

**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/JP2018/004060

**A. CLASSIFICATION OF SUBJECT MATTER**

Int.Cl. C01B11/06 (2006.01) i

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)

Int. Cl. C01B11/06

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

|  |           |
|--|-----------|
| Published examined utility model applications of Japan   | 1922-1996 |
| Published unexamined utility model applications of Japan | 1971-2018 |
| Registered utility model specifications of Japan         | 1996-2018 |
| Published registered utility model applications of Japan | 1994-2018 |

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CAplus/REGISTRY (STN), JSTPlus/JMEDPlus/JST7580 (JDreamIII)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No. |
|-----------|--|-----------------------|
| A         | JP 11-255503 A (NIPPON LIGHT METAL CO., LTD.) 21 September 1999, claims, paragraph [0009], examples (Family: none)   | 1-5                   |
| A         | JP 2007-169129 A (ASAHI GLASS CO., LTD.) 05 July 2007, claims, paragraph [0026] (Family: none)   | 1-5                   |
| A         | JP 60-81003 A (ASAHI KASEI CHEMICALS CORP.) 09 May 1985, claims, examples (Family: none)   | 1-5                   |
| A         | JP 2015-124110 A (SHOWA DENKO KABUSHIKI KAISHA) 06 July 2015, claims, paragraphs [0033], [0034], [0069], examples 4-6 & CN 104743513 A & KR 10-2015-0076089 A & TW 201524896 A | 1-5                   |

Further documents are listed in the continuation of Box C.

See patent family annex.

|   |  |
|---|--|
| * Special categories of cited documents:  | "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  |
| "A" document defining the general state of the art which is not considered to be of particular relevance  | "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   |
| "E" earlier application or patent but published on or after the international filing date   | "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 |
| "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) | "&" document member of the same patent family  |
| "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  |  |

Date of the actual completion of the international search  
10 April 2018 (10.04.2018)

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Name and mailing address of the ISA/  
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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No. |
|-----------|---|-----------------------|
| A         | JP 2015-124108 A (SHOWA DENKO KABUSHIKI KAISHA) 06 July 2015, claims, paragraphs [0025], [0059], fig. 3 & CN 104743514 A & KR 10-2015-0076087 A & TW 201524894 A  | 1-5                   |
| A         | JP 2012-188327 A (SUMITOMO CHEMICAL CO., LTD.) 04 October 2012, claims, paragraphs [0022], [0035] (Family: none)  | 1-5                   |
| A         | JP 2000-290003 A (NIPPON LIGHT METAL CO., LTD.) 17 October 2000, claims, examples, fig. 5, 6 (Family: none)   | 1-5                   |
| A         | JP 48-42796 B1 (TOA-GOSEI CHEMICAL INDUSTRY CO., LTD.) 14 December 1973, claims, fig. 2 (Family: none)  | 1-5                   |
| A         | WO 2016/201397 A1 (OLIN CORPORATION) 15 December 2016, claims, examples (Family: none)  | 1-5                   |
| A         | JP 2015-533775 A (OLIN CORPORATION) 26 November 2015, claims, examples & US 2014/0117278 A1 claims, examples & WO 2014/070928 A2 & EP 2914545 A2 & CA2889512 A1 & AU 2013337897 A1 & CN 104837763 A & MX 2015005381 A | 1-5                   |