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(54) **METHOD OF PRODUCING POROUS OXIDE LAYERS ON ALUMINUM CONTAINING POLYMERIC CORROSION INHIBITORS**

(57) A method of forming oxide layers where an element of aluminum or its alloy is subjected to anodic polarization in a silicate, borate, hexametaphosphate bath or their mixture, preferably containing sodium or potassium silicate with a concentration from 1 to 120 g/dm³, sodium or potassium tetraborate with a concentration from 1 up to 120 g/dm³ sodium or potassium hexametaphosphate with a concentration from 1 to 240 g/dm³ sodium or potassium hydroxide with a concentration of 0.3 to 30 g/dm³ conducted under direct current or pulsed

current regimes, while maintaining a current density of 0.1 A/dm² up to 50 A/dm², positive voltage from 250 to 800 V and negative voltage from 0 to -150 V, for 5 to 120 minutes, preferably rinsed in distilled water and dried, **characterized by** immersing the oxidised element in the liquid polymer monomer of aluminum corrosion inhibitor, and after its extraction and drying, it is subjected to the anodic polarization process again, which results in increasing the corrosion resistance of the metal substrate.

EP 4 063 540 A3



EUROPEAN SEARCH REPORT

Application Number

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	<p>SOWA MACIEJ ET AL: "Corrosion Inhibitor-Modified Plasma Electrolytic Oxidation Coatings on 6061 Aluminum Alloy", MATERIALS, vol. 14, no. 3, 29 January 2021 (2021-01-29), page 619, XP055963075, DOI: 10.3390/ma14030619 * Sections 2.1 and 2.2; figure 2 *</p> <p style="text-align: center;">-----</p>	1, 4	<p>INV. C25D11/02 C25D11/06 C25D11/12 C25D11/24</p>
X	<p>US 2021/180203 A1 (SONTA KESTUTIS A [US] ET AL) 17 June 2021 (2021-06-17) * paragraph [0047] - paragraph [0061]; figures 3, 4 *</p> <p style="text-align: center;">-----</p>	1-3	<p>TECHNICAL FIELDS SEARCHED (IPC)</p> <p>C25D</p>
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 30 September 2022	Examiner Telias, Gabriela
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p>		<p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>	

EPO FORM 1503 03:82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 22 00 0151

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82