



MERYT Adsorbents

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MERYT
Catalysts & Innovation

Adsorbents

The widespread use of Adsorption systems has converted Adsorption as a key process of new plants in the petroleum, petrochemical and chemical process industries. With supplying, research & development, technical staff, and sales capabilities, MERYT Catalysts & Innovation has the ability to react to the adsorbents industry needs without limitations. This expertise is backed by a number of major references throughout the globe. We have developed innovative Adsorption solutions and configurations for difficult-to-treat gas and liquid feeds. We combine research and development in process design with state-of-the-art engineering technologies to provide our clients with flexible, accurate, efficient and dependable tools that improve their bottom line. We offer continuous worldwide technical service and support to ensure our clients maximize the use and life of our adsorbents. We look forward to building strong, rewarding relationships and delivering superior products and services to our customers.

Our Services

At MERYT Catalysts & Innovation, we provide a comprehensive range of unique services to our customers. Our strengths are summarized as follows:

- Offering a wide range of specific adsorbents, high-performing zeolite molecular sieves, carbon molecular sieves, silica gels, activated carbons, and bed support materials in the Europe, Middle East, North Africa and South America to meet the demanding needs of the market.
- Providing EPCM services for the new Adsorption units on customer's particular Adsorption application that will ensure the unit is built, started up and operated successfully.
- Optimizing existing Adsorption units to save regeneration energy costs, extend the adsorbent life, and reduce the replacement costs.
- Loading and unloading assistance to minimize downtime and bring the Adsorption unit back on-line in the shortest time possible.
- Offering a complete suite of field technical services to get the Adsorption unit up and running and to keep it that way.
- Training operation personnel to keep Adsorption unit operating profitably, reliably and safely.

By selecting MERYT Catalysts & Innovation as your preferred partner for your Adsorption needs, you will get:

- Innovative Adsorption solutions and configurations for difficult-to-treat feeds.
- Full service package (unit design, on-site technical service, operator training).
- High quality adsorbent products with short delivery times.

Our experts are located close to our customers in Europe, Middle East, North Africa, and South America. Wherever our customers have operations, we are there to support them. We move our people where they are needed and we recruit and train local people as the demands of each project require.

MERYT Adsorbents

SULPHUR REMOVAL ADSORBENTS

- MERYT SR-07
- MERYT SR-11
- MERYT SR-15
- MERYT SR-22
- MERYT SR-31
- MERYT SR-35
- MERYT GS-09
- MERYT LS-29
- MERYT COS-27
- MERYT OP-18

CHLORIDE REMOVAL ADSORBENTS

- MERYT CLR-20
- MERYT CLR-26
- MERYT CLR-30
- MERYT CLR-32
- MERYT CLR-99

MERCURY / ARSINE / NITROGEN / OTHERS REMOVAL ADSORBENTS

- MERYT HGR-50
- MERYT HGR-51
- MERYT OP-17
- MERYT GP-80
- MERYT KP-07
- MERYT ASR-22
- MERYT BAU-23

OTHER MATERIALS

- INERT SUPPORTS
- MOLECULAR SIEVES
- ACTIVATED CARBONS
- ACTIVATED ALUMINA
- SILICA GEL
- RESINS

SULPHUR REMOVAL ADSORBENTS

MERYT SR-07

Sulphur removal adsorbent based on nickel widely used for purification of naphta for reforming and isomerization processes. It is very efficient to remove hydrogen sulphide, disulfides, mercaptans and thiophenes. It has long cycle life, with a minimum pressure drop.

Properties	Specification
Appearance	Black extrudates
Nominal diameter	1.6/2.5 mm
Bulk density	0.55-0.65 kg/l
Surface area	$\geq 250 \text{ m}^2/\text{g}$

MERYT SR-11

Sulphur removal adsorbent based on zinc oxide specially designed to remove sulphur compounds as hydrogen sulphide, carbonyl sulphide and mercaptans from hydrocarbon streams. It is recommended to operate at high temperature for the best performance.

Properties	Specification
Appearance	Gray-white extrudates
Nominal diameter	4.5 mm
Bulk density	1.00-1.15 kg/l
Surface area	$\geq 50 \text{ m}^2/\text{g}$

MERYT SR-15

Sulphur removal adsorbent based on zinc oxide designed to remove the content of hydrogen sulphide to less than 0.1 ppm in the feeds for hydrogen and ammonia production. It is very active at low temperature and presents high water tolerance.

Properties	Specification
Appearance	Light gray extrudates
Nominal diameter	4.0/5.0 mm
Bulk density	1.20-1.25 kg/l
Surface area	$\geq 30 \text{ m}^2/\text{g}$

MERYT SR-22

Copper and zinc oxide-based adsorbent designed to remove carbon monoxide, oxygen, hydrogen and traces of hydrogen sulphide from olefins. It is used to purify polymer-grade feedstock to protect downstream catalysts. It has superior thermal stability and high activity under a wide range of operation conditions.

Properties	Specification
Appearance	Gray-black tablets
Nominal diameter	6.0 mm
Bulk density	1.20-1.40 kg/l
Surface area	$\geq 0.45 \text{ m}^2/\text{g}$

SULPHUR REMOVAL ADSORBENTS

MERYT SR-31

Sulphur removal adsorbent based on zinc oxide and copper oxide specially designed to remove carbon monoxide, oxygen, hydrogen and traces of hydrogen sulphide completely from olefins in the petrochemical industry. This adsorbent presents high activity and excellent thermal stability during all its cycle length life.

Properties	Specification
Appearance	Gray-white extrudates
Nominal diameter	6.0 mm
Bulk density	1.20-1.40 kg/l
Surface area	$\geq 45 \text{ m}^2/\text{g}$

MERYT SR-35

Sulphur removal adsorbent based on zinc oxide and copper oxide specially designed to effectively remove carbonyl sulphide, arsines and phosphines from propylene, LPG and naphtha in the petrochemical industry.

Properties	Specification
Appearance	Brown-black tablets
Nominal diameter	6.0 mm
Bulk density	1.20-1.40 kg/l
Surface area	30-70 m^2/g

MERYT GS-09

Adsorbent for removal of sulphur in gas and liquid streams, based on copper oxide and zinc oxide. Specially designed for the deep elimination of sulphur components in natural gas and syngas. It is also suitable for deep sulphur removal from naphtha, gasoline and LPG.

Properties	Specification
Appearance	Brown-yellow extrudates
Nominal diameter	4.5 mm
Length	4 - 15 mm
Bulk density	0.7-0.8 kg/l

MERYT LS-29

Adsorbent for removal of sulphur compounds from liquid streams, based on copper and nickel oxides. It is specially designed for the deep removal of sulphur compounds from naphtha feed to the platforming units in order to protect the noble metal catalyst.

Properties	Specification
Appearance	Black extrudates
Nominal diameter	1.1/1.3 mm
Bulk density	1.05-15 kg/l
Surface area	$\geq 45 \text{ m}^2/\text{g}$

MERYT COS-27

MERYT COS-27 is an adsorbent specially designed for the selective adsorption of carbonyl sulphide, hydrogen sulphide, carbon sulphide and water from propylene and other olefinic streams. It is widely used in the production processes of polyethylene, polypropylene, and styrene to selectively adsorb these contaminants and, therefore, protect the valuable downstream catalyst.

Properties	Specification
Appearance	White spheres
Nominal diameter	1.4-2.8/2.0-4.0/3.0-5.0 mm
Bulk density	0.70 - 0.80 kg/l
Surface area	≥ 240 m ² /g

MERYT OP-18

MERYT OP-18 is a regenerative adsorbent that can effectively removes trace contaminants, such as hydrogen sulphides and water, from olefin streams in either gas or liquid phase. It has a high capacity and selectivity, ensuring that downstream polymerization catalysts are not negatively impacted by these contaminants. Additionally, it prevents freezing at the cold box.

Properties	Specification
Appearance	Light yellow extrudates
Nominal diameter	7x12 or 5x8 mesh
Bulk density	0.70-0.80 kg/l



SULPHUR REMOVAL ADSORBENTS

CHLORIDE REMOVAL ADSORBENTS

MERYT CLR-20

Chloride Removal Adsorbent based on zinc oxide and calcium oxide, specially designed for the efficient removal of HCl from light Hydrocarbons at low temperature. MERYT CLR20 adsorbent has high strength and superior performance in naphtha purification for the treatment of reformates in the refining industry.

Properties	Specification
Appearance	Brown-yellow extrudates
Nominal diameter	4.0 mm
Bulk density	0.95 kg/l
Surface area	$\geq 45 \text{ m}^2/\text{g}$

MERYT CLR-26

Chloride removal adsorbent based on zinc and calcium oxides, specially designed to remove hydrogen chloride and organic chlorides from liquid hydrocarbon streams, at low temperature. It is widely used for the purification of LPG, reformat of reforming units and the feedstock of aromatics BTX units.

Properties	Specification
Appearance	White trilobe extrudates
Nominal diameter	1.6 mm/3.2 mm
Bulk density	0.50-0.60 kg/l
Surface area	$\geq 25 \text{ m}^2/\text{g}$

MERYT CLR-30

Chloride removal adsorbent based on alumina and sodium, designed for the removal of hydrogen chloride from gas and liquid process streams. Thanks to its high pick-up capacity, MERYT CLR-30 protects downstream equipment and the poisoning of catalysts. It is widely used in reforming units

Properties	Specification
Appearance	White spheres
Nominal diameter	2.5 / 3.2 mm
Bulk density	0.75 kg/l
Surface area	$\geq 160 \text{ m}^2/\text{g}$



MERYT CLR-32

MERYT CLR-32 is a non-regenerative adsorbent used for removing traces of hydrogen chloride from hydrocarbon streams in the petrochemical industry. It provides high chloride capacity, longer service life, and minimizes green oil and organic chloride formation. Its optimized pore structure and high surface area lead to higher chloride pickup capacity, longer service life, and rapid adsorption.

Properties	Specification
Appearance	White spheres
Nominal diameter	1.0-5.0 mm
Bulk density	0.75 kg/l

MERYT CLR-99

Chloride removal adsorbent based on a modified molecular sieve specially designed to remove HCl and Organic Chlorides from Hydrogen from CCR units, LPG and liquid Hydrocarbon streams. It has an excellent Adsorption capacity and high porosity, providing long life cycles.

Properties	Specification
Appearance	Light yellow spheres
Nominal diameter	1.0-3.0 / 2.0-5.0 mm
Bulk density	0.60-0.70 kg/l



CHLORIDE REMOVAL ADSORBENTS

MERCURY / ARSINE / NITROGEN / OTHERS REMOVAL ADSORBENTS

MERYT HGR-50

Mercury removal adsorbent based on copper sulphide, specially designed for the efficient removal of mercury in natural Gas, nitrogen, air and oil field gas, thanks to its maximized mercury adsorption capacity. It is a non-regenerable adsorbent in extrudates form.

Properties	Specification
Appearance	Gray-black extrudates
Nominal diameter	2.5 -3.0 mm
Bulk density	0.75-0.85 kg/l

MERYT HGR-51

Mercury removal adsorbent based on copper sulphide, specially designed for the efficient removal of mercury in natural gas, nitrogen, air and oil field gas, thanks to its maximized mercury Adsorption capacity. It is a non-regenerable adsorbent in spheres form. An alternative higher particle size is offered to help to reduce the pressure drop of the bed.

Properties	Specification
Appearance	Gray-black spheres
Nominal diameter	2.0-4.0 / 3.0-5.0 mm
Bulk density	0.70-0.90 kg/l

MERYT OP-17

Adsorbent designed for the removal of oxygenated hydrocarbons organic sulphur and nitrogen-based polar compounds from saturated and unsaturated hydrocarbon streams.

MERYT OP-17 it is widely used for the purification of the streams of propylene and mixed C4, to protect valuable downstream catalysts.

Properties	Specification
Appearance	White spheres
Nominal diameter	1.4-2.8 / 2.0-4.0 / 3.0-5.0 mm
Bulk density	0.67-0.80 kg/l



MERYT GP-80

Adsorbent based on copper and manganese specially designed for the removal of contaminants arsine, phosphine, carbonyl sulphide, hydrogen sulphide and mercury in natural gas, syngas, LPG, paphtha and propylene.

Properties	Specification
Appearance	Gray-black extrudates
Nominal diameter	1.5 mm
Bulk density	0.65-0.75 kg/l
Surface area	$\geq 100 \text{ m}^2/\text{g}$

MERYT KP-07

MERYT KP-07 is a very-high performance adsorbent based on attapulgite used for the purification of kerosene. Thanks to its very high surface area, it removes all type of contaminants as water, metals, free fatty acids, colored compounds, organic oxides and surfactants in order to obtain a jet fuel into specifications. It is also widely used for the purification of oils and waxes.

Properties	Specification
Appearance	Light brown fine granules
Bulk density	0.55-0.65 kg/l
Moisture	max. 5.0 %

MERYT ASR-22

MERYT ASR-22 is an arsenic removal adsorbent used to remove trace levels of arsine and sulfur from liquid and gaseous hydrocarbon feedstocks, including hydrogen-rich gases like cracked gases. It does not promote polymer formation and is suitable for streams with acetylenes or dienes that can foul other guard bed materials.

Properties	Specification
Appearance	White spheres
Nominal diameter	3.0 mm
Bulk density	0.76 kg/l
Specific surface area	$\geq 150 \text{ m}^2/\text{g}$

MERYT BAU-23

MERYT BAU-23 is an activated bauxite designed to remove color and odor from hydrocarbon mixtures or aqueous solutions. Its treatment results in a reduction of organic acidity and increased resistance to oxidation in hydrocarbons.

Properties	Specification
Appearance	Light pink extrudates
Nominal diameter	1.6 mm
Bulk density	0.75 - 0.90 kg/l
Specific surface area	$\geq 100 \text{ m}^2/\text{g}$

INERT SUPPORTS

Inert supports play a pivotal role in chemical reactors, facilitating flow distribution and mitigating the loss of catalyst downstream. Typically situated at the base of the reactor and above the catalyst bed, it's crucial to grade these supports by size. This grading helps reduce pressure drops and averts the loss of catalyst particles in subsequent reactor sections.

Inert supports, such as ceramic, alumina, and high alumina balls, are widely used due to their resilience in high-temperature and corrosive conditions. Their design is meticulously tailored to enhance reactor parameters, including pressure drop, flow distribution, and heat transfer efficiency.

MOLECULAR SIEVES

Molecular sieves are microporous materials engineered to adsorb specific molecules selectively based on their size and shape, making them indispensable in numerous industrial processes. These sieves are categorized by their composition, pore size, and structural design, enabling a diverse array of separation and purification tasks. Predominantly used molecular sieves in industry encompass 3A, 4A, 5A, and 13X variants, with Carbon Molecular Sieves (CMS) as another variant.

At MERYT, we offer an exhaustive range of molecular sieves. The most used are:

- MERYT Molecular Sieve 3A: Specifically engineered for high selectivity towards water, effectively adsorbing water molecules from hydrocarbons and various organic solvents.
- MERYT Molecular Sieve 4A: Predominantly utilized in natural gas dehydration and for purification tasks in refrigeration applications.
- MERYT Molecular Sieve 5A: used for the separation of molecules such as nitrogen and oxygen in air separation processes, as well as for the drying and purification of gases and liquids.
- MERYT Molecular Sieve 13X: Prominent in natural gas treatment and purification, adept at impurity extraction from sources like biogas and landfill gas.
- MERYT Carbon Molecular Sieve: Specialized in generating high-purity nitrogen gas via the selective adsorption of oxygen and other contaminants from ambient air.

ACTIVATED CARBONS

Activated carbons are highly porous materials with a large surface area (up to 1500 m²/g), making them very effective adsorbents for a wide range of applications. They can be produced from various carbon-rich sources, including coconut shells, wood, and coal. Activated carbons are commonly used in air and water purification, wastewater treatment, food and beverage industries and pharmaceuticals. Their extremely high surface area allows them to effectively adsorb impurities and contaminants.

At MERYT, we provide all types of activated carbons:

- MERYT PAC, Powdered Activated Carbon, commonly used in water treatment due to its high adsorption capacity.
- MERYT GAC, Granular Activated Carbon (GAC), used in air and water treatment, with large surface area and low pressure drop.
- MERYT PEAC, Pellet Activated Carbon, used in gas phase applications, including industrial gas purification and solvent recovery.

Other activated carbons available, impregnated with different substances, are supplied for the removal of specific contaminants, including mercury, sulfur, and nitrogen oxides. With the support from our team of experts, we recommend you the most suitable activated carbon for each application.

ACTIVATED ALUMINA

Activated alumina is a porous, granular material that is commonly used as an adsorbent for various applications. It is produced by heating aluminum hydroxide at high temperatures, which creates a highly porous material with a large surface area. Activated alumina is commonly used in air and gas purification, as well as in the drying of various liquids and gases. Additionally, it is often used in the water treatment industry to remove fluoride and other contaminants.

At MERYT, we supply all types of activated aluminas, with different surface areas, from 200 to 500 m²/g. Our products are manufactured using only the highest quality materials and production processes, ensuring that they are efficient, effective, and reliable. Our team of experts works closely with each customer to understand their unique adsorption requirements and to provide customized solutions to meet their specific challenges.

SILICA GEL

Silica gel is a highly porous and amorphous form of silicon dioxide, commonly used as a desiccant to control humidity and moisture in various applications. It has a large surface area, typically ranging from 500 to 800 m²/g, which allows it to adsorb water molecules through physical adsorption. Silica gel is an excellent drying agent due to its high surface area and uniform pore size, which provides high adsorption capacity and efficiency. It is commonly used in air and gas drying applications. Other uses are packaging and storage of food, electronics, and pharmaceuticals.

At MERYT, we offer a wide range of silica gel products, including blue, orange, and white indicating silica gel and non-indicating silica gel. Our silica gel products are manufactured using high-quality raw materials and advanced production processes to ensure consistent quality and performance. We also provide customized solutions to meet our customers' specific humidity and moisture control requirements.

RESINS

Resins are widely used as catalysts and ion exchange materials. As catalysts, they are worldwide used for the production of ETBE, MTBE and TAME which are gasoline octane boosters. Resins as ion exchange materials are used to remove unwanted ions from solutions, replacing them with more desirable ions. This process is commonly used in water treatment plants. Furthermore, they are very used in other industries as food and beverages, and in the production of high-purity chemicals.

At MERYT, we offer a range of resins for catalyst and ion exchange applications. Our products include strong and weak acid cation exchange resins, strong and weak base anion exchange resins, chelating resins, and other resins. We also provide customized resin solutions to meet our customers' specific needs, ensuring optimal performance and efficiency.



OTHER MATERIALS



For additional information about any of these Adsorbents or any other Adsorbent not detailed in this catalogue, please, contact us, we will be very happy to help you.

MERYT Catalysts & Innovation Europe
C/Berlín, Parcela 3F, Polígono Industrial
Cabezo Beaza, 30353-Cartagena (Murcia)
SPAIN

Phone: +34 650 511 861

Email: info@meryt-chemical.com

MERYT Chemicals GCC
29 Al Ain Rd, Umm Al Nair, Abu Dhabi
UNITED ARAB EMIRATES

Phone: +971 56 501 9998

Email: info@meryt-chemical.com