

## Title (en)

PROCESS FOR RECOVERING ALKALI METALS AND SULFUR FROM ALKALI METAL SULFIDES AND POLYSULFIDES

## Title (de)

VERFAHREN ZUR RÜCKGEWINNUNG VON METALLEN UND SCHWEFEL AUS ALKALIMETALLSULFIDEN UND POLYSULFIDEN

## Title (fr)

PROCÉDÉ DE RÉCUPÉRATION DE MÉTAUX ALCALINS ET DE SOUFRE À PARTIR DE SULFURES ET DE POLYSULFURES DE MÉTAUX ALCALINS

## Publication

**EP 2970780 A4 20161102 (EN)**

## Application

**EP 14770492 A 20140314**

## Priority

- US 201361781557 P 20130314
- US 2014027292 W 20140314

## Abstract (en)

[origin: WO2014152393A1] Alkali metals (126) and sulfur (128) may be recovered from alkali monosulfide and polysulfides (122) in an electrolytic process that utilizes an electrolytic cell (120) having an alkali ion conductive membrane. An anolyte solution includes an alkali monosulfide, an alkali polysulfide, or a mixture thereof and a solvent that dissolves elemental sulfur. A catholyte includes molten alkali metal. Applying an electric current oxidizes sulfide and polysulfide in the anolyte compartment, causes alkali metal ions to pass through the alkali ion conductive membrane to the catholyte compartment, and reduces the alkali metal ions in the catholyte compartment. Liquid sulfur separates from the anolyte solution and may be recovered. The electrolytic cell is operated at a temperature where the formed alkali metal and sulfur are molten.

## IPC 8 full level

**C10G 27/00** (2006.01); **C10G 32/02** (2006.01); **C25B 1/00** (2006.01); **C25C 1/02** (2006.01)

## CPC (source: EP MX)

**C10G 15/00** (2013.01 - MX); **C10G 27/00** (2013.01 - EP MX); **C10G 32/00** (2013.01 - MX); **C10G 32/02** (2013.01 - EP MX); **C25B 1/00** (2013.01 - EP); **C25C 1/02** (2013.01 - EP); **C25C 7/00** (2013.01 - EP)

## Citation (search report)

- [X] US 2009134040 A1 20090528 - GORDON JOHN HOWARD [US], et al
- [XAI] US 2010089762 A1 20100415 - GORDON JOHN HOWARD [US]
- [T] W. R. FETZER: "The Electrolysis of Sodium Sulphide Solutions", THE JOURNAL OF PHYSICAL CHEMISTRY, vol. 32, no. 12, 1 January 1927 (1927-01-01), pages 1787 - 1807, XP055305725, ISSN: 0092-7325, DOI: 10.1021/j150294a002
- See references of WO 2014152393A1

## Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

## DOCDB simple family (publication)

**WO 2014152393 A1 20140925**; CA 2906000 A1 20140925; CA 2906000 C 20210504; CN 105189706 A 20151223; CN 106757146 A 20170531; CN 106757146 B 20181023; EP 2970780 A1 20160120; EP 2970780 A4 20161102; EP 2970780 B1 20180530; ES 2674092 T3 20180627; HK 1220476 A1 20170505; JP 2016519712 A 20160707; JP 6230690 B2 20171115; KR 102258315 B1 20210601; KR 20150127640 A 20151117; MX 2015012415 A 20160726; MX 368152 B 20190920; MY 171961 A 20191108; SG 11201507505V A 20151029

## DOCDB simple family (application)

**US 2014027292 W 20140314**; CA 2906000 A 20140314; CN 201480018989 A 20140314; CN 201710099325 A 20140314; EP 14770492 A 20140314; ES 14770492 T 20140314; HK 16108477 A 20160718; JP 2016502398 A 20140314; KR 20157027244 A 20140314; MX 2015012415 A 20140314; MY PI2015002348 A 20140314; SG 11201507505V A 20140314