Anion Exchange Membrane

With the development of metallurgy industry, the production of various chemical raw material and chemical reagent will adopt new techniques constantly. Electrolysis is one of methods of further processing metal of color. A new anion exchange member, which was developed by our company, is a bran-new macromolecule functional member. It has been put to prepare high pure stannous sulphate.

1. Purpose

Stannous sulphate, a kind of important inorganic chemical raw material, has already been applied to electroplate extensively, such as metal, alloy and the appliance product, and electroplate for various electronics component, printing for PC board and etc. With the application of aluminum section bar used in building, stannous sulphate, as the main composition of electrolysis and pigmentation to aluminum, is developed rapidly. Therefore, the demand of high pure stannous sulphate on the market increases with each passing day.

We have several methods of preparing stannous sulphate, the chemistry system and the electrical chemistry system. Because bivalence tin ion is very unsteady. In low acidic aqueous solution, it is easy to hydrolyze and deposit. While in high acidic aqueous solutions, bivalence tin ion easily to oxidize, becoming quadrivalence tin ion. So it is hard to prepare stannous sulphate. Preparing indirectly, impurity ion is produced and hard to separate. Yield is low and the quality is poor. While preparing directly, the reaction of the tin and vitriol is not very easy, because the hydrogen has very high overtaking voltage on the tin. Preparing stannous sulphate, using vitriol with high concentration and tin powder with high temperature, because high concentration vitriol is very easy to oxidize, quadrivalence tin ion is easy to form. What' more, tin powder is very expensive, so it is not suitable for industry production. For electrical chemistry system, as a result of the existence of overtaking voltage for hydrogen,bivalence tin ion discharges and deposits on cathode. A sponge tin appears. The electrolysis efficiency of the direct electrolysis method is very low, the energy wastes greatly, the craft condition is complicated. The product quality is affected. The anion exchange member our company produced currently is used to prepare high pure stannous sulphate. Ion can permeate it selectively. Bivalence tin ion can not reach cathode area to discharge and stays in anode area. The sponge tin scarcely appears on the cathode. The current efficiency and product quality are improved.

The body of this different phase ion exchange member is anion exchange resin, and the framework is other macromolecule materials. They are mixed by a certain proportion. The member contains fixed group and ion that can be decomposed and ionizated. It can show some characteristics to ion in the solution, such as selectivity, resistance to chemistry and causticity. The unique ability of ion exchange is favor of making abio-salt with high purification.

2. Appearance

The member should be level off and uniformity, and with no evident mechanical damnification (break). Escaping from network, crape and impurity affecting quality can not be allowed.
The member is in root color or emerald.

3.Exterior size

thickness	Permissive tolerance	available area
0.40mm	±0.03mm (dry)	≥800×1600 mm

4.Performance

The main physical and chemical performance:

item	unit	target
Water containing rate	%	30-40
Exchange capability(dry) ≥	mol/kg	1.8
external resistance≤	Ω·cm	60
Choosing permeating rate≥	%	89
Water permeating rate≤	ml/h·dm^2	0.2
Dynamite intensity≥	mPa	0.6
Acid resistance h2so4(a long time)	20%	good
Heat stability ≤	℃	50（high point is60）

5. Symbol, Packaging, Transportation, Deposition

(1). The different phase ion exchange member, which was used for electrolysis, was packed by carton..50 pieces per box and about 40 kilograms. Product unit, product name, batch number, product date, standard, quantities, together with certificate which was provided by quality checking department of product unit and the symbol on the note, should be marked outside carton..

(2). The different phase ion exchange member, which was used for electrolysis, should be stored in the storeroom, where is clean, cool, dry and ventilated. Solarization and mechanical damnification should be avoided during transport.

(3). Useful-life of the member is two-year. After two years, it needs to be test again.

Addendum

The condition of preparing bivalence tin of sulphate with this ion exchange memeber:

1. The current density of anode is 10-20mAcm^{-2}
2. Vitriol concentration of anode is 1.0mol L^{-1},while cathode is about 1.2mol L^{-1}
3. The content of bivalence tin ion of anode is lower than 100g/ L
4. Acidity of matrix solution is lower than 8mol/ L