

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	FOR FURTHER ACTION		see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No.	International filing date (<i>day/month/year</i>)	(Earliest) Priority Date (<i>day/month/year</i>)	
PCT/EP2019/083442	3 December 2019 (03-12-2019)	3 December 2018 (03-12-2018)	
Applicant			
TRINSEO EUROPE GMBH			

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of:

- 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 (Rules 12.3(a) and 23.1(b))

b. This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

c. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. **Certain claims were found unsearchable** (See Box No. II)

3. **Unity of invention is lacking** (see Box No III)

4. With regard to the **title**,

- the text is approved as submitted by the applicant
 the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

- the text is approved as submitted by the applicant
 the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings**,

- a. the figure of the **drawings** to be published with the abstract is Figure No. _____
 as suggested by the applicant
 as selected by this Authority, because the applicant failed to suggest a figure
 as selected by this Authority, because this figure better characterizes the invention
- b. none of the figures is to be published with the abstract

Box No. IV Text of the abstract (Continuation of item 5 of the first sheet)

A foaming composition useful to make an extruded foam is comprised of a plurality of chains of a copolymer of one or more vinylidene aromatic monomers and one or more unsaturated acids, the copolymer having 0.01 to 15.0 percent by weight of the one or more unsaturated acids wherein the acid groups are pendant from the copolymer a metal salt, metal oxide or combination thereof, the metal having a valence of at least 2; and one or more blowing agents. The foaming composition may be made into a foam by heating the foaming composition to a temperature sufficient to melt and ionically crosslink said copolymer which is then extruded through a die forming a foam. The foam is comprised of an ionically crosslinked aforementioned copolymer, wherein the copolymer is crosslinked through ionic bonds between the unsaturated acids and the metal of the metal salt or metal oxide.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2019/083442

A. CLASSIFICATION OF SUBJECT MATTER
 INV. C08J9/00 C08J9/08 C08K3/22 C08K5/098 C08L25/08
 ADD. C08F212/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
 Minimum documentation searched (classification system followed by classification symbols)
 C08J C08K C08L C08F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	EP 2 267 065 A1 (TOTAL PETROCHEMICALS RES FELUY [BE]) 29 December 2010 (2010-12-29) claim 1 paragraph [0039] -----	1-5,7-9, 11-15 6,10
X	US 3 322 734 A (WATKIN REES RICHARD) 30 May 1967 (1967-05-30) claims 1-7 table 1 column 7, line 8 - line 15 -----	1,2,4,5, 7,8, 11-14
X	US 2009/275716 A1 (REIMERS JAY [US] ET AL) 5 November 2009 (2009-11-05) claims 23-27,32 paragraph [0040] - paragraph [0041] examples 1,3 tables 1,2 -----	1,2,4,5, 13,14

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier application or patent but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "&" document member of the same patent family

Date of the actual completion of the international search 20 February 2020	Date of mailing of the international search report 04/03/2020
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Rodríguez, Luis
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2019/083442

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2267065	A1	29-12-2010	BR PI1014079 A2 19-04-2016
			CN 102803360 A 28-11-2012
			EA 201270036 A1 30-05-2012
			EP 2267065 A1 29-12-2010
			EP 2445953 A1 02-05-2012
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			US 2012132845 A1 31-05-2012
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			CA 2592075 A1 03-08-2006
			CN 101107278 A 16-01-2008
			EA 200701573 A1 28-02-2008
			EP 1841801 A2 10-10-2007
			KR 20070104561 A 26-10-2007
			TW 200643051 A 16-12-2006
			US 2006167149 A1 27-07-2006
			US 2007191536 A1 16-08-2007
			US 2008051540 A1 28-02-2008
			US 2009275716 A1 05-11-2009
			WO 2006081295 A2 03-08-2006
