

QUALITY PERFORMS.



LANXESS Bromine Solutions

Bromine and intermediates product guide

QUALITY WORKS.

LANXESS
Energizing Chemistry

A GLOBAL LEADER IN BROMINE AND INTERMEDIATES

INNOVATIVE. RELIABLE. SUSTAINABLE.

For close to a century, we have helped our customers to meet their needs with a broad portfolio of products and solutions. We are proud of our history, and look forward to helping our customers meet future performance, safety and compliance requirements by refining and redefining our portfolio with new and improved products that maximize sustainability. LANXESS Bromine Solutions is dedicated to providing products that are innovative, reliable and also minimize the impact on our environment and human health without sacrificing performance or quality. We are committed to Responsible Care practices and Product Stewardship for our products. As a leading Bromine and Intermediates producer, we are proud to be an excellent partner to our customers for a sustainable and secure global supply.

Global operations



★ LANXESS Bromine Solutions HQ ◆ Sales and Service Center ● Manufacturing ▲ Technical Competence Center
Strategic Bromine and Brominated Derivatives Agreements in South Arkansas and The Dead Sea.

We are committed to global sustainability and engineering chemical solutions that meet our customers' evolving needs.

BROMINE AND INTERMEDIATES

LANXESS Bromine Solutions is one of the world's leading manufacturers of Bromine and brominated Intermediates. With access to the world's two main sources of Bromine and significant ongoing investment in our Bromine ISO tank fleet and maintenance capacity, LANXESS Bromine Solutions is one of the leading global suppliers: Bromine and brominated Intermediates serve as building blocks for developing and engineering highly complex organic molecules that meet specific performance, environmental and quality requirements. Bromine and its Intermediates are utilized in many applications including flame retardants, agrochemicals, pharmaceuticals, fine chemicals, high performance rubber, polymers and biocides.

Additionally, inorganic bromides are important chemicals for the energy sector. Clear brine fluids are used in oil and natural gas production and the **GeoBrom®** product line of Bromine derivatives is a part of the solution for mercury emission control in coal fired power stations and industrial boilers.

Innovative solutions

Our expertise in Bromine and Bromine based chemicals, both in the lab and in full scale production, is built on a foundation of over 60 years of innovation and continuous improvement. Our state-of-the-art, dedicated technology centers in the United States are staffed by a growing team of highly experienced scientists skilled in a wide array of synthetic methods and chemical manufacturing processes.

We operate multi-purpose, flexible pilot facilities in the United States which enables us to readily scale up new products and processes from grams to tons before the commitment to full scale production. While primarily focused on providing the highest quality and most reliable Bromine and brominated intermediate products, our technology team also provides custom synthesis and process development services to customers seeking to advance their project with an experienced and reliable partner.



BROMINE & INTERMEDIATES

PRODUCT RANGE

Chemical name	CAS no.	Applications
Bromine & hydrobromic acid		
Bromine	7726-95-6	Flame retardants, agrochemicals, fine chemicals, dyes, Pharmaceuticals, high performance rubbers and biocides
Hydrobromic acid solutions	10035-10-6	Agrochemicals, fine chemicals, dyes, pharmaceuticals, PTA, biocides and mercury control
Anhydrous hydrogen bromide	10035-10-6	Fine chemicals, pharmaceuticals and plasma etching
Alkyl bromides		
Cetyl bromide	112-82-3	Surface active agents, biocides, specialty intermediates and viscosity modifiers
Dibromomethane	74-95-3	Fine chemicals, agrochemicals and biocides
Ethyl bromide	74-96-4	Fine chemicals, solvents and pharmaceuticals
Ethylene dibromide	106-93-4	Fine chemicals, agrochemicals, pharmaceuticals and scavenger for lead in gasoline
Lauryl bromine	143-15-7	Specialty intermediates and viscosity modifiers
Methyl bromide industrial	74-83-9	Fine chemicals, pharmaceuticals and agrochemicals
n-Butyl bromide	109-65-9	Pharmaceuticals and agrochemicals
n-Propyl bromide	106-94-5	Pharmaceuticals, agrochemicals and solvents
Inorganic bromides		
Calcium bromide (dry or solution)	7789-41-5	Photography, food preservation, road treatment and freezing mixtures
Sodium bromide (dry or solution)	7647-15-6	Photography, high performance rubber and fine chemicals

As with any product, use of the products mentioned in this publication in a given application must be tested (including field testing, etc.) by the user in advance to determine suitability.

Please contact your LANXESS Bromine Solutions representative if you require products not currently listed.



STRUCTURES

Bromine & hydrobromic acid

Bromine

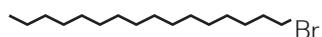


Hydrobromic acid

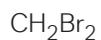


Alkyl bromides

Cetyl bromide



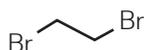
Dibromomethane



Ethyl bromide



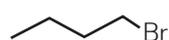
Ethylene dibromide



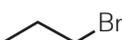
Methyl bromide industrial



n-Butyl bromide



n-Propyl bromide



Lauryl bromide



Inorganic bromides

Calcium bromide*



Sodium bromide*



*dry or solution



PRODUCT SAFETY AND STEWARDSHIP

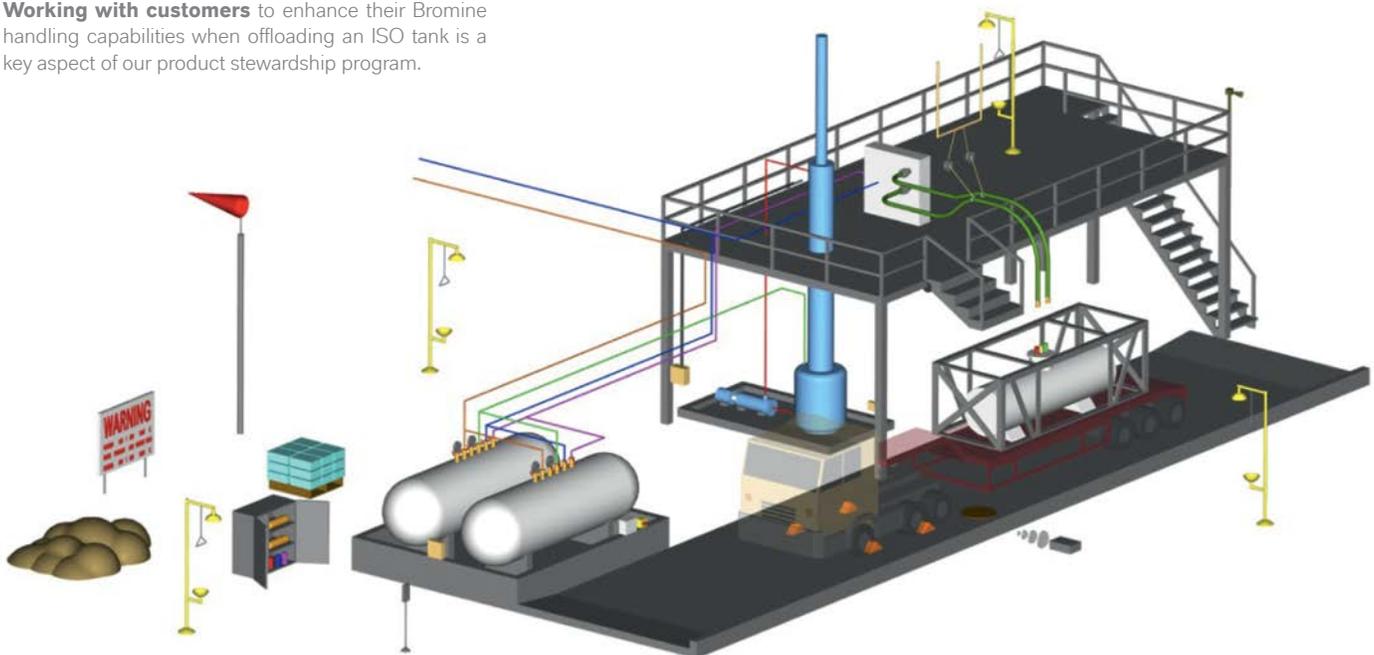
Our Bromine and Intermediates division manufactures and distributes products primarily used as “building block” chemicals which are handled in industrial settings. We utilize our business management systems, questionnaires and in many cases onsite safety assessments to evaluate our customers’ abilities to handle our products in an appropriately safe manner. As opportunities and needs merit, we then further educate our customers on the chemical they receive through safety data sheets, direct interaction, and where appropriate, supplemental information we have developed.

LANXESS Bromine Solutions is dedicated to Responsible Care practices and continuous improvement and is willing to work with our customers in ways that further enhance the safe and responsible distribution, handling and disposal of our Bromine and Intermediates products. Please contact your LANXESS Bromine Solutions representative if you have questions regarding safety and handling of our Bromine and Intermediate products.



Example of an ISO tank offloading facility

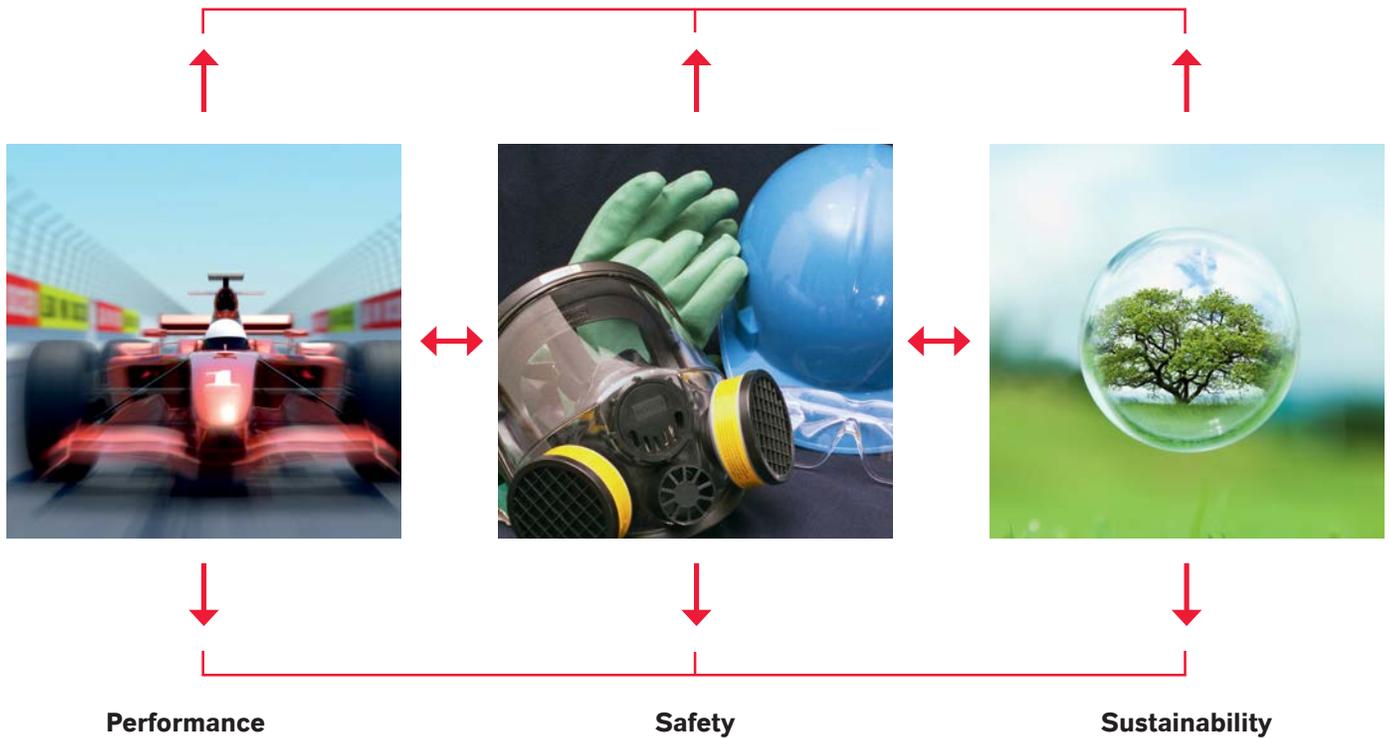
■ **Working with customers** to enhance their Bromine handling capabilities when offloading an ISO tank is a key aspect of our product stewardship program.



RESPONSIBLE CARE COMMITMENT

We are committed to strong performance – for our customers and for ourselves – and to providing for the safety of our employees, our customers and their customers, as well as meeting industry and environmental sustainability standards

and goals. The areas of performance, safety and sustainability permeate our organization and are closely related to make LANXESS Bromine Solutions the business it is today.





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The manner in which you use and the purpose to which you put and utilize our products, technical assistance and information (whether verbal, written or by way of production evaluations), including any suggested formulations and recommendations are beyond our control. Therefore, it is imperative that you test our products, technical assistance and information to determine to your own satisfaction whether they are suitable for your intended uses and applications. This application-specific analysis must at least include testing to determine suitability from a technical as well as health, safety, and environmental standpoint. Such testing has not necessarily been done by us. Unless we otherwise agree in writing, all products are sold strictly pursuant to the terms of our standard conditions of sale. All information and technical assistance is given without warranty or guarantee and is subject to change without notice. It is expressly understood and agreed that you assume and hereby expressly release us from all liability, in tort, contract or otherwise, incurred in connection with the use of our products, technical assistance, and information. Any statement or recommendation not contained herein is unauthorized and shall not bind us. Nothing herein shall be construed as a recommendation to use any product in conflict with patents covering any material or its use. No license is implied or in fact granted under the claims of any patent.

Health and Safety Information: Appropriate literature has been assembled which provides information concerning the health and safety precautions that must be observed when handling the LANXESS products mentioned in this publication. For materials mentioned which are not LANXESS products, appropriate industrial hygiene and other safety precautions recommended by their manufacturers should be followed. Before working with any of these products, you must read and become familiar with the available information on their hazards, proper use, and handling. This cannot be overemphasized. Information is available in several forms, e.g., *material safety data sheets and product labels*. Consult your LANXESS Solutions US Inc. representative or contact the Product Safety and Regulatory Affairs Department at LANXESS.

Regulatory Compliance Information: Some of the end uses of the products described in this publication must comply with applicable regulations, such as the FDA, NSF, USDA, CPSC and BfR. If you have any questions on the regulatory status of these products, contact your LANXESS Solutions US Inc. representative or Regulatory Affairs Manager at LANXESS.

Note: The information contained in this publication is current as of April, 2017. Please contact LANXESS Solutions US Inc. to determine if this publication has been revised. Edition 04/2017

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