

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(PCT Rule 71.1)

To:

NEDERLANDSCH OCTROOIBUREAU
P.O.Box 29720
NL-2502 LS The Hague
PAYS-BAS

Date of mailing
(day/month/year)

06.12.2017

Applicant's or agent's file reference
P6056684PCT

IMPORTANT NOTIFICATION

International application No.
PCT/NL2016/050604

International filing date (day/month/year)
30.08.2016

Priority date (day/month/year)
14.09.2015

Applicant
Pipelife Nederland B.V.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international
preliminary examining authority:



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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P6056684PCT	FOR FURTHER ACTION See Form PCT/PEA/416	
International application No. PCT/NL2016/050604	International filing date (day/month/year) 30.08.2016	Priority date (day/month/year) 14.09.2015
International Patent Classification (IPC) or national classification and IPC INV. F16L58/16		
Applicant Pipelife Nederland B.V.		
1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet. 3. This report is also accompanied by ANNEXES, comprising: a. ☒ (sent to the applicant and to the International Bureau) a total of <u>3</u> sheets, as follows: ☒ sheets of the description, claims and/or drawings which have been amended and/or sheets containing rectifications authorized by this Authority, unless those sheets were superseded or cancelled, and any accompanying letters (see Rules 46.5, 66.8, 70.16, 91.2, and Section 607 of the Administrative Instructions). ☐ sheets containing rectifications, where the decision was made by this Authority not to take them into account because they were not authorized by or notified to this Authority at the time when this Authority began to draw up this report, and any accompanying letters (Rules 66.4bis, 70.2(e), 70.16 and 91.2). ☐ superseded sheets and any accompanying letters, where this Authority either considers that the superseding sheets contain an amendment that goes beyond the disclosure in the international application as filed, or the superseding sheets were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in item 4 of Box No. I and the Supplemental Box (see Rule 70.16(b)). b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing, in the form of an Annex C/ST.25 text file, as indicated in the Supplemental Box Relating to Sequence Listing (see paragraph 3ter of Annex C of the Administrative Instructions).		
4. This report contains indications relating to the following items: ☒ Box No. I Basis of the report ☐ Box No. II Priority ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability ☐ Box No. IV Lack of unity of invention ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement ☐ Box No. VI Certain documents cited ☐ Box No. VII Certain defects in the international application ☐ Box No. VIII Certain observations on the international application		
Date of submission of the demand 12.07.2017	Date of completion of this report 06.12.2017	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Fax: +49 89 2399 - 4465	Authorized officer Fromentel, Henri Telephone No. +49 89 2399-8881	



**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/NL2016/050604

Box No. I Basis of the report

1. With regard to the **language**, this report is based on
- ☒ the international application in the language in which it was filed
 - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3(a) and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4(a))
 - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a) and (b))
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-5 as originally filed

Claims, Numbers

1-15 filed with telefax on 22-11-2017

Drawings, Sheets

1/1 as originally filed

- ☐ a sequence listing - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since either they are considered to go beyond the disclosure as filed, or they were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in the Supplemental Box (Rules 70.2(c) and (c-bis)):
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
5. ☐ This report has been established:
- ☐ taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rules 66.1(d-bis) and 70.2(e)).
 - ☐ without taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91(Rules 66.4bis and 70.2(e)).

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/NL2016/050604

6. ☒ With regard to top-up searches (Rules 66.1 *ter* and 70.2(f)):
- ☒ A top-up search was carried out by this Authority on 23.11.2017 (all discovered documents are listed in the Supplemental Box Relating to Top-up Search).
 - ☐ Additional relevant documents have been discovered during the top-up search.
 - ☐ No top-up search was carried out by this Authority because it would serve no useful purpose.
7. ☐ Supplementary international search report(s) from Authority(ies) has/have been received and taken into account in establishing this report (Rule 45bis.8(b) and (c)).

* If item 4 applies, some or all of those sheets may be marked "superseded".

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>1-15</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	<u>1-15</u>
	No: Claims	
Industrial applicability (IA)	Yes: Claims	<u>1-15</u>
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following document:

D1 WO 2013/131972 A1 (TECHNIP FRANCE [FR]) 12 September 2013
(2013-09-12)cited in the application

The following document was not cited in the international search report. A copy of the document is appended hereto.

D9 JP S57 85479 A (SCHLEGEL CORP) 28 May 1982 (1982-05-28)

D1 is regarded as being the prior art closest to the subject-matter of claim 1 , and discloses :

A high-pressure pipe (Fig 2), comprising an inner liner (32), an outer coating layer (40) and a reinforcement layer (34A, 34B) positioned between the inner liner and the outer coating layer (Fig 2), said reinforcement layer comprising a first helically wound strip (34A) and a second helically wound strip (34B) with an opposite winding angle to the first helically wound strip (34A), each strip comprising a matrix (50, fig 3 + p.7, l. 4-6) and two rows of fibers (52) embedded in the matrix (50), said fibers comprising twisted high-strength filaments (p.8, l. 8-11), wherein the filaments of a fiber are sized filaments obtained by subjecting the filaments to a sizing operation.

The subject-matter of claim 1 therefore differs from this known pipe in that each strip comprises only a single row of fibers embedded in the matrix and is therefore new (Article 33(2) PCT).

The technical effect of the difference is to allow the strip to maintain a bending stiffness essentially the same as that of the matrix, thus allowing the use of very thick tapes in the reinforcement layer.

The problem to be solved by the present invention may be regarded as simplify the manufacturing process of the pipe while increasing the bending capabilities of the pipe while keeping at least the same mechanical performances.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons: even if strip including a single row of fibers as in claim 1 are known from the prior art documents, see for example D9, the skilled person in the field of high

pressure pipes would not have found any motivation to use only a single row of fibers in those documents, dealing with complete other field of technology, and thus, just in light of D1 and facing the problem posed by the invention, he would have not been motivated to simply take one row of fibers only from the two rows of fibers disclosed in D1, and would have been instead motivated in light of the available prior art documents to modify other parameters of the reinforcement layer, such as the type or number of fibers per row or the type of matrix.

Thus, the subject matter of claim 1 is also inventive, Art. 33(3) PCT

The subject matter of corresponding production method claim 10 is thus also ***mutatis mutandis*** new and inventive.

Claims 2-9 respectively claims 11-15 are dependent on claim 1 resp. claim 10 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

EUROPEAN PATENT AND
TRADEMARK ATTORNEYS

www.nlo.eu

European Patent Office
c/o P.O. Box 5818
2280 HV RIJSMWK

Your ref:

The Hague, 22 November 2017

Our ref: P6056684PCT

Re: International patent application

Subject: High pressure pipe and method for producing such pipe

In the name of: Pipelife Nederland B.V.

Application no. PCT/NL2016/050604

In response to the objections raised in the Written Opinion dated 25 October 2017, applicant herewith files an amended set of claims (one clean version and one version with mark-ups), which is to become the subject of the International Preliminary Examination.

The amendments

Applicant has deleted claim 16.

Novelty & Inventive step

As acknowledged in the Written Opinion, the current subject matter of claims 1 and 10 meet the requirements of novelty and inventive step. Thus, all pending claims are both novel and inventive.

In case the International Preliminary Examination Authority does not consider the present amendments and the above observations to be persuasive and does not intend to issue a favourable IPRP, a further opportunity to file amendments is requested under Rule 66.4 PCT and/or an interview by telephone or at the Rijswijk premises is requested under Rule 66.6 PCT.

Finally, it is noted that the present response and the enclosed submissions do not imply the abandonment of any subject matter originally filed, and the Applicant reserves the right to re-instate any cancelled subject-matter either in the present application or in a divisional application.

Paul Magnus Clarkson,
Professional representative

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Claims (clean)

1. A high-pressure pipe, comprising an inner liner (1), an outer coating layer (6) and a reinforcement layer (2, 5) positioned between the inner liner and the outer coating layer, said reinforcement layer comprising a first helically wound strip (2) and a second helically wound strip (5) wound with an opposite winding angle to the first helically wound strip (2), each strip (2, 5) comprising a matrix (4) and a single row of fibers (3) embedded in the matrix, said fibers comprising twisted high-strength filaments, wherein the filaments of a fiber are sized filaments obtained by subjecting the filaments to a sizing operation.

2. The high-pressure pipe according to claim 1, wherein the filaments are unimpregnated filaments.

3. The high-pressure pipe according to claim 1 or 2, wherein the filaments have a thickness of 4-100 μ m.

4. The high-pressure pipe according to any of the preceding claims, wherein the filaments are carbon filaments.

5. The high-pressure pipe according to any of the preceding claims, wherein filaments are coated with a flexible coating.

6. The high-pressure pipe according to claim 5, wherein the flexible coating comprises a rubber-like coating.

7. The high-pressure pipe according to any of the preceding claims, wherein the filaments have a length which is of the same order of magnitude as the length of the fiber containing said filaments.

8. The high-pressure pipe according to any of the preceding claims, wherein the reinforcement layer comprises only two oppositely wound helical strips (2, 5).

9. The high-pressure pipe according to any of the preceding claims, wherein a matrix material is lacking between the filaments of a fiber.

- 5 10. A method for producing a high-pressure pipe, comprising the steps of:
- providing high-strength filaments,
 - sizing said high-strength filaments,
 - twisting said sized high-strength filaments to form fibers (3),
 - embedding the fibers in a matrix (4) to form a strip (2, 5) of a single row of fibres
- 10 embedded in the matrix,
- providing a tube-shaped inner lining (1),
 - helically winding strips (2, 5) on top of each other and wound with opposite winding angles around the inner lining (1), and
 - providing an outer coating (6) on top of the helically wound strips (2, 5).

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11. The method according to claim 10, wherein the filaments are unimpregnated filaments.

12. The method according to claim 11, wherein during the step of embedding the fibers
- 20 (3) in the matrix (4) the unimpregnated state the filaments of the fibers is maintained.

13. The method according to any of claims 10-12, wherein the fibers and the matrix (4) are selected from materials which exclude or inhibit adhesion between said fibers (3) and said matrix (4).

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14. The method according to any of claims 10-13, wherein the fibers, before embedding thereof in the matrix, are dipped in a mixture so as to cover said fibers with a rubber-like substance.

- 30 15. Method according to any of claims 10-14, wherein the filaments of a fiber are arranged next to each other without interposition of a matrix material between said filaments.