Technology Offer

Method of recuperative treatment of the zinc ion from residual solutions

Summary

A research team from a Romanian university has invented and patented a method of recuperative treatment of the zinc ions from residual solutions, method that has the advantage of establishing optimum conditions of cleaning solutions containing compounds of zinc waste. The research team is looking for industrial partners interested in license agreements and technical cooperation agreements.

Creation Date	20 December 2015
Last Update	19 January 2016
Expiration Date	19 January 2017
Reference	TORO20151105001

Details

Description

A Romanian research team has invented a method for the zinc ion recovery purification of waste solutions. Industrial platforms today, particularly the electrical industry, the engineering industry, the naval industry, the branch of mining extraction, varnishes, paints, pulp and paper, plastics up to organic synthesis, require zinc compounds. Zinc and combinations, especially salts, oxides, carbonates, represent important raw material in the technologies referred to, matters for which is need the advanced recovery, as well as a return to the technological flow, temporary storage or other methods methods of enhancing efficiency of industrial processes.
The process, according to the invention, consists in that the zinc ion is extracted in a first step, in the form of oxalate of dihydrated zinc phosphate, in the following optimal reaction conditions: the molar concentration of zinc in the residual solution: molar concentration of zinc in solution of approximately 0.03, the solution pH (potential hydrogen) = 5, oxalic acid in excess of approximately 60% and the reaction temperature of 20°C; after that, through low thermal decomposition of the resulting zinc oxalate at a temperature of 340 ... 370°C, the zinc oxide will be obtained.
The zinc oxide thus obtained is used for manufacturing of pigments, zinc salt preparation or as a catalyst in chemical processes.
The foreign partner that the Romanian research team is looking for can be an industrial partner interested in license agreements and technical cooperation agreements,in order to improve the existing method.

Advantages and Innovations

The technical problem solved by the invention relates to establish optimum purification of waste solutions containing zinc compound, in order to capitalize zinc, while solving ecological problems of the environment. Other advantages that can be mentioned are:
-high purity of the lead oxalate;

-superior decantation, filtration and washing speed of the precipitate as compared to the forms used within other methods;
-considerable reduced volume for the crystallized precipitate;
-crystalline and anhydrous form of the recovered product;
-chemical stability to atmospheric factors (humidity, heat, light, carbon dioxide).
Compared to other technologies, the presented method removes the following disadvantages of known solutions, which are linked to the amorphous state, the unevenness of compositional extracted forms, the large volume of precipitate even in optimum time settling, low speed filtration and washing of the precipitate instability chemistry to atmospheric agents with passage in soluble pollutant forms.

Stage of Development

Field tested/evaluated

Comments Regarding Stage of Development

The method for the recuperative treatment of the zinc ion from residual solutions was tested within several local SMEs.

IPR Status

Patents granted

Comment Regarding IPR status

Patent granted by the State Office for Inventions and Trademarks. IP rights on national level - Romania.

Keywords

Technology

06006009	Ionic Liquids
06006012	Bioprocesses
10002012	Remediation of Contaminated Sites
10004001	Industrial Water Treatment

Market

04005	Biochemistry / Biophysics
08004002	Chemical and solid material recycling
08004003	Water treatment equipment and waste disposal systems
08004004	Other pollution and recycling related

NACE

M.72.1.9	Other research and experimental development on natural sciences and engineering

Network Contact

Issuing Partner

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Open for EOI : Yes

Dissemination

Send to Sector Group

Environment

Client

Type and Size of Organisation Behind the Profile

University

Year Established

1991

Already Engaged in Trans-National Cooperation

Yes

Certification Standards

ISO 14001:2005
ISO 9001:2008

Languages Spoken

English

Client Country

Romania

Partner Sought

Type and Role of Partner Sought

The potential partners could be any SME active in the field of engineering industry, electrical industry, etc.
Concerning the technological cooperation agreement sought, would also like to find a foreign partner for the further technological development, by improving the existing method.

Type and Size of Partner Sought

SME 11-50,SME <10,SME 51-250

Type of Partnership Considered

License agreement
Technical cooperation agreement