

WATER TREATMENT

INNOVATIVE HYBRID ADSORBER TO REMOVE ARSENIC

Health studies show that the arsenic absorbed by the human body through the long-term consumption of contaminated drinking water has the potential to cause cancer or skin problems, even in concentrations of just a few ppb (parts per billion). Lanxess now has developed a new ion exchange resin that can remove toxic trace impurities, particularly arsenic, from drinking water.

In the production of drinking water, the focus is increasingly on the removal of toxic trace impurities, particularly arsenic. Specialty chemicals group Lanxess has now developed a product that can reliably remove this toxic metalloid from drinking water. Lewatit FO36 is an innovative hybrid adsorber consisting of a combination of a polymeric anion exchange resin and an iron oxide with a goethite structure. The iron oxide is distributed in the pores of the weakly basic ion exchange resin in a layer a few nanometers thick by a special production process. This fine, highly reactive iron oxide layer can selectively adsorb the arsenic. Because, unlike the other anionic components of water such as chloride, nitrate, sulfate and carbonate, only arsenic has this high affinity to the iron oxide surface, and is thus the only substance to be adsorbed. The other mineral components – some of them valuable – remain in the drinking water.

Uniform structure

The combination of ion exchange resin and iron oxide has various advantages from a mechanical and hydraulic point of view. The plastic matrix of the ion exchange resin gives the material high



Typical ion exchange resins.



The ion exchange resins are filled into bags and stacked on pallets.

mechanical stability and allows the specific shaping of the particles. The company has thus succeeded in producing a non-dusting, free-flowing bulk material with a uniform bead size (monodispersity). When used as a filtration agent, the product has the big advantage of a uniform structure, allowing the liquid to pass evenly through all the beads, excluding the formation of dead corners and ensuring a highly homogeneous flow. The amount of pumping energy required to operate the unit is also reduced by the homogenous form of the channels between the beads. Although the product was designed by the Lanxess Ion Exchange Resins business unit primarily for adsorbing arsenic, it can also be used for adsorbing other trace impurities.

Health risk

Health studies show that the arsenic absorbed by the human body through the long-term consumption of contaminated drinking water has the potential to cause cancer or skin problems, even in concentrations of just a few ppb (parts per billion). In line with recommendations made by the WHO, the permitted arsenic content in potable water supplies has therefore been fixed in many countries at less than 10 ppb, which is equivalent to 10 mg per liter. Because this regulation only came into force quite recently in many countries – in the United States, for example, in 2006 – many water suppliers around the world urgently need to take action. <<

An eight-page brochure giving extensive information ranging from the product properties to filter design and regeneration can be ordered downloaded from www.lewatit.com.



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