

I, Irina Hinrichs, pursuant to 28 U.S.C. § 1746, hereby declare under penalty of perjury that the following is true and correct:

1. I am fluent in both the German and English languages.
2. I am a professional translator of German into English.
3. The attached English translation of Buergofol's Opposition to European Publication No. EP 2 582 520 B1 dated January 30, 2015 is, to the best of my knowledge and belief, a true, correct and complete translation of the source document.
4. I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct. I understand that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. § 1001).



September 14, 2023

Irina Hinrichs
September 14, 2023

[logo]

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Reference number:	11730556.5
European patent:	EP 2 582 520 B1
Application date:	05/31/2011
Priority:	06/15/2010
Grant of patent published:	04/30/2014
Title:	Multilayer Film Permeable to UV Radiation
Patent proprietor:	HUHTAMAKI FILMS GERMANY GMBH & CO. KG
Opponent:	BUERGOFOL GMBH

In the name and on behalf of Buergofol GmbH, Jahnstraße 10 - 14, 93354 Siegenburg, Germany, we object to the patent EP 2 582 520 B1, filed on May 31, 2011 and published on April 30, 2014, which claims the priority of DE 10 2010 023 764 A1 dated June 15, 2010,

OPPOSITION

with the request to revoke the patent in full. The opposition is based on the opposition grounds of Art. 100 a) in conjunction with Art. 52 (1), 54 (1), 54

(2) and 56 of the European Patent Convention (EPC) as well as Art. 100 b) of EPC. Alternatively, an oral hearing is requested.

The opposition fee in the amount of €775.00 will be paid by debit order from account 2800 0971.

Grounds for opposition to European patent EP 2 582 520 B1

The following documents are submitted as part of this opposition:

E1: EP 2 582 520 B1

E2: List of features pursuant to claim 1 of EP 2 582 520 B1

E3: Wikipedia article “Vicat softening point”

E4: Article “Standard Test Method for Vicat Softening Temperature of Plastics”

E5: Data sheet for Lupolen 2420 F

E6: Excerpt from the book “Plastic films”

E7: EP O 267 742 A2

E8: DE 199 24 251 A1

E9: DE 297 00 236 U1

E10: WO 2010/033297 A2

E11: WO 2007/054350 A1

E12: Quality agreement Buergofol - SAERTEX multiCom

E13: Order confirmation dated 03/11/2002

E14: Extrusion order dated 03/20/2002

E15: Delivery note dated 03/27/2002

E16: Invoice dated 03/27/2002

E17: Excerpt from brochure “Ultramid”

E18: Brochure “Novamid”

E19: Information on “Bynel”

E20: Data sheet for “SABIC® LOPE 2200TC12”

E21: Data sheet “Exceed 1018 Series”

E22: Data sheet for Lupolen 2426 F

E23: Excerpt of the homepage of SAERTEX multiCom GmbH

E24: DE 198 17 413 C2

Subject Manner of the contested patent

The contested patent (Document E1) relates to an insertion tube intended to be suitable for rehabilitation of underground pipes, preferably underground sewer pipes. Such insertion tubes for covering pipe damage have been known for some time. For the full-surface lining of the pipe, these known insertion tubes have an inner tube facing the center of the pipe, an outer tube facing the pipe wall, and a carrier material placed between these two tubes, which in most cases is a resin-impregnated nonwoven as the carrier material. The resin can be cured by means of UV radiation, for which purpose a UV source is passed through the insertion tube lining the tube wall. The UV radiation penetrates the inner tube and reaches the resin in this way, resulting in permanent protection of the tube wall after the resin has cured. In paragraph [0004] of the contested patent, this known technology is described as well.

The contested patent deals mainly with a multilayer film, which is the inner tubular film of the insertion tube (see in particular paragraphs [0001] - [0010]). The patent application underlying the contested patent was originally directed to this multilayer film before the focus on the part of the patent proprietor was directed to the insertion tube.

The contested patent according to claim 1 concerns (see also separate feature breakdown as document E2):

- (1) Insertion tube suitable for rehabilitation of underground pipes, preferably underground sewer pipes, comprising:

(2) a liquid-tight multilayer film which is at least partially permeable to UV radiation and preferably non-conditioned, comprising a layer sequence of

(2a)(a) a layer (a) based on at least one thermoplastic olefin homo- or copolymer as one of the outer layers,

(2b)(b) an adhesion promoter layer (b),

(2c)(c) an inner layer (c) based on at least one homo- and/or copolyamide,

(2d)(d) an adhesion promoting layer (d),

(2e)(e) a layer (e) based on at least one homo- and/or copolyamide as one of the outer layers,

(2f) in the form of a tubular film,

(2g) wherein the thermoplastic olefin homo- or copolymer of layer (a) has a VICAT softening temperature of at least 100°C.

(2h) as an inner tube;

(3) a liquid-tight, UV radiation and/or short-wave light absorbing and/or reflecting outer single-layer or multilayer tubular film as an outer tube;

(4) an intermediate carrier material impregnated with a reactive plastic resin.

In one aspect, the insertion tube according to claim 1 is not sufficiently disclosed. Second, claim 1 is not based on an inventive step. Moreover, such insertion tubes have already been made available to the public before the priority date of the contested patent. Specifically:

Lack of practicability (Art. 83)

In several respects, the invention is not disclosed in the European patent application in a manner sufficiently clear and complete for a skilled person to carry out.

Features (2a) and (2g) of disputed claim 1 claim that layer (a) is based on at least one thermoplastic olefin homo- or copolymer, said thermoplastic olefin homo- or copolymer having a VICAT softening temperature of at least 100 °C.

The VICAT softening temperature is the temperature at which a needle having a round or square cross-sectional area of 1 mm² penetrates 1 mm deep into a specimen. It can be determined in four different ways, see E3 and E4 (therein: “4. Summary of Test Method”). Firstly, these are two different test forces, namely 10 N (loading 1, test force A) and 50 N (loading 2, test force B), and secondly, two different heating rates, namely 50 and 120 °C/h and K/h respectively. Claim 1 does not refer to any of these four different possibilities, so that claim 1 does not provide the skilled person with a reworkable teaching to decide whether to work within or outside of claim 1.

Furthermore, the use of the phrase “based on” in feature (2g) lacks sufficient disclosure. The phrase “based on” is understood by a skilled person to mean that the ingredient with the largest weight percentage (wt. %) in layer (a) is a thermoplastic olefin homo- or copolymer that meets said VICAT softening temperature condition (at least 100 °C). This must apply at least if - as in examples B1-B4 of the contested patent (see below) - the only constituents of this layer are two thermoplastic olefin homopolymers or copolymers which together account for 100 wt. %. Because then the layer (a) is undoubtedly based on the thermoplastic olefin homo- or copolymer that has the greater weight percentage.

In the present case, for all examples B1-B4, layer (a) contains 70 wt. % Lupolen 2420 F with a VICAT softening temperature of 96 °C (data sheet as document E5) and 30 wt. % Exceed 1327 CA. A VICAT softening temperature of Exceed 1327 CA could not be determined. In other words, layer (a) of the multilayer film according to Examples B1-B4 is based on an olefin homo- or copolymer - namely Lupolen 2420 F - with a VICAT softening temperature of below 100 °C.

Merely in support of what has been said above, it should be pointed out that the skilled person will also gather from the patent literature that the term “based on” always assumes a dominant proportion, at least 50%, of the compound in question. Reference is made here merely by way of example to paragraph [0019] of DE 20 2006 009 175 U1, paragraph [0017] of DE 10 2006 015 543 A1, paragraph [0011] of DE 10 2006 013 833 A1 and paragraph [0020] of DE 10 2006 001 752 A1.

It remains to be noted that there is an irresolvable contradiction between claim 1 and the only examples B 1-B4 of the contested patent. A skilled person would not know which weight percentage should still fall under the formulation “based on” and which should not in order to obtain the desired and alleged technical effect.

Accordingly, it was also stated in decision T 256/87 that it must be ensured that the skilled person reading the patent specification is able to carry out the invention in all essential parts and knows when he is working within the prohibited scope of protection of the claims and when he is not.

Inventive step (Art. 56 EPC)

I) No technical effect

According to the established case law of the boards of appeal, the question of whether or not a technical effect is present is a question of inventive step (see T 1233/05; T 230/07). The assessment of inventive step can only be based on those elements and aspects of the invention where a technical effect is ascertainable (see T 258/97). Whether an invention has a technical effect is essentially a matter of fact. Moreover, according to settled case law of the Boards of Appeal, the subject-matter of a claim cannot be inventive if no further technical effect is produced than is already present in the closest prior art.

It is implied in the contested patent that by selecting the VICAT softening temperature of at least 100 °C for the thermoplastic olefin homo- or copolymer of layer (a), the mechanical properties and, in particular, surprisingly, the extensibility of the multilayer film would be improved. This is clearly contested, as there is no correlation between VICAT softening temperature and extensibility. The VICAT softening temperature is exclusively a measure of the heat resistance. It is self-evident that the film should not melt or bake uncontrollably when the resin is cured by UV radiation, and for this purpose a high VICAT softening temperature of each of the film components is required. This must also and all the more apply to the modern UV sources in use with their high radiation energies.

The higher extensibility of the example films B1-B4 is rather a consequence of the chosen but already known layer structure (see below), the different layer thicknesses as well as the use of effective co-polyamides in layers (c) and (e), in particular Durethan C131F.

If the Lupolen 2420 F or the Exceed 1327 CA in layer (a) of examples B1 - B4 of the contested patent were indeed responsible for their better extensibility, the films of comparative examples V2 and V3 would also have to exhibit a similarly high extensibility. This is because the layers (a) of films V2 and V3 have exactly the same composition as the layers (a) of films B1 - B4, i.e., 70 wt. % Lupolen 2420 F and 30% Exceed 1327 CA. However, since the extensibilities are different, the thermoplastic olefin homo- or copolymer - whether with or without a specific VICAT softening temperature - cannot be responsible for the indicated increase in extensibility.

Instead, the only reason to use thermoplastic olefin homopolymers or copolymers in multilayer films is to achieve the required thickness of the film (with much less expensive materials). This is also the reason why in all four example films B1 - B4 the thickness of layer (a) is always more than half the total film thickness. In this context, reference is made to the general technical knowledge as presented, for example, in the book “Kunststoff-Folien” [Plastic Films] by Joachim Nentwig from 2006 (document E6), p. 163, line 5 et seqq. In this respect, an expert opinion is also offered as **evidence**.

For the sake of clarity, the factual situation is outlined once again on the basis of a concrete comparison of two films disclosed in the contested registered design: Comparative example V3 (Table 1) describes a film with exactly the same material composition as the film from example B2 (Table 2); only the distribution of the materials among the different layers is different. The total content in films from V3 and B2 is completely identical in terms of Lupolen 2420 F and Exceed 1327 CA (total film thickness: 80 µm), Admer NF 498 E (total film thickness: 30 µm), and polyamide Durethan CI 31 F (total film thickness: 40 µm). However, the extensibility of the film from the comparative example V3 is only 13.2 %, while the extensibility of the film from B2 is 34.1 %, which is almost three times the value (Table 3). This is clear evidence that it cannot depend on the materials used in layer (a) and in particular their VICAT softening temperature, but that only the layer structure (already known in the prior art) and the choice of polyamides lead to better extensibility.

For the statement that the VICAT softening temperature has no influence on the extensibility, expert evidence is also offered as a precautionary measure.

It is also noteworthy that the VICAT softening temperature is mentioned in only four places in the contested patent, namely in the introductory sentence in paragraph [0001], in the alleged solution to the problem in paragraph [0009] and in the identical wording of claim 1, and in the measurement method in paragraph [0020]. Not even in the compounds used for Comparative Examples V1 - V3 and Examples B1 - B4 are the corresponding VICAT softening temperatures for the thermoplastic olefin homopolymers or copolymers used (Lupolen 2420 F, Exceed 1327 CA) mentioned.

It should also be noted that the only results reported in the patent specification in Table 3 concern films in which the multilayer films are based on a thermoplastic olefin homo- or copolymer with a VICAT softening temperature of below 100 °C. However, better extensibility of unstressed films is meaningless.

The other alleged advantage of the invention stated in the contested patent concerns the “surprising” sufficient barrier effect of the inner multilayer film (in the insertion tube) against drying out of the resin. The contested patent seems to imply here that the specific choice of thermoplastic olefin homo- or copolymer of layer (a) causes this barrier effect. However, the barrier effect of the multilayer film is caused by the polyamide that has been incorporated in all the films concerned for decades. There is no technical contribution to the barrier effect by the claimed choice of layer (a). In this respect, an expert opinion is also offered as evidence.

II) Claim too broad

If the wording “based on” to feature (2a) - contrary to any understanding of the skilled person, see above under “Lack of practicability (Art. 83 EPO)” - is also intended to include those embodiments which are below 50 wt. % (such as 30 wt. % for Exceed 1327 CA according to examples 81 - B4), the following statements are made as a precaution.

Such a broad interpretation of claim 1 of the contested patent with respect to the wording “based on” would result in a lack of inventive step. In decision T 939/92, the Board of Appeal required that essentially all claimed compounds having the respective technical effect must be covered by the claim in question. The technical task could only be taken into account in the assessment of inventive step if it could be regarded as successfully solved, i.e., if it was plausible that essentially all claimed compounds [there: acted as growth regulators for plants]. If, on the other hand, only some and not essentially all of the claimed compounds exhibited a certain technical effect, it must be concluded that the invention - in the breadth defined in the independent claim - does not solve the technical task of achieving this certain technical effect.

Accordingly, it would be required that a multilayer film having a layer (a) comprising an olefin homo- or copolymer having a VICAT softening temperature of at least 100 °C must possess the claimed mechanical advantages even if this olefin homo- or copolymer had a content of, for example, only 20 wt. % or 10 wt. % or 5 wt. % and so on. For if 30 wt. % is to be covered by the wording “based on,” then this must also apply to any other weight percentage.

However, the burden of proof that the alleged mechanical effects are then also present for these low weight percentages lies with the patent proprietor in accordance with the aforementioned T 939/92. Accordingly, the patent proprietor is requested to submit this

evidence. Otherwise, the requirements of Art. 56 EPO are not met (see also T 1188/00, T 1064/01, T 226/85).

It is also confirmed in T 942/98 that the patentable breadth of a claim may not be left to the arbitrary disposition of the applicant. The recently published decision T 1247/12 reaffirms this case law.

III) Combination of E7 with E8 or E9

III a) Disclosure content of E7

Feature (1): According to its title (“Multilayer carrier films”), E7 as the closest prior art describes a multilayer film. According to the E7 summary, the multilayer film is used to support a fiber mat impregnated with synthetic resin, which rests against the inside of a pipe while the resin is cured. In column 1, lines 13 -19, it is described that in this case the resin-impregnated fiber mat lies against the inside of the tube, while the multilayer film is arranged on the outside (facing the center of the tube). The combination of multilayer film and resin-impregnated fiber mat is formed into a pocket and sealed (column 2, line 12 and line 30) and then - if necessary, after storage - laid in the form of a tube in a duct. This means that feature (1) is known from E7.

Feature (2): According to its title (“Multilayer carrier films”), E7 already describes a multilayer film. UV light is shone onto the multilayer film from the side of the film, and after passing through the film, the UV light activates and cures the resin. The transmittance to UV radiation, for example, is disclosed in column 4, lines 15 - 29. Also, reference is made to the last paragraph of the description: *„When the multilayer film in accordance with the invention transmits light, it can be used in circumstances where a light activatable curing catalyst is incorporated within the resin”*. The liquid tightness is described, for example, in column 3, line 3 et seqq. (for the liquid synthetic resin composition). Feature (2) is thus disclosed in E7.

Feature (2a): The multilayer film of the E7 has a middle nylon layer. A polyamide copolymer layer is disposed on one side of this layer, while a layer of a weldable (“weldable”, i.e., sealable) synthetic plastic compound is provided on the other side (see claim 1 of E7). According to column 2, lines 35 - 39 of E7, the latter layer can be a polyethylene or a polypropylene, i.e., a layer based on a thermoplastic olefin homo- or copolymer as one of the outer layers. Thus, feature (2a) is also disclosed in E7.

Feature (2c): The aforementioned middle nylon layer is a layer based on a homo- and/or copolyamide. The table in E7 gives the example “Nylon 6” for the middle layer. Nylon 6 (also known by the brand name “Perlon”) is a polyamide, as is immediately known to the skilled person. E7 thus also discloses the feature (2c).

Feature (2e): According to E7, the other layer, which is an outer layer with respect to the nylon layer, is a polyamide copolymer, for example consisting of 49 wt. % nylon 6 and 51 wt. % nylon 12, see column 3, lines 50 - 55 and the table of E7. Thus, feature (2e) is also disclosed in E7.

Features (2b) and (2d): With regard to features (2b) and (2d), it is disclosed in column 3, lines 23 - 28 that the middle nylon layer may be bonded to either of the two outer layers by means of a “bonding layer”. This bonding layer is, for example, a polyethylene graft anhydride copolymer. Accordingly, in each case there is an adhesion promoting layer between the inner nylon layer and the weldable synthetic resin compound on the one hand, and between the inner nylon layer and the nylon 6/nylon 12 layer on the other hand.

Feature (2g): With regard to feature (2g), E7 lists various sealable compounds in column 2, lines 35 - 39, in the text passage already cited above for feature (2a), which can be used for the outer layer facing away from the fiber mat. Among other things, polypropylene is also mentioned (line 36), which is a thermoplastic olefin homo- or copolymer. Many other olefin homo- or copolymers also fulfill the condition of feature (2g), but polypropylene is taken as an example here. - Since, according to Table 1 of E4 (“Standard Test Method for Vicat Softening Temperature of Plastics”), polypropylene has a VICAT softening temperature of (far) more than 100 °C, namely 152.5 °C, the feature (2g) is fulfilled.

It should be emphasized here again that claim 1 of the contested patent does not recite a measurement method for the VICAT softening temperature. Only in the description, in paragraph [0020], is the measurement method mentioned. Therefore, according to the wording of the claim, the patent holder must accept all VICAT softening temperatures, regardless of the method of measurement (see below). However, even an - already necessary - limitation of claim 1 with respect to the measurement method used to determine the VICAT softening temperature, does not affect the fact that feature (2g) is known from E7: The contested patent states in paragraph [0020] that the VICAT softening temperature is to be measured with test force A at a heating rate of 120 K/hr. Exactly this measurement method was also used to determine the VICAT softening temperature of polypropylene (152.5 °C) according to Table 1 of E2 (“Loading 1 and Rate B”, i.e. according to “4. Summary of Test Method” at a test load of 10 N and a heating rate of 120 K/h).

Feature (2g) is therefore also known from E7.

Feature (2h): From the foregoing, it already follows without further ado that the multilayer film of E7 is an inner tube, i.e., it faces the center of the tube, while the resin-impregnated fiber mat faces the tube wall, see comments on feature (1).

Thus, only the features (2f) and (3) are not disclosed in E7.

Given the prior art according to E7, it could be considered an objective task to improve the mechanical properties of the insertion tube while providing better protection against resin leakage on the outside of the insertion tube. This task can be regarded as falling into two subtasks, since feature (2f) concerns the inner tubular film and feature (3) concerns the outer tubular film, with the resin-impregnated carrier material being arranged between these two films. Thus, the technical effect of feature (2f) and the technical effect of feature (3) are completely independent of each other and do not produce a synergistic effect.

The skilled person will readily come across several documents for solving these two subtasks, which in combination with E7 lead to the subject matter of claim 1.

It should be noted at the outset that feature (2f) is a feature which is in any case self-evident to the skilled person and which he takes directly from the disclosure of E7 without supplementation. The skilled person knows that for the production of tubular films the processes of extrusion to a tubular film (blown film) and extrusion to a flat film with subsequent sealing to a tube are possible.

III b) Combination of E7 with E8

A skilled person would readily encounter, for example, E8 in the search for improving the resin tightness of the insertion tube according to E7 to prevent leakage of the resin to the pipe wall side and premature curing of the resin during storage. Both are achieved by an outer tube surrounding the resin-impregnated carrier material (and as already known from the prior art described in [0004] of the contested patent, see also below).

Like the contested patent, E8 relates to a lining tube with an inner multilayer film and a resin-impregnated carrier material arranged in a tube shape in the form of a fiber tape (see claim 1). The particular embodiment of E8 provides that the resin-impregnated fiber tape is bonded to a plastic film on the side facing away from the inner multilayer film via a nonwoven layer reinforced on the plastic film. It is essential in the present case that, in accordance with column 5, line 24 et seqq. and claim 3, an outer film tube can also be provided around the film tube, which performs tasks such as a diffusion barrier, light impermeability, reflection, etc. This means that feature (3) is known from E8. There is nothing to prevent the E7 from being combined with the E8 for further protection of the insertion tube - especially since the E8 also discloses both an embodiment without an outer film tube (comprising, just like the E7, an inner multilayer film and a resin-impregnated carrier material) and with an outer film tube (for example, to improve the tightness) and thus readily suggests to the skilled person that the insertion tube of the E7 should also be provided with an outer tube according to feature (3).

Incidentally, feature (2f) from E8 is also explicitly known from previous art. In column 4, line 14 et seqq. it is disclosed that the inner film tube 3 was produced by an extrusion tubular film process.

III c) Combination of E7 with E9

Also, a skilled person would readily come across E9. This also deals with insertion tubes for sewer rehabilitation and is thus readily considered by the skilled person. The purpose of feature (3) is to prevent the premature curing of the resin in the interlayer and the penetration of liquids. For this purpose, E9 discloses an outer sleeve 3 enclosing a resin-impregnated fiber tube 2 and an inner film tube 1 (which can be designed without a sealing seam without any inventive intervention, feature (2f)), see Claim 1 and the figure. According to claim 4, the sleeve 3 may be, for example, a film to which metal surfaces separated from each other are applied and which serve as UV reflectors (claim 1 of E9). The liquid-tightness of the sleeve 3 results from its intended use alone and is a self-evident feature. Thus, feature (3) is anticipated by E9.

If it is still necessary to indicate that E9 also discloses feature (4), please refer to the first paragraph on page 2 and to page 5, lines 6 - 8 of E4. The fiber tube 2 made of fibers impregnated with curable synthetic resin and arranged between the inner film tube 1 and the outer sleeve 3 is cured by means of the UV light, see the first two paragraphs of page 5 of E9.

III d) Combination of E7 with E10 or E11

To underline that an outer film (feature (3)) has become a common component of an insertion tube in recent decades, reference is also made to the E10 and the E11 as example. In E10, paragraphs [0039] and in particular [0044] describe the tubular outer film 230. In E11, on page 9, 1st paragraph and in the only figure, the outer tube 16 is disclosed.

III e) Combination of the E7 with the prior art cited in the patent specification

As mentioned above, paragraph [0004] of the contested patent already describes as prior art an insertion tube disclosing an inner plastic film, an outer plastic film (feature (3)) and a resin-impregnated carrier material (feature (4)) arranged between these two films. It should be noted that the removal of the inner tube after curing of the resin is also already described there. It is obvious to the skilled person that the multilayer film of the E7 and the resin-impregnated carrier material surrounding it should also be wrapped with an outer film to protect the insertion tube and the environment, in particular the groundwater, from resin leakage (styrene) and the resin from premature drying.

Obvious prior use (Art. 54 (2) of EPC)

As will be explained in more detail below, various overt acts of prior use occurred before the priority date of the contested patent. One of them is listed in detail below. This refers to a multilayer film as an inner tubular film in which layer (a) was composed of two polyethylenes. One polyethylene had a VICAT softening temperature below 100 °C and was present in layer (a) at a level of 60 wt. %. The other polyethylene had a VICAT softening temperature above 100 °C and was present in layer (a) at a level of 40 wt. %. Therefore, the obvious prior use argued here is introduced only in the event that the Opposition Division should conclude that the phrase “based on” in claim 1 should also include a weight content of only 40 wt. % under claim 1. Above, the opposers have already argued that such a view contradicts logic and professional understanding in the case of two PE components that are to be regarded as equivalent. Therefore, the obvious prior use is brought forward as a precautionary measure. Specifically:

Long before the priority date of the contested patent, the opposer manufactured and sold multilayer films as 5-layer tubular films with the features (2), (2a) - (2g) of claim 1 for sewer rehabilitation. The customers for these tubular films were various manufacturers of insertion tubes and sewer rehabilitation companies, who used these multilayer films as inner tubular films for the production of insertion tubes according to claim 1 (i.e., with inner tubular film, outer tubular film and resin-impregnated carrier material in between) and used them for pipe rehabilitation with a UV lamp (claim 10). For example, many times before the priority date of the contested patent, the opposer supplied 5-layer tubular films without a sealing seam with the features (2), (2a) - (2g) to the company SAERTEX multiCom GmbH, which is exclusively active in the field of manufacturing insertion tubes made of films and scrim constructions for the rehabilitation of sewers. The following is offered for the accuracy of this statement:

- Witness evidence: Manfred Boyer, until 2007 in Quality Assurance / Development at SAERTEX multiCom GmbH, to be summoned via his current company address: c/o Per Aarsleff A/S, Birkemosevej 9, 8361 Hasselager, Denmark;
- Witness evidence: Dr. Abdel-Kader Boutrid, quality representative of the opposer Buergofol GmbH, to be summoned via the opposer;
- Witness evidence: Dr. Franz Schleicher, owner of the opposer Buergofol GmbH, to be summoned via the opposer.

As an example of the business relationship and cooperation of the opposers with the company SAERTEX multiCom, a related “Quality Agreement” dated 02/15/2006 is presented (document E12), which was concluded without obligation of confidentiality (such an agreement was signed only in 2008). This agreement regulates detailed quality requirements including the issuance of acceptance test certificates (§ 2 and § 3), minimum production quantities (§ 4), the obligation to retain reserve samples (§ 5), possible complaints (§ 7), future development targets based on the currently used standard (§ 8) for the current as well as future production goods, etc. The submitted quality agreement served to record the essential points of the previous and future business relationship between the opposer and SAERTEX multiCom in order to have clear contractual relationships and regulation points. The following is offered for the accuracy of this statement:

- Witness evidence: Manfred Boyer, co-signatory of E12, see above;
- Witness evidence: Dr. Abdel-Kader Boutrid, co-signatory of E12, see above;

- Witness evidence: Dr. Franz Schleicher, co-signatory of E12, see above;
- Witness evidence: Hans-Jürgen Schabbehad, then sales manager and managing director of the opposer Buergofol GmbH and co-signatory of the E12, to be summoned via the address: Gartenstrasse 17/1, 69502 Hemsbach;
- Witness evidence: Robert Reuschel, then and currently sales Inland Internal Service of the opposer Buergofol GmbH, co-signatory of the E12, to be summoned via the opposer;
- Witness evidence: Tobias Goth (formerly: Tobias Abfall), then and currently clerk, account manager of the opposer Buergofol GmbH, to be summoned via the opposer.

In the upper third of the quality agreement, the films supplied by the opposer are labeled “3-layer: PA/HV/PE” and “5-layer: PA/HV/PA/HV/PE”, where it is known that the abbreviation PA stands for polyamide, the abbreviation HV for bonding agent and the abbreviation PE for polyethylene. The 5-layer film referred to in the quality agreement thus has the same layer structure as that of claim 1 of the contested patent, i.e., it has the features (2), (2a) - (2f).

All of the above-mentioned witnesses can also prove that the opposer manufactured and distributed multilayer films as 5-layer tubular films with features (2), (2a) - (2g) of claim 1 for sewer rehabilitation, here for the customer SAERTEX multiCom GmbH, long before the priority date of the contested patent.

As an example of the obvious prior use, a settled order between the opposer and SAERTEX multiCom GmbH from March 2002 is submitted with all supporting documents. In the submitted documents E13 (order confirmation), E15 (delivery bill) and E16 (invoice), further corresponding orders, deliveries or invoice items are listed, but only one of these orders is to be traced back here.

It is pointed out that the order confirmation E13 and the delivery bill E15 are not original documents, as the originals were destroyed after the legal retention period of 10 years and are therefore no longer available in paper form. The information from the original documents is therefore only available in electronic form. If an order confirmation from a long time ago is printed out from the database today, the currently stored letterhead is automatically inserted for software reasons; a printout made today of a delivery bill issued a long time ago is automatically output without letterhead for software reasons. A copy of the invoice of the transaction in question (with signature) was still available in paper form and can therefore be submitted as document E16.

The following is offered as evidence to the above submission regarding document retention and the issuance of older order confirmations, delivery bills, etc.:

- Witness evidence: Werner Schmid, Finance/Personnel at the opposer Buergofol GmbH, to be summoned via the opposer;
- Witness evidence: Hanni Gurtner, Proxy/Purchasing Administration at the opposer Buergofol GmbH, to be summoned via the opposer.
- Witness evidence: Dr. Franz Schleicher, see above;
- Witness evidence: Dr. Abdel-Kader Boutrid, see above;
- Witness evidence: Tobias Goth, see above;

The order confirmation dated 03/11/2002 with the order number 10200554 is submitted as document E13. This order confirmation specifies in item 1 a 140 µm thick tubular film of width 1182 mm and length 1,050 linear meters. The formula is specified as XB34 0004.

In the production order dated March 20, 2002 (document E14), headed “Extrusion 15895”, the same order number is listed, namely 102005544/(1). The delivery date is specified as March 26, 2002. The order concerns the above-mentioned tube with specification “XB34 B0004” and the specified values for thickness 140 µm, width 1182 mm and length 1,050 linear meters.

This production order was then executed according to the “extrusion order” (see lower half of the first page of document E14) on 03/25/2002 at the opposer’s premises, producing 227 kg of the tubular film.

The film produced on 03/25/2002 according to the order number 10200554/1 was immediately delivered to SAERTEX multiCom GmbH with delivery note number 20200621 on 03/27/2002 (delivery bill as document E15) and the invoice with invoice number 30200621 and date of 03/27/2002 (document E16) was issued. The respective items 1 on the delivery bill and the invoice each list the order number mentioned 10200554/1. The sales prices in the order confirmation and in the invoice are blacked out as business secrets.

On the second page of the extrusion order (document E14), the formula for the above specification XB34 B0004 is given. The layer sequence in extruders E, D, C, B, A was:

- Extruder E: 1) [...] wt. % **Ultramide** [...] (a polyamide from BASF)
2) [...] wt. % **Novamide** [...] (a polyamide of DSM)
- Extruder D: 1) [...] wt. % **Bynel** [...] (a PE-based bonding agent from DuPont).
2) [...] wt. % **LD** [...] (LDPE)
- Extruder C: 100.0 wt. % **Ultramide** [...] (a polyamide from BASF)
- Extruder B: 1) [...] wt. % **Vynel** [...] (a PE-based bonding agent from DuPont)
2) [...] wt. % **attane** [...] (a PE-based bonding agent from Dow Chemicals)

- Extruder A: 1) 60.0 wt. % **Stamylan2200TC12** (LOPE)
2) 40.0 wt. % **Exceed ML1018 FD** (a metallocene-catalyzed PE resin from ExxonMobil Chemical).

The layer produced by extruder A corresponds to layer (a) of feature (2a) in claim 1 of the contested patent. The bonding layers produced by extruders B and D correspond to layers (b) and (d) of features (2b) and (2d) in claim 1. Finally, the layers from extruders C and E correspond to homo- and/or copolyamide layers (c) and (e) of features (2c) and (2e) in claim 1.

In layers B, C, D and E, for reasons of secrecy, only the respective brand names, but not the mixing ratios and the specific weights of the compounds, as well as the individual type designations are mentioned and blackened accordingly in the formulation sheet. The failure to mention the mixing ratios, specific weights and type designations does not weaken the probative force of document E14, since all the information relevant in relation to the contested patent is derived from the trade names themselves. However, the Opposition Division, and only the Opposition Division, may also be provided with an original unredacted version of the p

For the accuracy of this document is offered:

- Witness evidence: Dr. Abdel-Kader Boutrid, see above;
- Witness evidence: Dr. Franz Schleicher, see above

The relevant information on the main compounds in layers (a) - (e) is provided in documents E17 - E21. Specifically:

- Document E17: Pages 10 and 11 of BASF's "Ultramid® (PA) Main Brochure", downloaded from: [http://www.plasticsportal.net/wa/plasticsEU~de/DE/function/conversions:/publish/common/upload/engineering plastics/Ultramid brochure.pdf](http://www.plasticsportal.net/wa/plasticsEU~de/DE/function/conversions:/publish/common/upload/engineering%20plastics/Ultramid%20brochure.pdf)
- Document E18: Brochure "Novamid®" from DSM, downloaded from: <http://www.dsm.com/content/dam/dsm/novamid/en/US/documents/Novamid-Brochure.pdf?fileaction=openFile>
- Document E19: Information on "Bynel" as a bonding agent, downloaded from: [http://www.dupont.com/content/dam/dupont/products-and-services/packaging-materials-and-solutions/packaging-materials-and-solutions-landing/documents/Bynel adhesion comparitor.pdf](http://www.dupont.com/content/dam/dupont/products-and-services/packaging-materials-and-solutions/packaging-materials-and-solutions-landing/documents/Bynel%20adhesion%20comparitor.pdf)
- Document E20: on Stamylan 2200TC12: Information downloaded from: <http://www.materialdatacenter.com/ms/en/Sabic/Saudi+Basic+Industries+Corporation+%28SABIC%29/SABIC+LDPE+2200TC12/a00c865d/2171>
Stamylan's product family has been marketed under the name SABIC® LOPE since 2004. The type designations have remained the same, i.e., Stamylan 2200TC12 has become SABIC® LOPE 2200TC12.
- Document E21: on Exceed ML 1018 FD: Exceed 1018 series datasheet downloaded from: <http://exxonmobilchemical.ides.com/datasheet.aspx?FMT=PDF&PS=PE&E=243855&l=58933&CULTURE=en&SKEY=58933.1422176.84957118:878cfffbd8f-41de-b166-208e6c87e44b>

As can also be seen from formula XB34 B0004 (document E14), no UV absorbers or similar were added, so that the multilayer film produced was at least partially permeable to UV radiation. If this is questioned by the patent holder, appropriate witness evidence will be offered. The fluid tightness also results from the selected materials. In addition, the intended use of the multilayer film supplied was known to both contracting parties, i.e., the opposer and SAERTEX multiCom GmbH, which operates exclusively in the field of sewer rehabilitation, so that both UV permeability and impermeability to liquids were necessary and self-evident.

The multilayer films supplied by the opposer to SAERTEX multiCom had two polyethylenes in layer (a), namely - at least in this batch - Stamylan 2200TC12 at 60 wt. % on the one hand and Exceed ML 1018 FD at 40 wt. % by weight on the other. Handwritten “2426 F” is marked behind the Stamylan. This endorsement means that Lupolen 2426 F can be used as a substitute for Stamylan 2200TC12, since both compounds are equivalent and have almost the same chemical and physical properties. Thus, if Stamylan 2200TC12 could not be supplied by the manufacturer or was otherwise unavailable, Lupolen 2426 F was readily available as a substitute. From document E22 (data sheet) on Lupolen 2426 F and document E20 on SABIC® LDPE 2200TC12 (equivalent to Stamylan 2200TC12, see above), it can be seen that the densities are the same up to the per mille range (0.923 g/cm³ and 0.922 g/cm³, respectively, according to ISO 1183), as are the respective yield strengths (in each case 11 MPa according to ISO 527-1). According to document E22, the VICAT softening temperature of Lupolen 2426 F is 96 °C; the VICAT softening temperature of Stamylan 200TC12 or SABIC® LDPE 2200TC12 is correspondingly also about 96 °C.

The melting temperature of the compound named “Exceed ML 1018 FD” from ExxonMobil Chemical is 119 °C (see E21), so - according to expert knowledge - the VICAT softening temperature (according to VST A/120) is at least 100° C for all Exceed compounds. The literature does not contain any table values for the VICAT softening temperature of the various Exceed compounds and thus also not of Exceed ML 1018 FD, so that specialist knowledge must be used here. As evidence, in this regard expert opinion or inquiry to the manufacturer ExxonMobil Chemical is offered as well.

Also, the extrusion order (document E14) is fully consistent with the quality agreement (document E12). In § 2, 2.4 of the quality agreement, the two polyethylenes (PE) are specified with melting temperatures 110 °C (+/-5 °C) and 118 °C (+/-5 °C), respectively. The first mentioned temperature is the melting temperature of Stamylan 200TC12 or SABIC® LDPE 2200TC12, the second mentioned temperature is the melting temperature of Exceed ML 1018 FD (see document E21, indicated there: Peak Melting Temperature: 119 °C). If deemed necessary, the following is offered in this regard:

- Witness evidence: Dr. Abdel-Kader Boutrid, see above

In addition, it is pointed out that in the quality agreement (E12) in § 6, the standard maximum test extensibility to be achieved is 30%. The multilayer films supplied by the opposer therefore also exhibit the extensibilities of the example films B1 - B4 given in the contested patent (see Table 3 there).

The layer produced by extruder A is not based on Exceed, but on Stamylan, as the latter is contained in said layer at 60 wt. %. Therefore, as explained at the beginning of this chapter, the obvious prior use argued here is introduced only in case the Opposition Division should conclude that layer (a) of the prior-used film should be based on the 40 wt. % Exceed ML 1018 FD.

Likewise, the obvious prior use is submitted for the other case, namely when the Opposition Division concludes that layer (a) of the prior-used film is based on the 60 wt. % Stamylan 2200TC12 or Lupolen 2426 F and the VICAT softening temperature of approx. 96 °C of the Stamylan 2200TC12 or Lupolen 2426 F is so close to the claimed VICAT softening temperature of at least 100 °C that claim 1 lacks novelty for this reason alone (corresponding to EPO decision T 17/85, OJ 1986, 406).

This multilayer film - as well as many other films supplied by the opposer before the priority date of the contested patent - was processed by SAERTEX multiCom GmbH into an insertion tube according to feature (1) of claim 1 and used for sewer pipe rehabilitation. In this case, a liquid-tight UV-radiation absorbing and/or reflecting outer tubular film according to feature (3) was arranged around the inner multilayer film according to feature (2) manufactured and supplied by the opposer, with a resin-impregnated carrier material lying there-between according to feature (4). Therefore, an insertion tube having all features (1) - (4) of claim 1 has been made available to the public before the priority date of the contested patent. This obviousness results both from the discussions held without obligation of confidentiality between the opposer and SAERTEX multiCom, in which, of course, the use of the multilayer film supplied by the opposer as a component of the insertion tube was also discussed, and from the use of this insertion tube in the sewer pipe rehabilitation itself, whereby the sewer pipes rehabilitated in this way were readily accessible to sewer workers, for example. At the internet address <http://www.saertex-multicom.de/index.php?&path=industry/references&lang=de>

different reference projects of the company SAERTEX multiCom are provided (also submitted as document E23), where the opposer since the nineties of the last century until the end of 2010 has supplied the inner multilayer films as an exclusive supplier to SAERTEX multiCom:

The following is offered for this submission:

- Witness evidence: Manfred Boyer, see above;
- Witness evidence: Dr. Franz Schleicher, see above

Further obvious prior use

Witness evidence is also offered that prior to the priority date of the contested patent, multiple multilayer films corresponding to feature (2) (i.e., including all sub-features (2a)-(2f)) of claim 1 were supplied by the opposer to the company Brandenburger Liner GmbH & Co. KG, Taubensuhlstraße, D-76829 Landau / Pfalz. Here, too, the opposer was the exclusive supplier of the multilayer films for many years - in particular also before the priority date of the contested patent. The Brandenburger company then used these multilayer films as inner tubular films in insertion tubes having all the features of claim 1 of the contested patent and used them for sewer rehabilitation. The following is offered for this statement:

- Witness evidence: Stefan Reichel, until 2009 head of development at Brandenburger Liner GmbH and current head of development at RELINEEUROPE, to be summoned via his current company address: RELINEEUROPE AG, Groß Ahlmühle 31, D-76865 Rohrbach;
- Witness evidence: Christian Noll, until the end of 2009 managing partner of Brandenburger Liner GmbH and current member of the board of RELINEEUROPE, to be summoned via his current company address: RELINEEUROPE AG, Groß Ahlmühle 31, D-76865 Rohrbach;
- Witness evidence: Dr. Abdel-Kader Boutrid, see above;
- Witness evidence: Dr. Franz Schleicher, see above

Dependent claims

Claims 2 - 10, referring back to independent claim 1, are also not based on new or inventive features compared to the prior art, so that these could also not contribute to maintaining the contested patent.

For example, **claim 2** claims that

- the layer thickness of layer (a) is at least 40%, preferably at least 50%, of the total layer thickness of the multilayer film.

This feature is disclosed in the Table of E7 for the compound Surlyn (an ethylene-acid copolymer and thus also a thermoplastic olefin homo- or copolymer) as an example of the weldable synthetic plastic compound. The thickness of the Surlyn layer is given as 150 μm - 190 μm , while the thickness of the other layers is given as 60 μm - 70 μm (more precisely: 30 μm + 30 μm + 10 μm , if necessary). Thus, the Surlyn layer thickness is more than 50% of the total layer thickness.

Reference is also made to the extrusion order (Document E14, page 2, left margin) in connection with the prior uses brought forward above. According to the extrusion order (E14), the layer produced by extruder A, corresponding to layer (a) of feature (2a), was 77.0 µm thick or thick, while the sum of the layer thicknesses of all other layers was 63.0 µm in total.

Claim 3 claims

- that the layer (a) of the multilayer film is based on at least one ethylene homo- or copolymer and/or at least one propylene homo- or copolymer.

Claim 3 is already anticipated by the explanations of Claim 1, feature (2a).

Claim 4 claims

- that the layers (c) and (e) of the multilayer film have an identical layer structure, preferably an identical layer thickness and/or identical polyamide components and/or an identical composition, preferably an identical polyamide component.

An additional technical effect is not given or recognizable by the features of claim 4.

Moreover, according to the extrusion order (document E14), the polyamide layers produced with extruders C and E are of the same thickness, namely 20 µm each.

Claim 5 claims

- that the layers (c) and (e) of the multilayer film have a different layer structure, preferably a different layer thickness and/or different polyamide components and/or a different composition.

The same applies here as for claim 4. Moreover, it can be seen from the table of E7 that the middle layer (corresponding to layer (c) of the contested patent) is a nylon 6 layer, while the outer layer (corresponding to layer (e) of the contested patent) is formed by a nylon 6/nylon 12 copolymer.

In addition, the polyamide layers produced with extruders C and E were produced with at least partially different polyamides according to the extrusion order (document E14).

Claim 6 claims

- that the bonding layers (b) and (d) of the multilayer film are each based independently of one another on at least one modified thermoplastic olefin homo- or copolymer, preferably each based independently of one another on at least one modified thermoplastic ethylene homo- or copolymer and/or at least one modified propylene homo- or copolymer.

This feature belongs to the basic knowledge of the skilled person and does not involve anything inventive. Also disclosed in E7, column 3, lines 23 - 28, is that both bonding layers are, for example, polyethylene graft anhydride copolymers. Thus, the features of claim 6 are known from E7.

Also, reference is made to the extrusion order (E14), according to which the polyethylene-based bonding layers produced with extruders B and D were made.

Claim 7 claims

- that the multilayer film consists of layers (a) to (e).

This claim is fully anticipated by E7, see the comments on features (2a) - (2e).

Also, with regard to the aforementioned obvious prior use, the layers produced with the extruders A-E according to the extrusion order (E14) corresponded to the layers (a) - (e) according to the features (2a) - (2e).

Claim 8 claims

- that the multilayer film is at least 80%, preferably at least 90%, transparent to UV radiation, preferably to UV radiation in a wavelength range from 200 to 400 nm.

Apart from the fact that this claim is ambiguous in terms of wording, it is trivial - in line with the above comments on E7 regarding feature (2) - to provide a high UV transmittance for the multilayer film, since otherwise curing by means of UV radiation is not feasible at all.

- The multilayer film produced according to the extrusion order (document E14) is also exhibited the claimed transmittance for UV radiation. The following is also offered for this statement:

- Witness evidence: Dr. Abdel-Kader Boutrid, see above

Claim 9 claims

- that the multilayer film is directly adjacent to the carrier material with its surface layer (a).

The claim states that the layer based on the at least one thermoplastic olefin homo- or copolymer is adjacent to the carrier material. Nothing inventive can be seen in this.

Claim 10 claims

- a pipe rehabilitation system suitable for rehabilitating underground pipes comprising an insertion tube according to any one of claims 1 -9 intended for insertion into the pipe to be rehabilitated and a movable source emitting UV radiation and/or short-wave visible light, preferably a UV emitter.

Claim 10 adds only the feature of the UV and/or visible light emitting source. Such pipe rehabilitation systems have been offered and used by all well-known sewer rehabilitation companies for many years. For example, the feature regarding the UV source is known from E9, page 2, lines 11 - 14 and page 5, lines 14-18. E24 (claim 1: ... “Passing one or more UV light sources [...] through the tube, thereby curing the resin”) discloses this feature.

The prior uses recited above also disclose all of the features of claim 10:

- Witness evidence: Manfred Boyer, see above;
- Witness evidence: Stefan Reichel, see above;

Witness evidence: Christian Noll, see above

Summary:

On the whole, the request for complete revocation of EP 2 582 520 B1 made at the outset is therefore justified.

CANZLER & BERGMEIER

[signature]

Dr. Thomas Schließ
- Patent Attorney -

Exhibits
E1 -E24