

United States District Court,  
E.D. Michigan, Southern Division.

**AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., a Delaware corporation,**  
Plaintiff.

v.

**TRW VEHICLE SAFETY SYSTEMS, INC., an Ohio corporation,**  
Defendant.

**June 18, 2004.**

## **REPORT AND RECOMMENDATION**

**JOHN R. THOMAS, Special Master.**

This patent litigation has been presented to the Special Master for the purpose of claim construction pursuant to *Markman v. Westview Instruments*, 52 F.3d 967 (Fed.Cir.1995), *aff'd*, 517 U.S. 370 (1996). This report sets forth the Special Master's recommended claim construction to the Court. In addition, this report recommends that the Court deny Plaintiff Automotive Technologies International Inc.'s Motion to Strike References to the Accused Devices and Declaration of Dr. Tushar K. Ghosh.

### **I. BACKGROUND**

Automotive Technologies International Inc. ("ATI") is the proprietor of U.S. Patent No. 6,250,668 ("the '668 patent"), titled "Tubular Airbag, Method of Making the Same and Occupant Protection System Including the Same." The '668 patent relates to air bags, useable in automobiles and other vehicles, that protect occupants during crashes or roll overs. The patent's abstract describes the invention as an "airbag for a vehicle formed from sections of material joined to one another, e.g., heat-sealed or adhesively-sealed, such that interconnected compartments receivable of an inflating medium are formed."

The '668 patent resulted from a series of continuation-in-part applications having a filing date as early as May 23, 1994. Issued on June 26, 2001, the '668 patent incorporates a lengthy specification, including both thirty sheets of diagrams and thirty "objects and advantages" of the invention. '668 patent, col. 11-12. The '668 patent also contains 45 claims directed towards vehicles and airbags. The following claims, which house some of the limitations discussed later in this report, are representative:

1. An airbag for a vehicle, comprising

a plurality of sheets of material, two of said sheets of material being at least partially in opposed relationship to one another,

said two opposed sheets of material being joined to one another to form a plurality of substantially straight, interconnected compartments between said two opposed sheets of material receivable of an inflating

medium.

26. A vehicle comprising

a passenger compartment,

a door, and

a safety device for protecting an occupant in the passenger compartment in a crash involving the vehicle, said safety device comprising

a gas generator;

a sensor operatively connected to said gas generator for sensing a crash requiring activation of said gas generator;

an inflatable element in flow communication with said gas generator for being inflated with gas from said gas generator upon activation of said gas generator;

said inflatable element having a non-inflated mode and an inflated mode and being positioned adjacent said door in the inflated mode,

said inflatable element comprising

a first material layer defining a front part of said inflatable element;

a second material layer defining a back part of said inflatable element, selected parts of said first material layer and said second material layer other than the periphery of said first and second material layers being joined to one another to thereby define joints at locations at which said first and second material layers are joined to one another, said inflatable element thereby incorporating a plurality of cells defined between said joints.

39. An airbag for a vehicle, comprising

a plurality of sections of material, said sections of material being made of film,

said sections of material being joined to one another to form a plurality of substantially straight, interconnected compartments receivable of an inflating medium.

40. An airbag for a vehicle, comprising

a plurality of sections of material, at least one of said sections of material being a non-perforated sheet of film including tear propagation arresting means arranged in connection therewith for arresting the propagation of a tear in said film sheet,

said sections of material being joined to one another to form a plurality of substantially straight, interconnected compartments receivable of an inflating medium.

Following the issuance of the '668 patent, ATI commenced infringement litigation against TRW Vehicle Safety Systems, Inc. ("TRW"). At this early stage in these proceedings, the parties seek construction of the '668 patent claims. *Key Mfg. Group, Inc. v. Microdot, Inc.*, 925 F.2d 1444, 1448 (Fed.Cir.1991) ("Before analyzing a claim to determine whether infringement occurs, the court must properly interpret the claim."). In particular, in their briefs and in a May 19, 2004 hearing held before the Special Master, ATI and TRW dispute the construction of a number of claim limitations appearing in the '668 patent. This report will accordingly focus upon the construction of these particular claim limitations. *See Scripps Clinic & Research Foundation v. Genentech, Inc.*, 927 F.2d 1565, 1580 (Fed.Cir.1991) ("it is efficient to focus on the construction of only the disputed elements or limitations of the claims.").

## **II. MOTION TO STRIKE**

ATI has filed a Motion to Strike References to the Accused Devices and Declaration of Dr. Tushar K. Ghosh. In its motion, ATI requests the Court to strike (1) the Declaration of Dr. Ghosh submitted by TRW, (2) any of TRW's references to Dr. Ghosh's declaration, and (3) any references to the accused devices and related manufacturing methods in TRW's Proposed Claim Construction Statement. The Special Master recommends that the Court deny this motion. With respect to Dr. Ghosh's declaration, the U.S. Court of Appeals for the Federal Circuit ("Federal Circuit") has held that "it is entirely appropriate, perhaps even preferable, for a court to consult trustworthy extrinsic evidence to ensure that the claim construction it is tending to from the patent file is not inconsistent with clearly expressed, plainly apposite, and widely held understandings in the pertinent technical field." *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1309 (Fed.Cir.1999). Dr. Ghosh's declaration provides background information on the airbag field that may assist the Court in parsing the '668 patent. It is also notable that although ATI seeks to strike Dr. Ghosh's motion, during the May 19, 2004 hearing before the Special Master, counsel for ATI referred to Dr. Ghosh's testimony while opining that a proposed TRW claim construction employed terms that have a specialized meaning with the field of weaving.

Regarding the references in TRW's Proposed Claim Construction Statement to the airbags accused of patent infringement, the Federal Circuit has also explained that identification of the accused devices can assist a court in focusing on those claim limitations pertinent to the dispute at hand. *Pall Corp. v. HemaSure, Inc.*, 181 F.3d 1305, 1308 (Fed.Cir.1999) ("Although the construction of the claim is independent of the device charged with infringement, it is convenient for the court to concentrate on those aspects of the claim whose relation to the accused device is in dispute."); *Scripps Clinic*, 927 F.2d at 1590 ("Of course the particular accused product (or process) is kept in mind, for it is efficient to focus on the construction of only the disputed elements or limitations of the claims."). Upon review of the contested TRW submissions, the Special Master concludes that the TRW discussion of the accused devices assists in the identification of those claim limitations relevant to this dispute, rather than impermissibly mingling arguments concerning claim interpretation and infringement. The Special Master therefore recommends that the ATI Motion to Strike References to the Accused Devices and Declaration of Dr. Tushar K. Ghosh be denied.

## **III. PRINCIPLES OF CLAIM CONSTRUCTION**

Having recommended the disposition of the ATI Motion to Strike, the Special Master now moves to the construction of the claim limitations in dispute between the litigants. Following the seminal decision in *Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed.Cir.1995), *aff'd*, 517 U.S. 370 (1996), claim interpretation is a matter of law exclusively within the province of the court. To determine the proper scope and meaning of the patent claims asserted, the court consults intrinsic evidence, which consists of: (1) the

claims, (2) the other portions of the written description, and, if in evidence, (3) the prosecution history. *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed.Cir.1996).

The Federal Circuit indulges a "heavy presumption" that the claim terms carry their ordinary and customary meaning. *Johnson Worldwide Assocs. v. Zebco Corp.*, 175 F.3d 985, 989 (Fed.Cir.1999). "In the absence of an express intent to impart a novel meaning to claim terms, an inventor's claim terms take on their ordinary meaning." *Teleflex, Inc. v. Ficosa North Am. Corp.*, 299 F.3d 1313, 1325 (Fed.Cir.2002). This accepted, usual meaning is measured according to the understanding of the "community of those of ordinary skill in the relevant art." *Leggett & Platt, Inc. v. Hickory Springs Mfg. Co.*, 285 F.3d 1353, 1357 (Fed.Cir.2002).

The "common understanding" of terms used in patent claims may be reflected in dictionaries, encyclopedias, and technical treatises. *Ferguson Beauregard v. Mega Sys., LLC*, 350 F.3d 1327, 1338 (Fed.Cir.2003). The Federal Circuit has explained that dictionaries and other learned texts are not "prohibited extrinsic evidence," *Vanguard Products Corp. v. Parker Hannifin Corp.*, 234 F.3d 1370, 1373 (Fed.Cir.2000), but rather may in appropriate circumstances "be considered along with the intrinsic evidence when determining the ordinary meaning of claim terms." *Bell Atlantic Network Services, Inc. v. Covad Comm. Group, Inc.*, 262 F.3d 1258, 1267 (Fed.Cir.2001). While dictionaries may be used to ascertain the plain and ordinary meaning of claim terms, the intrinsic record is used to resolve ambiguity in claim language or, where it is clear, trump inconsistent dictionary definitions. *Texas Digital Sys., Inc. v. Telegenix, Inc.*, 308 F.3d 1193, 1204 (Fed.Cir.2002).

#### **IV. ANALYSIS OF THE DISPUTED CLAIM LIMITATIONS**

##### **A. "A Plurality of Sheets of Material"**

Claim 1 of the '668 patent in part recites "a plurality of sheets of material." There seems to be no serious dispute that the term "plurality" means "at least two." *See, e.g., ResQNet.com, Inc. v. Lansa, Inc.*, 346 F.3d 1374, 1382 (Fed.Cir.2003) (" 'each of a plurality of fields' means 'each of at least two fields.' "); *Dayco Prods., Inc. v. Total Containment, Inc.*, 258 F.3d 1317, 1327-28 (Fed.Cir.2001) ("In accordance with standard dictionary definitions, we have held that 'plurality,' when used in a claim, refers to two or more items, absent some indication to the contrary."); *York Products, Inc. v. Central Tractor Farm & Family Center*, 99 F.3d 1568, 1575 (Fed.Cir.1996) ("a plurality ... of ridge members" interpreted to mean "at least two ridge members.").

The parties do dispute the meaning of the limitation "sheets of material." Finding no further elaboration of this term within the written description of the '668 patent, TRW relies upon the AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE (4th ed.2000), for the following definition of the term "sheet": "A broad, thin, usually rectangular mass or piece of material, such as paper, metal, glass, or plywood." From this starting point, TRW asserts that the limitation "sheets of material" means "separate broad and thin pieces of material."

In contrast to TRW, ATI contends that the limitation "sheets of material" speaks for itself and requires no additional construction. Notably, ATI takes this position with respect to many of the disputed limitations at issue. According to ATI, here and elsewhere, the '668 patent recites the claimed invention in simple, straightforward language. Because lay persons can themselves discern the meaning of such claim limitations as "sheets of material," ATI asserts, no further clarification is necessary or even desirable. ATI explains that further interpretation simply augments the claims with additional words that must themselves be understood, and risks engaging in the impermissible practice of reading additional limitations into the claim. *See*

SuperGuide Corp. v. DirecTV Enterprises, Inc., 358 F.3d 870, 875 (Fed.Cir.2004) ("it is important not to import into a claim limitations that are not a part of the claim.").

In weighing these competing views, the Special Master is guided by the Federal Circuit's persistent statements that in the post- *Markman* era, "the trial judge has the duty and responsibility to interpret the claims at issue." *Exxon Chem. Patents, Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1556 (Fed.Cir.1995). *See also* *AFG Indus., Inc. v. Cardinal IG Co.*, 239 F.3d 1239, 1247 (Fed.Cir.2001) ("It is critical for trial courts to set forth an express construction of the material claim terms in dispute ...."); *Augustine Medical, Inc. v. Gaymar Indus., Inc.*, 181 F.3d 1291, 1297 (Fed.Cir.1999) (observing that the district court discharged "its duty to give meaning to the claims"); *Personalized Media Comm., LLC v. Int'l Trade Comm'n*, 161 F.3d 696, 705 (Fed.Cir.1998) (noting a court's "duty as the construer of patent claims."). It is difficult to see how that duty can be fulfilled by failing to interpret disputed claim limitations at all. An unwillingness to discern the meaning of claim limitations would undermine one of the principal rationales underlying the *Markman* decision, the consistent application of established rules of interpretation to patent claims, leading to increased certainty and fairness for patentees and accused infringers alike. *Markman*, 52 F.3d at 978-79. Further, the Federal Circuit has also explained that a properly conducted claim construction lends greater clarity to the claim terms, without introducing limitations from without the claims. *See Scripps Clinic & Research Foundation v. Genentech, Inc.*, 927 F.2d 1565, 1580 (Fed.Cir.1991) ("the construction of claims is simply a way of elaborating the normally terse claim language: in order to understand and explain, but not to change, the scope of the claims."); *see also Embrex, Inc. v. Serv. Eng'g Corp.*, 216 F.3d 1343, 1347 (Fed.Cir.2000) (quoting *Scripps Clinic* ).

A review of Federal Circuit precedent reveals that the court endeavors to lend additional clarification to disputed claim limitations, even to those that upon first impression might appear self-evident. *See, e.g.*, *Inverness Med. Switzerland GmbH v. Warner Lambert Co.*, 309 F.3d 1373, 1378-82 (Fed.Cir.2002) (construing "on"); *Ecolab Inc. v. Paraclipse, Inc.*, 285 F.3d 1362, 1374-76 (Fed.Cir.2002) (construing "contain"); *Kustom Signals, Inc. v. Applied Concepts, Inc.*, 264 F.3d 1326, 1329-32 (Fed.Cir.2001) (construing "or"); *Anderson v. Int'l Eng'g & Mfg Inc.*, 160 F.3d 1345, 1348-49 (Fed.Cir.1998) (construing "away"); *Reinshaw PLC v. Marposs Socita' Per Azioni*, 158 F.3d 1243, 1250-53 (Fed.Cir.1998) (construing "when"). The Federal Circuit has less often stayed its hand, declining to further interpret a claim term only in cases where the term's meaning is so apparent that no additional definition is required. *See W.E. Hall Co., Inc. v. Atlanta Corrugating, LLC*, 370 F.3d 1343, 2004 WL 1237608, (Fed. Cir. June 7, 2004) (construing the term "open," but observing that the claim limitation "single piece" was "sufficiently clear to make even resort to a dictionary unnecessary .").

The recent Federal Circuit decision in *E-Pass Technologies, Inc. v. 3Com Corp.*, 343 F.3d 1364 (Fed.Cir.2003) is instructive on this point. There the Federal Circuit devoted considerable attention to the meaning of the claimed term "card." The district court had previously concluded that the term incorporated an industry standard defining the dimensions of credit cards. *Id.* at 1366. The Court of Appeals ultimately disagreed, reasoning that the term "card," as used in the claims of the patent at issue, meant a "flat, rectangular piece of stiff material." *Id.* at 1371.

The *E-Pass Technologies* case is one of many demonstrating that claim limitations that may appear straightforward at first blush may, under the withering gaze of high-stakes litigation, be subject to ambiguities and conflicting interpretations. Like the term "sheet," the limitation "card" could be said to be straightforward and not especially technical. Yet competing views arose over the term nonetheless, and the Federal Circuit's response was not to let the term define itself but rather to clarify its meaning through

further elucidation. Applying this holding to the present case, the Special Master therefore declines the invitation to let each of the claim limitations involved in this litigation lie. Unless the meaning of a particular claim limitation is manifest and absolutely incapable of benefitting from further definition, this report will endeavor to construe that limitation employing the protocols established by the case law of the Federal Circuit.

As in the *E-Pass Technologies* case, the Special Master is unable to discern any particular meaning associated with the claim limitation "sheet." No passage in either the specification or the prosecution history suggests that anything other than the ordinary meaning of the term "sheet" applies. Under these circumstances, the Special Master relies upon the earlier Federal Circuit decision in *Strattec Security Corp. v. General Automotive Specialty Co.*, 126 F.3d 1411 (Fed.Cir.1997), which interpreted the claim limitation "conductive sheet material" found in U.S. Patent No. 4,250,482. The Court of Appeals reasoned:

A review of the '482 patent and its prosecution history reveals that the terms "sheet" and "sheet-like" do not have any special meanings in the art and that the '482 invention used these terms in their ordinary, everyday sense, i.e., to describe something flat with a fairly broad surface relative to its thickness. The claims thus include within their literal scope only devices with conductive material that comprises a fairly broad surface relative to its thickness.

*Id.* at 1417-18. The Federal Circuit's definition does not differ markedly from the dictionary definition offered by TRW for the term "sheet." Therefore the Special Master construes the limitation "sheet" to mean "something flat with a fairly broad surface relative to its thickness."

The Special Master declines to include the additional word "separate" within this claim construction, as proposed by TRW. The Special Master can identify no affirmative statement within the intrinsic evidence of record requiring that the limitation "a plurality of sheets of material" include "separate" sheets.

The Special Master therefore recommends that the claim limitation "a plurality of sheets of material" be construed as meaning "at least two pieces of material with a fairly broad surface relative to their thickness."

## **B. "Two Opposed Sheets of Material Being Joined To One Another To Form ... Compartments"**

Claim 1, along with other claims of the '668 patent, in part recites "said two opposed sheets of material being joined to one another to form ... compartments." Both the limitations "opposed" and "joined" have attracted competing views. First, with respect to "opposed," TRW argues that the limitation "opposed sheets of material" mean "sheets having facing surfaces." ATI has offered no contrary construction, again stating that the phrase "opposed sheets of material" speaks for itself.

The written description of the '668 patent consistently uses the term "opposed" to define the relationship between the two sheets forming the airbag. *E.g.*, '668 patent, col. 22, line 31. Having reviewed the written description of the '668 patent, the Special Master concludes that the term "opposed" means simply "placed across from one another." Each of the embodiments discussed in the '668 patent, ranging from the "air mattress" embodiment illustrated in Figure 7 to the "self limiting" embodiment depicted in Figure 14, includes sheets that have been arranged in this fashion. This definition also comports with that of the related term "opposite." *See* AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE (4th ed. 2000) ("Placed or located directly across from something else or from each other: *opposite sides of a building.*" ).

In adopting a construction of the term "opposed" to mean "placed across from one another," the Special Master expressly declines to adopt TRW's proposed construction. The phrase "sheets having facing surfaces" might inappropriately imply a degree of symmetry between the airbag sheets. Although some of the embodiments of the invention of the '668 patent seem to have "facing" sheets, *e.g.*, Figure 7 (the "air mattress" embodiment), others appear to have more irregular outer contours, *e.g.*, Figure 6 (the "knee bolster" embodiment). It is, of course, impermissible to import limitations from particular embodiments of an invention into a patent's claims. *Arlington Indus, Inc. v. Bridgeport Fittings, Inc.*, 345 F.3d 1318, 1327 (Fed.Cir.2003) (inappropriate to "import a limitation from the preferred embodiments to restrict the meaning of a claim term.").

Also at issue between the litigants is whether the term "joined" refers to the claimed product in its final state, or whether the limitation describes how the airbag was manufactured. TRW asserts that this limitation requires that the claimed product be manufactured by bringing together two pieces of material. TRW opines that the use of heat sealing or adhesives, two manufacturing techniques described by the '668 patent, fall within this category. *E.g.*, '668 patent, col. 20, lines 24-26. In response, ATI asserts that this claim limitation refers to the passive state of being joined, and that it should not be further construed.

TRW's argument is reminiscent of the one made and rejected in *Vanguard Products Corp. v. Parker Hannifin Corp.*, 234 F.3d 1370 (Fed.Cir.2000). The claim at issue in that case called for gasket with an inner layer along with an outer layer "integral therewith." *Id.* at 1371. The accused infringer asserted that the term "integral therewith" should be construed to require the use of a co-extrusion technique to manufacture the gasket. *Id.* The Federal Circuit rejected this position, concluding that the specification of the patent-in-suit "shows that the term was used to describe the product, and not as a designation of a specific manufacturing process." *Id.* at 1372. In particular, the Court of Appeals reasoned that the claim was directed towards the product itself, not a method a manufacture, and that the patentee nowhere disclaimed the use of other manufacturing techniques. *Id.* The Federal Circuit also observed that a different claim of the patent-in-suit expressly recited that gasket layers be "co-extruded," and that limitations from one claim should not be read into another not specifically reciting that limitation. *Id.*

As in the *Vanguard Products* case, claim 1 of the '886 patent is directed towards a product, rather than being drafted in product-by-process format or otherwise including restrictions upon the method of manufacture through which that product can be made. Similarly, the Special Master has failed to locate any statement, in the written description or prosecution history, that suggests the '668 patent claims are limited to a particular manufacturing process. To the contrary, the '668 patent describes the production of airbags through at least four techniques: sewing, heat welding, adhesives and molding. *See, e.g.*, '668 patent, col. 2, lines 28-32 (sewing); col. 20, lines 24-26 (heat welding and adhesive); col. 21, lines 32-35 (blow molding). According to the '668 patent, the latter of these would not necessarily require that two sheets of material be joined during the production process. *See* '668 patent, col. 21, lines 32-35 ("this airbag can also be made by blow molding or other similar molding process, *i.e.*, as one unitary sheet."). Finally, claim 8 of the '668 patent, which is dependent upon claim 1, recites that each piece of material be "formed from a discrete sheet of material." It would therefore be improper to read this limitation into other claims of the '668 patent that do not expressly recite it. *See Tandon Corp. v. United States Int'l Trade Comm'n*, 831 F.2d 1017, 1023 (Fed.Cir.1987) (claims containing different limitations are presumed to be of different scope).

The Special Master therefore recommends to the Court that the claim limitation "two opposed sheets of material being joined to one another to form ... compartments" means "two pieces of material with a fairly

broad surface relative to their thickness that, in the airbag product, are placed across from each other and joined in order to form compartments."

### C. "Substantially Straight"

Claim 1, along with other claims of the '668 patent, calls for "substantially straight" airbag compartments. The Special Master has not found, nor have the parties identified, any passage in the patent's specification or prosecution history that quantifies or further elaborates upon the term "substantially straight."

Although TRW originally contended that this limitation meant "straight within real-world manufacturing tolerances," it abandoned this position during the oral hearing held before the Special Master. In contrast, ATI takes the position that the phrase "substantially straight" speaks for itself and requires no further construction. However, the Federal Circuit plainly believes that the term "substantially" deserves further elucidation, as demonstrated by a line of case law considering construction of the limitation "substantially" in a number of contexts. *See, e.g.,* Verve, LLC v. Crane Cams, Inc., 311 F.3d 1116, 1119-20 (Fed.Cir.2002) ("substantially constant"); Epcon Gas Sys., Inc. v. Bauer Compressors, 279 F.3d 1022, 1030-31 (Fed.Cir.2002) ("substantially below"); LNP Eng'g Plastics, Inc. v. Miller Waste Mills, Inc., 275 F.3d 1347, 1354-56 (Fed. Cir.2001) ("substantially completely wetted"); Ecolab, Inc. v. Envirochem, Inc., 264 F.3d 1358, 1364-69 (Fed.Cir.2001) ("substantially uniform"); Biotec Biologische Naturverpackungen GmbH v. Biocorp, Inc., 249 F.3d 1341, 1346-47 (Fed.Cir.2001) ("substantially water free").

Of these decisions, one close on point is York Products, Inc. v. Central Tractor Farm & Family Center, 99 F.3d 1568 (Fed.Cir.1996). Here the Federal Circuit reviewed the interpretation of the claim limitation "at least a substantial part of the entire height thereof." The Court of Appeals observed that the term "substantially" ordinarily means "considerable in extent," AMERICAN HERITAGE DICTIONARY SECOND COLLEGE EDITION 1213 (2d. ed.1982), or "largely but not wholly that which is specified." WEBSTER'S NINTH NEW COLLEGIATE DICTIONARY 1176 (9th ed.1983). 99 F.3d at 1572-73. Ultimately, the Federal Circuit approved of the district court's construction of the limitation "a substantial part of the entire height thereof" as requiring coverage of "nearly the entire height" of the relevant portion of the invention. *Id.* at 1573.

In view of the disclosures of the '668 patent, a comparable construction to the term "substantially straight" is appropriate here. Figure 7 of the '668 patent, illustrating one embodiment of the invention, shows compartments divided by parallel joints that are very nearly straight. However, Figure 7 depicts a slight curvature located near the end of the joint. It is also notable that the patent's specification discloses a number of other embodiments, including waffle-shaped compartments and compartments formed of concentric circles. '668 patent, Col. 22, Lines 35-38. These embodiments employ compartments that are not separated by substantially straight joints, but rather by joints that intersect or are curved. Federal Circuit jurisprudence establishes that subject matter that a patent discloses, but does not claim, is disclaimed. *See* Johnson & Johnston, 285 F.3d 1046, 1054 (Fed.Cir.2002) (*in banc*). Although this principle most famously applies to the doctrine of equivalents due to the *Johnson & Johnston* case, it applies with equal force to literal infringement. *See* Unique Products, Inc. v. Brown, 939 F.2d 1558, 1562-63 (Fed.Cir.1991) ("It is also well-established that subject matter disclosed but not claimed in a patent application is dedicated to the public."). In light of these disclosures, the limitation "substantially straight" should be construed strictly, requiring that the joints defining the airbag's compartments be straight for nearly their entire length. *See* Sage Products, Inc. v. Devon Indus., Inc., 126 F.3d 1420, 1425-26 (Fed.Cir.1997) (construing "manifestly limited claims" directed towards a "relatively simple structural device" strictly).

The Special Master therefore recommends to the Court that the term "substantially straight" means "straight along nearly the entire length of the joint forming the compartment."

#### **D. "Adjacent Said Door"**

Claim 26 requires that the inflatable element be "positioned adjacent said door in the inflated mode." The parties have not directed the Special Master to any intrinsic evidence further specifying the meaning of the term "adjacent." In such a case, Federal Circuit case law establishes a "heavy presumption" that the term enjoys its ordinary and customary meaning. *Johnson Worldwide Assocs. v. Zebco Corp.*, 175 F.3d 985, 989 (Fed.Cir.1999). The presumption would lead to a construction of the term "adjacent" as meaning "close to" or "near." *See* THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE (4th ed.2000) (defining "adjacent" as "close to; lying near" or "next to; adjoining"); *see also* *International Rectifier Corp. v. IXYS Corp.*, 361 F.3d 1363, 1373 (Fed.Cir.2004) (construing the claimed term "adjoining" and discussing the synonym term "adjacent"); *General Am. Transp. Corp. v. Cyro-Trans, Inc.*, 93 F.3d 766, 769-70 (Fed.Cir.1996) (noting district court's conclusion that the term "adjacent" means "not far off" or "not necessarily at but nearby or near").

The Federal Circuit has further counseled, however, that in appropriate circumstances the heavy presumption of ordinary meaning may be overcome. *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed.Cir.2002). It is also important to note that the Federal Circuit has stressed that claim construction is the "contextual interpretation of language," *Smithkline Beecham Corp. v. Apotex Corp.*, 365 F.3d 1306, 1314 (Fed.Cir.2004):

Claim interpretation requires the court to ascertain the meaning of the claim to one of ordinary skill in the art at the time of invention. *ResQNet.com, Inc. v. Lansa, Inc.*, 346 F.3d 1374, 1378 (Fed.Cir.2003); *Phillips Petroleum Co. v. Huntsman Polymers Corp.*, 157 F.3d 866, 871 (Fed.Cir.1998). This task requires the court to place the claim language in its proper technological and temporal context.

*Smithkline Beecham*, 365 F.3d at 1313. *See also* *Brookhill-Wilk 1, LLC v. Intuitive Surgical, Inc.*, 334 F.3d 1294, 1300 (Fed.Cir.2003) ("Our precedent referencing the use of dictionaries should not be read to suggest that abstract dictionary definitions are alone determinative. In construing claim terms, the general meanings gleaned from reference sources, such as dictionaries, must always be compared against the use of the terms in context, and the intrinsic record must always be consulted to identify which of the different possible dictionary meanings is most consistent with the use of the words by the inventor.").

Having carefully considered the evidence of record, the Special Master concludes that the "adjacent" limitation presents one of those cases where a term should be interpreted more narrowly than its broadest possible dictionary definition. Rather than requiring that the inflatable element of the airbag be located "close to" or "near" a door or doors, the term "adjacent" should be construed in the more narrow sense of "alongside" that door or doors.

Several evidentiary inputs point to this interpretation. The first of these is the wording of two of the '668 patent claims, claim 26 and claim 38. These two claims, which are each directed towards a vehicle, are similarly phrased. The principal difference between them is that claim 26 is directed towards a vehicle with "a door," while claim 38 concerns a vehicle with "front and rear doors on a common side." Notably, claim 26 requires that an inflatable element be "positioned adjacent said door in the inflated mode," while claim

38 recites that the inflatable element be "positioned adjacent both said front and rear doors in the inflated mode." The particularity of claim 38's wording strongly suggests that the inflatable element be "alongside" the front and rear doors, rather than merely near both of them. Because claim limitations must be construed consistently within a particular patent instrument, this meaning of the term "adjacent" should apply to claim 26 as well. *See Inverness Med. Switzerland GmbH v. Princeton Biomeditech Corp.*, 309 F.3d 1365, 1371 (Fed.Cir.2002) ("A claim term used in multiple claims should be construed consistently."); *Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1342 (Fed.Cir.2001) ("a claim term should be construed consistently with its appearance in other places in the same claim or in other claims of the same patent").

This construction is supported by one of the numerous "objects of the invention" stated in the '668 patent. The thirtieth, and final, object of the invention is: "To provide an airbag designed to inflate in the passenger compartment alongside the side door of the vehicle." '668 patent, col. 12, lines 58-59. Although every claim need not support a particular "object of an invention" recited in the patent's specification, *see Brookhill-Wilk I, LLC*, 326 F.3d at 1222 (declining to limit interpretation of claim based upon statements in "objects of the invention" and "background" sections of the asserted patent), the express usage of the term "alongside" here nonetheless supports this reading of the term "adjacent" in the patent's claims.

The deposition testimony of an inventor named in the '668 patent, Dr. Breed, further promotes the construction of the term "adjacent" as meaning "alongside." In deposition testimony, Dr. Breed explained that a "driver's side or a passenger side frontal impact airbag" was not "adjacent" to a door. TRW Ex. 5, Transcript of Dr. Breed Deposition of Oct. 24, 2003, at 107-08. Dr. Breed further explained that an airbag "coming out of the steering wheel or ... instrument panel" did not qualify as being "adjacent" to a door, although a side impact airbag-such as Element 800 depicted in Figure 8 of the '668 patent-would so qualify. *Id.* Because the meaning of patent claims is determined with reference to one of ordinary skill in the art, *Vanderlande Indus. Nederland BV v. Int'l Trade Comm'n*, 366 F.3d 1311, 1318 (Fed.Cir.2004), the understandings of Dr. Breed appropriately inform the construction of the term "adjacent." *See AFG Indus., Inc. v. Cardinal IG Co.*, 239 F.3d 1239, 1245-46 n. 1 (Fed.Cir.2001) (discussing testimony of officer of the accused infringer who also qualified as a person of ordinary skill in the art).

The Special Master therefore recommends to the Court that the claim limitation "adjacent said door in the inflated mode" be interpreted as meaning "alongside the door when the airbag is inflated."

### **E. First and Second Layers of Material**

Claim 26 includes an "inflatable element" that is claimed to comprise:

a first material layer defining a front part of said inflatable element;

a second material layer defining a back part of said inflatable element, selected parts of said first material layer and said second material layer other than the periphery of said first and second material layers being joined to one another to thereby define joints at locations at which said first and second material layers are joined to one another, said inflatable element thereby incorporating a plurality of cells defined between said joints.

TRW asks that the limitation "a first material layer defining a front part" be construed to mean "an identifiable thickness of a material that forms the front outer wall of the airbag and that is overlaid onto another material." Similarly, TRW requests that the limitation "a second material layer defining a back part"

be construed as "an identifiable thickness of a material that forms the back outer wall of the airbag and that is overlaid onto another material." In contrast, ATI states that these proposed constructions are not supported by the written description of the '668 patent and impermissibly import limitations from the specification into the claims. *See SuperGuide Corp. v. DirecTV Enterprises, Inc.*, 358 F.3d 870, 875 (Fed.Cir.2004) ("it is important not to import into a claim limitations that are not a part of the claim.").

The Special Master concludes that the proposed TRW constructions of these limitations are not supported by the intrinsic evidence of record. Nothing in the '668 patent requires that the claimed material layers form the outer walls of the airbag. Indeed, the material layers recited in claim 26 need only form "a front part" or "a back part," not *the* front or back part. Further, the proposed construction "overlaid onto another material" inappropriately suggests that the claim is limited to a particular manufacturing technique, rather than a completed product.

Some guidance in construing this claim limitation can be found in the Federal Circuit exhaustive interpretation of the term "layer" in its decision in *AFG Indus., Inc. v. Cardinal IG Co.*, 239 F.3d 1239, 1247-50 (Fed.Cir.2001), even though the technical context of that case differs from this one. Although the Court of Appeals concluded that the term "layer" had a particular meaning within the context of the patent at issue in *AFG Industries*, its analysis commenced with the dictionary definition "one thickness, course, or fold laid or lying over another ...." *Id.* at 1247. The Federal Circuit's ultimate definition of "layer" in that case also employed the phrase "thickness of material." *Id.* at 1250. These definitions correspond to the dictionary definition cited by TRW, which reads: "A single thickness of a material covering a surface or forming an overlying part or segment ...." *AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE* (4th ed.2000).

The Special Master therefore recommends to the Court that the claim limitation "a first material layer defining a front part of said inflatable element" be construed as meaning "a thickness of material that forms part of the front of the airbag." The Special Master also recommends to the Court that the claim limitation "a second material layer defining a back part of said inflatable element" be construed as meaning "a thickness of material that forms part of the back of the airbag."

#### **F. "A Plurality of Sections of Material, Said Sections of Material Being Made of Film"**

Claim 39 in part recites "a plurality of sections of material, said sections of material being made of film." As noted previously, the term "plurality" means "at least two." *See, e.g., ResQNet.com, Inc. v. Lansa, Inc.*, 346 F.3d 1374, 1382 (Fed.Cir.2003). The primary dispute between the parties is whether the claim requires these "sections of material" to be fashioned entirely of film, or whether they can be made of film along with another substance. FN1 In particular, the litigants' views differ on the construction of the limitation "made of." TRW contends that "being made of film" should be construed as requiring that sections be made exclusively of film. In contrast, ATI argues that the additional modifier "exclusively" should not be imported into the claim.

FN1. TRW also contends that the limitation "sections of material" should be construed as "pieces of material." This construction appears to be premised upon TRW's view that the claimed airbags must be fabricated from two discrete pieces of material. Because the Special Master does not recommend that the claims of the '668 patent be construed to require that the claimed airbag be manufactured from two discrete components of material, the Special Master similarly declines to recommend any further construction of the limitation "sections of material."

Whether the phrase "made of" is open or closed to additional elements is, unfortunately, not entirely clear at first glance. In patent parlance, this inquiry involves the interpretation of a so-called "transition phrase." *See* AFG Indus., Inc. v. Cardinal IG Co., 239 F.3d 1239, 1244 (Fed.Cir.2001) ("We refer to claim terms like 'composed of' as 'transition phrases.' "). Patent drafters ordinarily employ one of three transitions when authoring claims: "comprising," which is inclusive to additional elements, *see* Smith & Nephew, Inc. v. Ethicon, Inc., 276 F.3d 1304, 1311 (Fed.Cir.2001); "consisting," which is exclusive to additional elements unrelated to the invention, *see* Norian Corp. v. Stryker Corp., 363 F.3d 1321, 1331-32 (Fed.Cir.2004); and "consisting essentially of," which permits inclusion of components not listed in the claim, provided that they 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).

Unlike the three customary transition phrases, however, the phrase "made of" is not an established term of art in patent law. The parties have not cited any case law interpreting "made of," nor has the Special Master been able to locate any through independent research. However, in a handful of cases, the Federal Circuit has construed atypical transition phrases. Among the transition phrases interpreted are "composed of," *see* AFG Industries, 239 F.3d at 1245; "having," *see* Lampi Corp. v. American Power Products, Inc., 228 F.3d 1365, 1376 (Fed.Cir.2000); Crystal Semiconductor Corp. v. TriTech Microelectronics Int'l Inc., 246 F.3d 1336, 1348 (Fed.Cir.2001); Regents of the Univ. of Cal. v. Eli Lilly & Co., 119 F.3d 1559, 1573 (Fed.Cir.1997); and "including," *see* Toro Co. v. White Consolidated Industries, Inc., 199 F.3d 1295, 1303 (Fed.Cir.1999); Hewlett-Packard Co. v. Repeat-OType Stencil Mfg. Corp., 123 F.3d 1445, 1451 (Fed.Cir.1997).

This case law indicates that, in cases where the patent drafter opted to use an atypical transition phrase, the determination of whether that phrase is inclusive, exclusive, or a hybrid is made in the context of the intrinsic evidence of record. For example, in the *Lampi Corp.* case, the Federal Circuit determined that the transition phrase "housing having two half-shells" to be open to other elements. 228 F.3d at 1376. In reaching this conclusion, the Court of Appeals relied upon the claim differentiation doctrine, as well as the teaching of the specification that the "housing *preferably consists* of two separable half-shells," rather than explaining that the housing be formed exclusively of two half-shells. *Id.* The view of the U.S. Patent & Trademark Office appears to be in accord with that of the Federal Circuit. *See* U.S. PATENT & TRADEMARK OFFICE, MANUAL OF PATENT EXAMINING PROCEDURE, s. 2111.03 (Feb.2003). ("Transitional phrases such as 'having' must be interpreted in light of the specification to determine whether open or closed claim language is intended.").

Applying these teachings to the present case, the Special Master concludes that the transition phrase "made of," within the context of the '668 patent, is in open format. As with the "comprising" transition phrase, "made of" will permit the inclusion of components not listed in the claim. *Smith & Nephew, Inc. v. Ethicon, Inc.*, 276 F.3d at 1311. In reaching this conclusion, the Special Master relies upon the '668 patent's description of conventional driver side airbags as "*made of fabric.*" '668 patent, Col. 7, lines 34-35 (emphasis added). This discussion can be read in the context of an earlier discussion of driver side airbags that reads as follows:

A conventional driver side airbag (also referred to herein as a driver airbag) is made from pieces of Nylon or polyester fabric that are joined together, e.g., by sewing. The airbag is usually coated on the inside with neoprene or silicone for the purposes of (I) capturing hot particles emitted by the inflator in order to prevent

holes from being burned in the fabric, and (ii) sealing the airbag to minimize the leakage of an inflating gas through the fabric.

'668 patent, Col. 1, lines 59-66. The '668 patent's express use of the "made of" transition phrase in this context indicates that the term "made of" does not imply the meaning of "exclusively made of." After all, conventional driver side airbags are explained to be made not entirely of fabric, but rather the combination of fabric and an inner coating of neoprene or silicone. It would therefore be inappropriate to construe the transition phrase "made of" as requiring that the limitation be closed to other materials.

The Special Master therefore recommends to the Court that the claim limitation "being made of film" be interpreted as meaning "being made at least partially of film."

**G. "Tear Propagation Arresting Means"**

Claim 40 in part calls for "tear propagation arresting means ... for arresting the propagation of a tear in said film sheet." ATI and TRW do not dispute that this limitation employs the "means-plus-function" claiming style authorized by s. 112, para. 6 of the Patent Act. *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1369-70 (Fed.Cir.2002) (discussing methods of determining whether a claim limitation invokes 35 U.S.C. s. 112, para. 6 (2000) or not). This provision requires "means-plus-function" claim limitations to "be construed to cover the corresponding structure, material or acts described in the specification and equivalents thereof." 35 U.S.C. s. 112, para. 6 (2000). *IMS Tech., Inc. v. Haas Automation, Inc.*, 206 F.3d 1422, 1420-30 (Fed.Cir.2000) ( "Claim construction of a s. 112, para. 6 limitation includes identifying the claimed function and determining the corresponding structure or act disclosed in the specification, both of which are questions of law ...."). The specification of the '668 patent discloses a number of different structures that serve the function of arresting tear propagation in a film sheet. The following table sets forth these numerous embodiments.

**Embodiments of "Tear Propagation Arresting Means"**

**Corresponding Disclosure in the '668 Patent Specification**

Elastomeric film material, including elastomeric film with a variable thickness pattern and a thermoplastic elastomer	Column 1, lines 45-57;  Column 9, lines 5-13; Column 13, lines 42-50;
	Column 16, lines 33-34
Net or net material, including a woven or molded net	Column 4, line 52 through Column 5, line 3; Column 7, lines 28-33; Column 8, lines 36-49; Column 13, lines 42-50; Column 16, lines 59-60;
	Column 17, line 50 through Column 18, line 2
Elastic films	Column 5, lines 30-35
Fabric, including laminated fabric	Column 7, lines 19-28;
	Column 13, lines 42-50

A film material that is chemically formulated to arrest a tear that begins from a hole	Column 8, lines 49-60
Two film airbags or airbag layers attached with an adhesive	Column 15, line 60 through Column 16, line 39
A multiple-layer airbag including a film layer made of a comparatively weaker material which requires a greater elongation before the tear propagates	Column 16, line 61 through Column 17, line 8

TRW takes the position that during the prosecution of an application preceding the one that ultimately matured into the '668 patent, ATI narrowed the meaning of the limitation "tear propagation arresting means." More specifically, TRW observes that ATI distinguished a prior art patent to Haruna through the following statement:

Haruna discloses a fabric outer bag with a flexible inner bag.... Although the inner bag of Haruna might be a film airbag, it is not used as intended in the instant application. For Haruna the inner airbag is only acting as a seal having no stress therein and thus there would be no stress-caused propagation.

ATI Exhibit F, Prosecution History of U.S. Patent No. 5,505,485, A01072-73. According to TRW, this statement confines the meaning of the limitation "tear propagation arresting means ... for arresting the propagation of a tear in said film sheet" to "materials that are intended to arrest the propagation of stress-caused tears in the film sheet."

TRW is correct that the prosecution history informs the construction of means-plusfunction claims. *See* *Alpex Computer Corp. v. Nintendo Co.*, 102 F.3d 1214, 1221 (Fed.Cir.1996) ("Just as prosecution history estoppel may act to estop an equivalence argument under the doctrine of equivalents, positions taken before the PTO may bar an inconsistent position on claim construction under s. 112, para. 6."). However, the portion of the prosecution history cited by TRW cannot be said to constrain the limitation "tear propagation arresting means" that is later recited in certain claims of the '668 patent. First, ATI's statements specifically responded to the examiner's rejection of claims 1, 2, 4, 6-8 and 14 due to the Haruna reference. *See* ATI Ex. F, Prosecution History of the '485 Patent, A01063. None of these claims contains the limitation "tear propagation arresting means" precisely as provided in the '668 patent. *See id.* at A010008-A01010 (claims 1, 2, 4, 6-8 and 14). FN2 Second, ATI's response to the examiner argued that Haruna did not incorporate tear propagation reduction mechanisms at all, rather than characterizing the distinct claim limitation that ultimately appeared in the '668 patent. For both of these reasons, the portion of the prosecution history cited by TRW does not restrict the meaning of the limitation "tear propagation arresting means" beyond the usual protocol established by 35 U.S.C. s. 112, para. 6 (2000).

FN2. One, and only one, of these claims, claim 4, includes similar wording to claims 6, 15, and 40 of the '668 patent. Claim 4 stipulates that "means are provided *within said film* to arrest the propagation of a tear" (emphasis added). However, none of the claims of the '668 patent require that the tear propagation arresting means occur "within said film." *Compare* '668 patent, claims 6, 15 and 40 ("tear propagation arresting means *arranged in connection*" with a "non-perforated sheet of film") (emphasis added). Not only do the '668 patent claims not employ the same language as the claims in ATI's earlier application, the written description of the '668 patent reveals that tear propagation arresting means can be found in other components of the invention, such as in a juxtaposed film layer fashioned of a different material, or through the use of fabric. *See, e.g.*, '668 patent, col. 7, lines 19-28; col. 16, line 61-col. 17, line 8.

The Special Master therefore recommends to the Court that the claim limitation "tear propagation arresting means" be construed as meaning "elastomeric film material, including elastomeric film with a variable thickness pattern and a thermoplastic elastomer; a net or net material, including a woven or molded net; elastic films; fabric, including laminated fabric; a film material that is chemically formulated to arrest a tear that begins from a hole; two film airbags or airbag layers attached with an adhesive; a multiple-layer airbag including a film layer made of a comparatively weaker material which requires a greater elongation before the tear propagates; and equivalents thereof."

## V. SUMMARY OF CONCLUSIONS

In summary, the Special Master recommends that the ATI Motion to Strike References to the Accused Devices and Declaration of Dr. Tushar K. Ghosh be denied. The Special Master further recommends that the Court adopt the following constructions of disputed claim terms.

<b>668 Patent Claim Limitation</b>	<b>Recommended Construction</b>
"a plurality of sheets of material"	"At least two pieces of material with a fairly broad surface relative to their thickness."
"two opposed sheets of material being joined to one another to form ... compartments"	"Two pieces of material with a fairly broad surface relative to their thickness that, in the airbag product, are placed across from each other and joined in order to form compartments."
"substantially straight"	"Straight along nearly the entire length of the joint forming the compartment."
"adjacent said door in the inflated mode"	"Alongside the door when the airbag is inflated."
"a first material layer defining a front part of said inflatable element"	"A thickness of material that forms part of the front of the airbag."
"a second material layer defining a back part of said inflatable element"	"A thickness of material that forms part of the back of the airbag."
"being made of film"	"Being made at least partially of film."

"tear" "Elastomeric film material, including elastomeric film with a variable thickness pattern and

propagation  
arresting  
means"

a thermoplastic elastomer; a net or net material, including a woven or molded net; elastic films; fabric, including laminated fabric; a film material that is chemically formulated to arrest a tear that begins from a hole; two film airbags or airbag layers attached with an adhesive; a multiple-layer airbag including a film layer made of a comparatively weaker material which requires a greater elongation before the tear propagates; and equivalents thereof."

E.D.Mich.,2004.

Automotive Technologies Intern., Inc. v. TRW Vehicle Safety Systems, Inc.

Produced by Sans Paper, LLC.