Method for reprocessing an emulsion formed during hydrometallurgical recovery of a metal

The invention relates to a process for working up an emulsion formed in the hydrometallurgical winning of a metal according to the preamble of claim 1 ~~and a process for the hydrometallurgical winning of a metal according to the preamble of claim 10~~.

In the hydrometallurgical winning of metals, a solids-containing emulsion is formed at the phase boundary between the organic phase and the aqueous phase in a solvent extraction step. This solids-containing emulsion influences the efficiency of the hydrometallurgical winning process since the emulsion forms a relatively large proportion compared to the organic phase and the aqueous phase and can be separated off only with difficulty by means of conventional sedimentation in the sedimentation tanks provided for this purpose. The impurities in the emulsion are carried further both in the organic phase and in the subsequent course of the process through to the electrolyte solution, so that the life of the cathode in the electrochemical winning of the metal is reduced and the setting of the pH of the electrolyte solution becomes problematical. The impurities likewise turn up in the aqueous phase of the solvent extraction, so that this phase cannot readily be recovered from the leaching solution.

WO 2006/133804 discloses the use of a decanter for the three-phase separation of an emulsion in the hydrometallurgical winning of a metal. To adjust the separation zone and/or the pond depth in the drum, the pressure is altered in an annular chamber in which a peeling plate is arranged. A fluid feed line through which a fluid, e.g. a gas, can be introduced from the outside opens into the annular chamber. This type of setting/regulation of the separation zone and/or the

pond depth has been found to be useful but should be optimized further.

Embodiments of the present invention seek to provide an improved process for working up an emulsion formed in hydrometallurgical winning and to create an improved process for the hydrometallurgical winning of a metal.

According to an aspect of the present invention, there is provided a process for the centrifugal work-up of a solids-containing emulsion formed in the hydrometallurgical winning of a metal, where the work-up is carried out in at least one three-phase decanter to form a first lighter liquid phase, a second liquid phase and a solids phase, said first liquid phase having a lower density than the second liquid phase, the process comprising the following steps:

i) determination of an actual value of the density of the first liquid phase,

ii) comparison of the actual value with a guide parameter, in particular a prescribed density value, and

iii) setting of the outflow pressure of the first liquid phase as a function of the guide parameter.

The adjustment of the separation zone as a function of the density of the first liquid phase is carried out in such a way or has the consequence that the residence time of this phase in the decanter is optimized so that the phase is discharged with good removal of solids.

The first liquid phase can as a result be recirculated to the hydrometallurgical process as solvent for the solvent extraction. At the same time, the second liquid phase can also be discharged from the

Claims

1. A process for the centrifugal work-up of a solids-containing emulsion formed in the hydrometallurgical winning of a metal, where the work-up is carried out in at least one three-phase decanter to form a first lighter liquid phase, a second liquid phase and a solids phase, said first liquid phase having a lower density than the second liquid phase, the process comprising the following steps:

i) determination of an actual value of the density of the first liquid phase,

ii) comparison of the actual value with a guide parameter, in particular a prescribed density value, and

iii) setting of the outflow pressure of the first liquid phase as a function of the guide parameter.

2. The process as claimed in ~~the preceding~~ claim 1, wherein the setting of the outflow pressure is effected by throttling of a valve in an outflow line downstream of a peeling plate for discharging the first liquid phase from the decanter.

~~3. The process as claimed in either of the preceding claims, wherein the first liquid phase has a lower density than the second liquid phase.~~

~~4~~3. The process as claimed in ~~any of the preceding~~ claims 1 or 2, wherein the work-up is carried out with formation of an organic phase, an aqueous phase and a solids phase, where the organic phase is the first liquid phase and the aqueous phase is the second liquid phase.

~~5. The process as claimed in any of the preceding claims, wherein the work-up of the emulsion is carried out in a three-phase decanter.~~

~~6~~4. The process as claimed in any of the preceding claims, wherein a further regulating parameter is determined in addition to the density and is taken into account in the setting of the outflow pressure.

~~7~~5. The process as claimed in claim ~~6~~4, wherein the yield, the conductivity and/or the purity of the first liquid phase and/or the second liquid phase is employed as additional regulating parameter.