CLAIMS

1. Electrolytic method for extracting tin or both tin and lead contained in an electrically conductive mixture derived from waste, said electrically conductive mixture consisting of a plurality of solid elements and comprising:

- less than 50% by mass, with respect to the total weight of the mixture, of tin in metal form,
- less than 25% by mass, with respect to the total weight of the mixture, of lead in metal form, and
- more than 25% by mass, with respect to the total weight of the mixture, of metallic copper and/or metallic iron and/or metallic aluminium, and/or metallic nickel, and/or metallic alloy comprising copper and/or iron and/or aluminium and/or nickel,

the method being characterised in that it comprises the steps consisting of:

a) forming an anode (200, 201, 202A, 202B) from said electrically conductive mixture,

b) preparing an electrolytic solution (800, 801, 802) comprising methanesulfonic acid at a concentration of between 150 g/l and 250 g/l, and tin methanesulfonate at a concentration of between 10 g/l and 60 g/l of tin and/or lead methanesulfonate MSPb at a concentration of between 5 g/l and 120 g/l of lead,

c) providing a cathode (600, 601A, 601B, 602A, 602B, 602C),

d) at least partly immersing said anode (200, 201, 202A, 202B) and cathode (600, 601A, 601B, 602B, 602C) in the electrolytic solution (800, 801, 802), and

e) applying an electric current between said anode (200, 201, 202A, 202B) and said cathode (600, 601A, 601B, 602A, 602B, 602C), via an electrical device (20, 21, 22), in order, by oxidation, to lixiviate the tin or both tin and lead of the anode (200, 201, 202A, 202B), and to allow the deposition on the cathode (600, 601A, 601B, 602A, 602B, 602C) of the tin or both tin and lead initially contained in the electrically conductive mixture.

2. Method according to claim 1, according to which the method comprises a step of compacting said electrically conductive mixture carried out either before step a) of formation of the anode (200, 201, 202A, 202B) or subsequently.

3. Method according to claim 1, according to which, after step a) of formation of the anode (200, 201, 202A, 202B), this anode (200, 201, 202A, 202B) is inserted in a metal basket (400, 401, 402A, 402B).

4. Method according to claim 3, according to which said metal basket (400, 401, 402A, 402B) is made from titanium, stainless steel or carbon.

5. Method according to any of claims 1 to 4, according to which said electrically conductive mixture comprises less than 5% by mass, with respect to the total weight of said electrically conductive mixture (800), of any metal less noble than tin and lead, said metal being directly accessible physically and chemically to the electrolytic solution (800).

6. Method according to any of claims 3 or 4, further comprising, at the end of step e), the following steps:

- removing said metal basket (400, 401, 402A, 402B) and said cathode (600, 601A, 601B, 602A, 602B, 602C) from said electrolytic solution (800, 801, 802),

- rinsing said metal basket (400, 401, 402A, 402B) with said electrolytic solution (800, 801, 802), and then with water in order to recover all the residual tin methanesulfonate and/or lead methanesulfonate on said basket, and

- recovering at least the tin or both tin and lead deposited at the cathode (600, 601A, 601B, 602A, 602B, 602C).

7. Method according to any of claims 3 or 4, according to which the metal basket (400, 401, 402A, 402B) is enveloped in a polymer-based porous envelope in order to physically keep elements of said electrically conductive mixture the largest dimension of which is greater than or equal to 20 μm.

8. Method according to any of claims 1 to 7, according to which the electrolytic solution (800, 801, 802) further comprises a phenolic stabiliser and/or chloride ions and/or an antioxidant.

9. Method according to any of claims 1 to 8, according to which the cathode (600, 601A, 601B, 602A, 602B, 602C) is composed either of aluminium, or steel, or tin and/or lead.

10. Method according to any of claims 1 to 9, according to which the density of the current applied is between 150 and 400 A/m^2 at the cathode (600, 601A, 601B, 602A, 602B, 602C), the cathode (600, 601A, 601B, 602A, 602B, 602C) being in the form of a plate.