MIXER-SETTLERS

- Continuous product separation -
- For challenging extraction processes -
- Easy scale-up from lab trials -
- DN50 to DN1000 - Pilot to industrial scale -
The flexible and reliable extraction process

GENERAL

A typical mixer-settler is consisting of a continuously operated mixing zone and a continuously operated settling zone separated by a weir to avoid back mixing. Mixer and settler can be more or less designed independently. The mixing process of the heavy phase 1 and the light phase 2 can be adjusted by the right choice of stirrer, stirrer speed and throughput.

- 1a Heavy Phase Inlet - very often the aqueous feed
- 1b Heavy Phase Outlet - very often the aqueous raffinate
- 2a Light Phase Inlet - very often the organic solvent
- 2b Light Phase Outlet - very often the organic extract
The settling process requires a certain residence time in the settler which is adjusted by the right choice of the volume means length of the settling zone with respect to the throughput. If the phase separation is not sufficient for a given throughput it is possible to improve the separation process to a certain extend by installing coalescers and barrier systems to avoid the entrainment of non-coalesced dispersion.
Mixer-settlers are available in QVF® borosilicate glass 3.3 from DN50 up to DN1000 and in De Dietrich® glass-lined steel even larger. With one single mixer stage almost one single equilibrium stage can be achieved which makes the transfer of results in the laboratory with separation funnels to production scale systems comparably easy. In case more than one theoretical equilibrium stage has to be realized they are mostly connected in a counter current manner – see below 4 stage flow chart:

- 1a Heavy Phase Inlet - very often the aqueous feed
- 1b Heavy Phase Outlet - very often the aqueous raffinate
- 2a Light Phase Inlet - very often the organic solvent
- 2b Light Phase Outlet - very often the organic extract

Basic block chart of a counter-currently operated 4-stage mixer settler system
2-Stage Mixer-Settler System DN50
The investment costs for an extraction plant using mixer-settlers increase proportionally with the number of theoretical separation stages to be realized, so that in most cases no more than 4 stages are connected within one system. The more separation stages have to be realized the more extraction columns become advantageous.

De Dietrich Process Systems will be pleased to elaborate for you the most economic solution.
Mixer-Settlers made of stainless steel
Questions? We are here to help.
If you'd like to talk with a sales representative about purchasing De Dietrich Process Systems's products and services, you can reach us here.