211, 1217 (Fed.Cir.1995), I will define it in this case based upon its plain and ordinary meaning to be "approximately the value as stated." *See* Novartis Pharm. Corp. v. Apotex Corp., 02 Civ. 8917, 2006 WL 626058, at *9-10 (S.D .N.Y. Mar. 13, 2006). While I find no need to define about, which is understandable and intended to mean approximately, giving a margin for testing error, I agree with the defendants-and Sears does not appear to argue otherwise-that it should not be utilized so loosely as to permit expansion to encompass, for example, where 1500 is specified as an outer limit, to include decasaccharides with the molecular weight of 1638 with regard to the '793 patent.FN17

FN17. The significance of the disagreement over the term "about" relates to whether Sears could potentially claim that low molecular weight carbohydrates or sugars extending above the specified molecular weight ranges are intended to be encompassed within the purview of patent claims. During the *Markman* hearing Sears disavowed any such intention, specifically stating, for example, that decasaccha rides, with a molecular weight of approximately 1638, would fall outside of claim one of the ' 793 patent, which specifies 1500 as an upper limit. With that assurance, the disagreement over the meaning of the term "about" takes on markedly decreased significance.

10. ***Low/High Molecular Weight***

The ADM defendants also seek interpretation of the phrases "low molecular weight" and "high molecular weight", as employed within the '793 patent. In my view, refinement of those terms to articulate specific weight ranges would result in needless redundancy since, especially with regard to low molecular weight, particular limits are specified. As a rule of construction, a term should ordinarily not be given an interpretation which should render other portions of a claim redundant or unnecessary. Comark Comm'cns v. Harris Corp., 156 F.3d 1182, 1187 (Fed.Cir.1998). Accordingly, I accept Sears' suggestion, and find no need to interpret these terms.

11. ***Said Carbohydrate***

The '793 patent claims are formatted in such a way as to define carbohydrate not only in terms of express molecular weight ranges, but also by using a Markush claim format. Illustrative of this are claims one and seven of the '793 patent, which include language requiring that "[s]aid carbohyrdate ... [be] at least one selected from the group consisting of glucose, fructose and higher saccharides based on glucose and/or fructose and mixtures thereof." The ADM defendants now urge the court to interpret the phrase "said carbohydrate", in light of this language, in such a way as to make it clear that the mixture in question can contain nothing other than the materials specified in the Markush group.

Undeniably-and Sears does not contend otherwise-the low molecular weight carbohydrates referenced in the '793 patent, for example, must be from one of the specified group members. The suggestion, however, that the mixture specified in the patent claims can contain nothing else repeats an argument previously raised with regard to such terms as "balance" and "aqueous solution." For the reasons previously articulated, I decline the invitation to interpret that phrase as closed and to exclude, based upon interpretation of this

phrase, incidental impurities which I have already found elsewhere to be includable.

III. *SUMMARY AND ORDER*

While seeking interpretation of claim terms not previously addressed in my decision in *Cargill* with regard to the '793 patent, and noting that none of the terms set forth in the separate but related '622 patent have yet been construed by the court, the defendants in this case urge many arguments, most of which are variants of those aired in *Cargill*. The goal of fostering predictability of results, with special applicability in the patent arena, requires particular deference to those earlier findings. As Justice Harlan once observed,

[v]ery weighty considerations underlie the principle that courts should not lightly overrule past decisions. Among these are the desirability that the law furnish a clear guide for the conduct of individuals, to enable them to plan their affairs with assurance against untoward surprise; the importance of furthering fair and expeditious adjudication by eliminating the need to relitigate every relevant proposition in every case; and the necessity of maintaining public faith in the judiciary as a source of impersonal and reasoned judgments. The reasons for rejecting any established rule must always be weighed against these factors.

Moragne v. States Marine Lines, Inc., 398 U.S. 375, 403, 90 S.Ct. 1772, 1789 (1970).

Having carefully reviewed the '793 and '622 patents, as well as the documents associated with their prosecution, I find that the terms set forth in those patents are susceptible to resolution based upon the available intrinsic evidence without the need to resort to consideration of dictionaries, treatises or expert opinions, except as otherwise noted. Based upon consideration of the available evidence, it is hereby

ORDERED as follows:

1) The disputed terms of the '793 and '622 patents are hereby construed by the court as follows:

Terms	Construction
"de-icing and anti-icing composition"	no construction
"aqueous solution"	a uniformly disbursed liquid mixture of two or more components, one of which is water, and which can contain incidental amounts of insoluble components
"low molecular weight carbohydrate"	a material which includes carbon, hydrogen, and oxygen where the ratio of hydrogen to oxygen is the same as in water, and which is obtained from a refined and consistent source
"balance"	aside from the other specified ingredients, including low molecular carbohydrates (or sugars) and chloride salts, and with the possible addition of colorants and thickeners, as well as incidental impurities or harmless ingredients associated with the commercial sources of the key components in the invention, the solution shall contain only water

"thickener"	a substance or material, whether inherent in or separately added to a composition, separate from the low molecular weight carbohydrate and chloride salt, which consists of either 1) a cellulose derivative with molecular weights of about 60,000 to 1,000,000 or 2) a carbohydrate with molecular weights of about 10,000 to 50,000, which causes an increase in the composition's viscosity.
"colorant"	a substance or material, whether inherent in or separately added to the specified composition, which imparts color to the composition
"sugars"	hexoses and higher saccharides based on hexoses up to decasaccharides, which are obtained from a refined and consistent source
"constituents"	construed in accordance with its ordinary meaning, to include ingredients of the de-icing and anti-icing composition specified
"about"	approximately the value as stated
"low/high molecular weight"	no construction
"said carbohydrate"	no construction

2) The court will conduct a conference in this matter, to be held by telephone on August 9, 2007 at 11:00 a.m. to discuss the case and the implementation of the schedule for submission of dispositive motions. Plaintiffs' counsel is hereby directed to initiate the call on that date by contacting chambers at (315) 234-8620.

N.D.N.Y.,2007.
Sears Petroleum & Transport Corp. v. Archer Daniels Midland Co.