We have been working on the prevention and utilization of water pollution, and we have studied a large number of benzene and naphthalene organic wastewaters produced by chemical and light industry such as dyes, pesticides, and pharmaceuticals.

In the past, the EDA series of ultra-high cross-linked polystyrene macroporous adsorption resin and SDA series complex adsorption resin were developed on the basis of long-term development of macroporous and homogeneous pore resin, and the fixed bed adsorption treatment process was successfully developed.

The process not only effectively treats toxic organic chemical wastewater, strictly controls the emission of toxic organic pollutants, but also realizes the enrichment, recovery and comprehensive utilization of raw materials and intermediates in wastewater.

Compared with the conventional simple destruction treatment method, our wastewater treatment process is based on the combination of pollutant treatment and resource utilization, which can reduce the
wastewater treatment cost. Even some projects have a surplus after they have met operating expenses.

## Comparison of Treatment Methods for Toxic Organic Chemical Wastewater

<table>
<thead>
<tr>
<th>Advantage</th>
<th>Disadvantage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Resin adsorption method</strong></td>
<td>Wide range of use and good practicality; The adsorption effect is good, the desorption and regeneration are easy; The resin has stable performance and long service life; It is beneficial to comprehensive utilization and turns waste into treasure; Easy to operate and low energy consumption; with broadly application foreground</td>
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</tbody>
</table>
Working Principle of EDA Macroporous Adsorption Resin for Treating Organic Wastewater Pollutants

Adsorption

In the actual application process, when the toxic organic substances (solute) in the wastewater pass through the adsorbent resin (adsorbent) bed, Van der Waals attraction (including hydrogen bonding force, orientation force, inducing force and Dispersion force), the solute molecules are adsorbed on the surface of the adsorbent (generally, the
higher the specific surface area of the adsorbent, the larger the adsorption amount.

When the adsorbent molecule and the solute molecule can form a hydrogen bond, the adsorption selectivity can be greatly improved, and the separation of the solute molecule from the aqueous solution is facilitated, thereby purifying the toxic organic wastewater.

**Desorption**

The adsorbed solute (toxic organic matter) can be completely eluted in an appropriate manner, and the resin can be reused.

Generally, a dilute alkali is used as a desorbing agent for the acidic solute; a dilute acid is used as a desorbing agent for the alkaline solute, and an organic solvent (such as lower alcohol) is used as a desorbing agent for the neutral solute.

For high-concentration organic wastewater containing benzene, naphthalene and anthracene series, the necessary pretreatment, such as pH adjustment, filtration, etc., is first carried out according to the wastewater quality.

The obtained solution is adsorbed by the fixed bed of macroporous resin, and some of the adsorbed effluents can be discharged directly to the standard.

Some of the adsorbed effluents can reach the standard discharge, and some can be discharged to the standard after deep treatment, and some can be reused as washing water.

The resin with saturated adsorption is desorbed with a desorbent, and the low concentration desorption solution can be used as a desorbent in the next batch.

The high concentration desorption solution can be reused in the production section, or the product can be directly recycled for comprehensive utilization. Recycling of pollutants.

Therefore, the use of ultra-high cross-linking adsorption resin with high specific surface area, moderate pore size, narrow pore distribution, and high mechanical strength can improve the adsorption and desorption ability of the resin.
Appropriate adjustment of the polarity of the resin, so that the artificial hydrogen bond between the adsorbent and the solute molecule can greatly improve the adsorption selectivity of the resin and the efficiency of the resin fixed bed adsorption process.

**EDA Macroporous Adsorption Resin Uses and Characteristics**

EDA series macroporous adsorption resin is mainly used to treat wastewater such as dyes, pesticides and pharmaceuticals and their intermediates.

It can be used for adsorption recovery of phenols, amines, organic acids, nitro compounds, halogenated hydrocarbons, etc.

Such as 1-naphthylamine, 1-Naphthol, 2-naphthol, 2,3-acid, 1,2 which are difficult to handle, 4-acid and oxygen, peric acid, amino acid J and other naphthalene intermediate wastewater, m-cresol, sodium p-nitrophenol, nitrobenzene, nitrochlorobenzene, aniline, p-aminodiphenylamine, ortho-benzene Diamine, phenylacetic acid and fluorine (chloro) toluene.

**Characteristics of EDA Series Macroporous Adsorption Resin in Removing Organic Wastewater Pollutants**

**Wide Application Range and Good Practicability**

The concentration of organic matter in wastewater can be treated by several methods from several to tens of thousands of mg/L; the adsorption effect is not affected by the inorganic salts contained in the solution; it can also be applied in non-aqueous systems.

**High Adsorption Efficiency, Easy to Desorb and Regenerate**

After adsorption, the wastewater can generally reach or approach the discharge standard. The resin adsorption rate is usually above 99%; no secondary pollution occurs; easy to desorb and regenerate, and the desorption rate is generally above 95%.

**Stable Performance and Long Service Life**

The resin has high-temperature resistance, oxidation resistance, acid and alkali resistance, and organic solvent resistance; under normal conditions, the annual resin loss rate is less than 5%.

**Conducive to Comprehensive Utilization and Waste Recycling**
Resin can separate and recycle most of the useful chemical raw materials in wastewater, resulting in obvious economic benefits.

Simple process, Convenient Operation and Low Energy Consumption

Organic Industrial Wastewater Treatment Process Flow Chart

Wastewater Treatment Resin

SEPPRO® SDA-120: used for organic polluted water, such as recycling of aromatic amines, like nitrobenzene from waste water of industries as petrochemical, dyestuff, pesticide, medicine and their intermediates.
SEPPRO® SDA-210：It is especially used for organic polluted water treatment, mainly for high COD reduction so the water will be suitable for discharge.

SEPPRO® EDA-39：It is especially for Acetaminophen recovery from paracetamol production solution.

SEPPRO® SDA-4：Suitable pore diameter, high surface area as well as high selectivity to target substances. Good resistance to high temperature, salt, acid, and alkali. Suitable for various techniques. Excellent kinetic properties which lead to high adsorption rate.

Contact Us

If you are interested in our industrial wastewater treatment technology, you can contact us.