

Proven suite of gas treating technologies and absorbents.

FLEXSORB™ technology

ExxonMobil's FLEXSORB technology enables customers to process increasingly sour gas streams while helping to meet stringent emission regulations and sulfur recovery objectives. This highly selective H₂S removal process has been used in tail gas treating (TGT), acid gas enrichment (AGE) and high-pressure acid gas removal (AGR) units. The technology provides a cost-effective way to meet low H₂S specifications while minimizing CO₂ co-absorption.

ExxonMobil has developed and commercialized the FLEXSORB™ suite of gas treating technologies and absorbents and has applied them in petroleum refining, natural gas production, and petrochemical operations around the world.

The FLEXSORB SE technology is designed for the selective removal of H₂S in the presence of CO₂ and utilizes proprietary sterically hindered amines. The unique characteristics of the amine allow it to achieve high H₂S cleanup selectively at low solvent circulation rates. This gas treating technology has been proven in over 100 commercial units worldwide and is considered the best available technology in many regions, enabling facilities to meet stringent emissions standards. FLEXSORB SE Plus can help to meet or exceed the World Bank Standard (WBS) SO₂ emission limit of 150 mg/Nm³, equivalent to approximately 99.98% sulfur recovery efficiency (SRE).

Two variations:

FLEXSORB SE

is used for selective removal of H₂S

FLEXSORB SE Plus

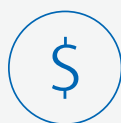
is used to meet ultra low H₂S specifications (< 10 vppm) even at the low pressures.

Key benefits



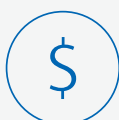
Proven technology

- Over 45 years of proven commercial experience



Low capital costs

- Smaller pumps and heat exchangers
- Smaller columns
- Uses standard gas treating equipment



Low operating costs

- Low circulation rate
- Low energy consumption
- Long solvent life and resistant to performance deterioration overtime
- Simple to operate

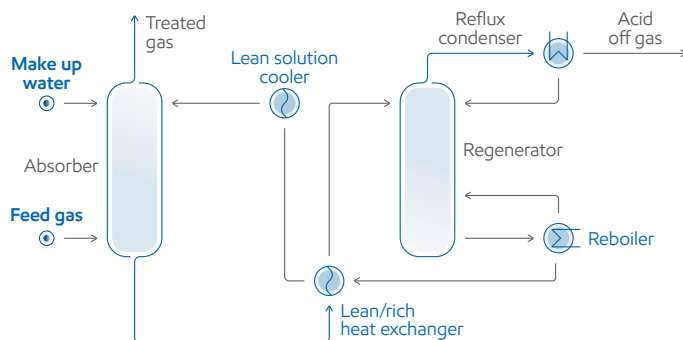


Environmental benefits

- Meets stringent H₂S emissions targets to improve environmental performance
- Meets H₂S standards even at low pressure or higher lean temperature

Tail gas treating unit (TGTU)

In sulfur plant TGTU applications, FLEXSORB™ SE and SE Plus solvents require about half of the circulation rate and regeneration energy of other solvents based on methyldiethanolamine (MDEA). CO₂ rejection is very high, typically above 90%. Lower circulation rate translates into smaller heat exchangers and a smaller regenerator tower, thereby reducing investments for grassroots projects. For existing units, FLEXSORB SE and SE Plus solvents allow the unit to be debottlenecked with few or no equipment modifications.



High pressure natural gas treating

In natural gas treating, selective H₂S removal from natural gas can be advantageous whenever a portion of the CO₂ can remain in the treated gas. In one natural gas treating facility, conversion to FLEXSORB SE solvent allowed the unit to increase gas production by 27% without modification of the existing hardware. At the same time, the circulation rate and reboiler duty was lowered to 65% and 78% of the design, respectively. FLEXSORB SE also improved the CO₂ slip and the operability of the unit by reducing the co-absorption of heavy hydrocarbons.

Acid gas enrichment

ExxonMobil's FLEXSORB SE or SE Plus solvents are in use in a wide variety of Acid Gas Enrichment (AGE) designs around the world, enabling reserves that contain more CO₂ than H₂S to be economically developed. As the name implies, an AGE unit enriches the H₂S content of the acid gas stream, making it practical to recover sulfur in a conventional Claus SRU. In applications where acid gas injection instead of Claus is used, FLEXSORB technology can be used to minimize the volume of acid gas for re-injection.

Onshore treating facility

	Conventional hybrid	FLEXSORB SE
Sour gas rate, MSCFD	X	127% of X
Pressure, psig	935	935
Temperature, °F	90	90
Feed composition, vol %		
H ₂ S	0.064	0.064
CO ₂	1.0	1.0

Solvent rate, gpm	460	300
Reboiler duty, MBTU/HR	19.0	14.9
Treated gas		
H ₂ S, vppm	4	2
CO ₂ , mole %	0.70	0.85



Have a technical question?

Connect directly with our technical experts at exxonmobilchemical.com/AnswerPerson

©2025 ExxonMobil. ExxonMobil, the ExxonMobil logo, the interlocking "X" device and other product or service names used herein are trademarks of ExxonMobil, unless indicated otherwise. This document may not be distributed, displayed, copied or altered without ExxonMobil's prior written authorization. To the extent ExxonMobil authorizes distributing, displaying and/or copying of this document, the user may do so only if the document is unaltered and complete, including all of its headers, footers, disclaimers and other information. You may not copy this document to or reproduce it in whole or in part on a website. ExxonMobil does not guarantee the typical (or other) values. Any data included herein is based upon analysis of representative samples and not the actual product shipped. The information in this document relates only to the named product or materials when not in combination with any other product or materials. We based the information on data believed to be reliable on the date compiled, but we do not represent, warrant, or otherwise guarantee, expressly or impliedly, the merchantability, fitness for a particular purpose, freedom from patent infringement, suitability, accuracy, reliability, or completeness of this information or the products, materials or processes described. The user is solely responsible for all determinations regarding any use of material or product and any process in its territories of interest. We expressly disclaim liability for any loss, damage or injury directly or indirectly suffered or incurred as a result of or related to anyone using or relying on any of the information in this document. This document is not an endorsement of any non-ExxonMobil product or process, and we expressly disclaim any contrary implication. The terms "we," "our," "ExxonMobil Chemical" and "ExxonMobil" are each used for convenience, and may include any one or more of ExxonMobil Chemical Company, Exxon Mobil Corporation, or any affiliate either directly or indirectly stewarded.



ExxonMobil