FASCAT® Catalysts

pmc organometallix™

About FASCAT® Catalysts

PMC's broad portfolio of high purity tin catalysts is offered in packages ranging from pails to totes. Our outstanding customer service is aligned with global availability and industry-leading technical know-how. FASCAT catalysts are the world's trusted, cost-effective solution for esterification, transesterification and urethane and siloxane cross-linking.

PMC Organometallix is a leading global producer of a broad portfolio of stannous (tin II), monobutyltin, dibutyltin, and dioctyltin catalysts under the FASCAT brand name. Our catalysts are globally recognized for consistent performance. Quality assurance drives our manufacturing processes and provides peace of mind to our customers. As long as proper procedures are followed, FASCAT catalysts will perform consistently, batch after batch, no matter where in the world they are utilized.

Your trusted performer

Electrocoat manufacturers trust FASCAT catalysts for the most exacting specifications for automotive and industrial resin and paste applications.

Your cost-effective solution

Ester manufacturers recognize FASCAT catalysts as superior to caustics and titanates due to overall lower manufacturing costs. Most applications require extremely low loading levels to achieve desired reaction rates.

Your regulatory partner

FASCAT 2000 and 4100 series products are very high purity - offering manufacturers seeking to minimize dibutyltin (DBT) and tributyltin (TBT) confidence when it comes to meeting stringent regulatory standards.

pmc organometallix™

Your global partner

PMC Organometallix has the global production and warehousing capacity to provide the FASCAT product you need when you need it. Visit FASCAT.com to see our list of global distributors.

Your formulating aide

FASCAT catalysts provide manufacturers of urethanes and siloxanes a cost-effective means of enhancing or varying cure speed and pot life.

FASCAT® Applications

FASCAT catalysts are effective for a wide variety of end-use applications. Many FASCAT catalysts behave as Lewis acids, making a wide range of synthetic chemistry possible. Listed below are typical uses.

FASCAT® catalysts are used in the production of:

Adhesives and Sealants

Adhesives and sealants rely on FASCAT catalysts to enhance curing properties. Both polyurethane and silicone-based chemistries are common applications in both 2K and 1K systems.

Biofuels and Synthetic Lubricants

Manufacturers seeking high yield and minimal side reactions use FASCAT catalysts to esterify the monomeric esters used for biofuels and synthetic lubricants. Solid and liquid catalysts are available and can be distilled or filtered from the finished products.

Coatings

FASCAT catalysts are widely used in coatings applications, both for making resins and enhancing the cure of the final formulation. Food contact (FDA) grade catalysts are also available.

A specialized FASCAT solution exists for manufacturers working with a variety of resins and coatings:

- Polyester resins
- Alkyd resins
- Polyurethanes
- Epoxy resins
- Hybrids: polysiloxane/epoxy hybrids
- Electrophoretic coatings (e-coat)

Elastomers

FASCAT catalysts can be used to vary the speed of cross-linking for polyurethanes (PUR, TPU, TPE) and for silicones (SI, Q, VMQ). Other synthetic rubber compounds also benefit from FASCAT technology.

Foams

From mattresses to insulation, polyurethane foams are made from reacting polyether polyols or polyester polyols with isocyanate in the presence of a FASCAT catalyst and tertiary amine. PMC manufactures two primary products for foam production. Contact our experts for special selectivity or VOC requirements.

Plasticizers

FASCAT catalysts are used to manufacture phthalate esters, in particular dioctyl phthalate (DIOP) esters. These high molecular weight phthalate esters are used as plasticizers in a wide variety of end uses from enteric coatings of pharmaceuticals, to viscosity control agents, film formers, suspending agents, personal-care products, and soft plastics.

Unsaturated Polyester Resins

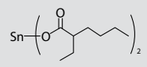
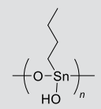
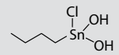
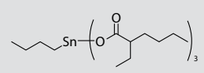
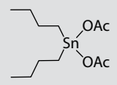
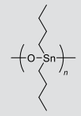
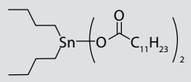
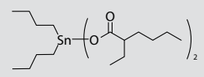
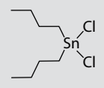
FASCAT catalysts are used to manufacture polyester resins that are used to manufacture composites.

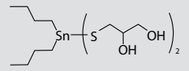
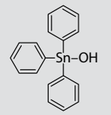
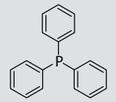
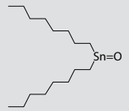
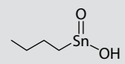
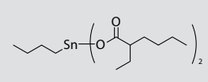
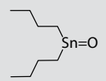
Use our product selector tool at www.FASCAT.com to find out which FASCAT catalysts best meet your needs.

FASCAT® Product Portfolio

Highly selective catalysts for esters, urethanes, and siloxanes

FASCAT catalysts can have a 1 or 2 year shelf life as indicated at room temperature in an unopened container. Shelf life is determined based on manufacture date or recertification date as indicated on the certificate of analysis (CoA).

Product	CAS #	Chemical Name(s)	Product Description	Chemical Structure
FASCAT 2001 ●	814-94-8	Stannous oxalate	• White to off-white solid powder • Production of monomeric and polymeric plasticizers, fatty acid esters, and synthetic lubricants • Removable from final ester by filtration	
FASCAT 2003 ●	301-10-0	Stannous bis (2-ethylhexanoate) *also known as* Stannous octoate	• Pale yellow liquid • Production of oleochemicals and silanol condensation reactions • Urethane cross-linking • Urethane foam gelling	
FASCAT 2004 ●	7772-99-8	Stannous dichloride	• Solid white to off-white flaked material • Esterification catalysts • Removable from final ester by filtration • Used in tin plating and other metal finishing	
FASCAT 4100 ●	2273-43-0	Monobutyltin oxide *also known as* Butyl stannoic acid	• Amorphous white solid for transesterification and esterification • Hydrolytically stable • Versatile, neutral catalyst • Extremely pure with low levels of DBT and TBT contamination	
FASCAT 4101 ●	13355-96-9	Monobutyltin dihydroxychloride	• Amorphous white solid for transesterification and esterification • Hydrolytically stable • Soluble in several solvents, NaOH, HNO3 • Extremely pure with low levels of DBT and TBT contamination	
FASCAT 4102 ●	23850-94-4	Monobutyltin tris (2-ethylhexanoate)	• Pale yellow liquid • Esterifications of aromatic polyester polyols • Ring opening polymerization • Plasticizers, including dioctyl phthalate	
FASCAT 4200 ●	1067-33-0	Dibutyltin diacetate	• Clear, colorless to pale yellow liquid • Silanol condensation reactions for caulk and sealant applications • Production of blocked isocyanates • Cross-link urethane coating systems • Transesterifications	
FASCAT 4201 ●	818-08-6	Dibutyltin oxide	• Amorphous white solid • Transesterification catalyst for methacrylate esters • High temperature transesterification reactions for coating resins • Cross-linking electrocoat resins and pastes • Finely ground available - FASCAT 4203	
FASCAT 4202 ●	77-58-7	Dibutyltin dilaurate	• Yellow amber, oily liquid • Cross-link two-component urethane coating systems • Cross-link RTV silicone systems • Cross-link polyethylene/silane (PEX) co-polymer systems • Gelling catalyst of flexible and rigid polyurethane foams	
FASCAT 4208X ●	2781-10-4	Dibutyltin bis (2-ethylhexanoate) in xylene (50 wt%)	• White to straw liquid • Silanol/silicone condensation reactions	
FASCAT 4210 ●	63-18-1	Dibutyltin dichloride	• White crystalline solid • Intermediate for producing dibutyltin compounds • Precursor for glass coating • Reactive additive for synthetic rubber to improve carbon black dispersibility	

Product	CAS #	Chemical Name(s)	Product Description	Chemical Structure
FASCAT 4224 ●	68298-38-4	Dibutyltin bis (1-thioglyceride)	• Clear to light colored liquid • Highly selective for polyurethane systems. • Hydrolytic stability for waterborne coatings and adhesives • Formulations needing long pot life at room temperature, quick cure at elevated temperatures	
FASCAT 4233 ●	Proprietary	Butyltin mercaptide	• Light amber oily liquid • Synthesis and curing of polyurethanes • Delayed action cure compared to organotin carboxylates	Proprietary
FASCAT 4350 ●	Proprietary	Butyltin oxide	• Amorphous white powder • Alkyd resins --> alcoholosis and esterification steps • 20% to 25% reduction in reaction time as well as improved color and haze compared to lithium catalyzed systems	Proprietary
FASCAT 4351 ●	76-87-9	Triphenyltin hydroxide	• White powder • Commonly used in fungicides • Acid-epoxy reactions	
FASCAT 4352 ●	603-35-0	Triphenylphosphine	• White to light tan flaked solid • Synthesis of organic and organometallic compounds • Synthesis of biaryl compounds • Deoxygenation of organic peroxides	
FASCAT 4400 ●	7646-78-8	Tin tetrachloride *also known as* Stannic chloride	• Clear to yellow, fuming liquid • Chloromethylation and reaction of epichlorohydrin with alcohols to form glycidyl ethers • Organic synthesis	
FASCAT 8201 ●	870-08-6	Dioctyltin oxide	• Amorphous white solid • Transesterifications • Cross-linking electrocoat resins and pastes • Slightly less reactive than DBTO, but fewer regulatory restrictions • Finely ground available - FASCAT 8203	
FASCAT 9100 ●	2273-43-0	Monobutyltin oxide *also known as* Butyl stannoic acid (Food Contact Grade)	• FDA grade of FASCAT 4201 that satisfies 21 CFR 175.300, 21 CFR 177.2420, and 21 CFR 175.105. • Consult the publication for limitations	
FASCAT 9102 ●	23850-94-4	Monobutyltin tris (2-ethylhexanoate) (Food Contact Grade)	• FDA grade version of FASCAT 4102 used in cross-linked polyester resins for food contact articles intended for repeated use under 21 CFR Sec. 177.2420(b)3. • The maximum amount of catalyst cannot exceed 0.2 percent of the polyester resin under 21 CFR Sec. 175.300.	
FASCAT 9201 ●	818-08-6	Dibutyltin oxide (Food Contact Grade)	• FDA grade of FASCAT 4201 that satisfies 21 CFR 175.300, 21 CFR 177.2420, and 21 CFR 175.105. • Consult the publication for limitations	

KEY

- ● 1 Year Shelf Life
- ● 2 Year Shelf Life

Full Descriptions and Technical Data Sheets Are Available at www.FASCAT.com

Product Stewardship for FASCAT® Catalysts

PMC will help you navigate the facts and regulations for organotin products

Tin (Sn) in its elemental form, CAS 7440-31-5, has a silvery or gray appearance. Tin is commonly extracted from the mineral cassiterite, and is nontoxic.

Uses of tin go back 3000 years when it was commonly mixed with copper to make bronze, which remains a widely used alloy today. When tin is used to form organometallic complexes, a wide range of toxicities can be observed. Some species are toxic while others have low toxicities.

General Toxicity Rules

R = Me > Bu > Oct

R_3SnX > R_2SnX_2 > $RSnX_3$

R = Organic group (Methyl, Butyl, Octyl)
X = Ligand (Halide, Oxide, Mercaptide, etc.)

What do you need to know regarding the use of FASCAT tin catalysts?

FASCAT catalysts are not Substances of Very High Concern (SVHC). Although FASCAT 4200 and 8200 series catalysts have REACH! restrictions, they are generally effective at catalyzing reactions at levels below the 0.1% REACH threshold equivalent weight of tin.

Navigating the regulatory environment around the world can be tough – let our experts help guide you!

How does REACH* specifically impact organotins?

Organotin compounds cannot be used as biocides in free association paint, as antifouling agents for submerged items, or for industrial water treatment.

Tri-substituted organostannic compounds, such as tributyltin (TBT) compounds and triphenyltin (TPT), and dibutyltin (DBT) compounds are limited to 0.1% by weight of tin in consumer products.

Similarly, dioctyltin (DOT) compounds are limited to 0.1% by weight of tin in articles that would come in contact with the skin (gloves, footwear, nappies, floor coverings etc.).

Other REACH registered tin compounds are not restricted.

For additional information regarding our FASCAT product stewardship,

ask our experts at www.FASCAT.com/ask-the-expert/ or email us at regulatory@fascat.com

[!] Regulation, Evaluation, Authorization & Restriction of Chemicals
* Per REGULATION (EC) No 1907/2006 and COMMISSION REGULATION (EU) No 276/2010

FASCAT® Catalysts Help to Provide Renewable Energy

With applications in the wind turbine industry, FASCAT catalysts assist in the creation of environmentally-friendly energy solutions.

FASCAT 2000 & 4000 Series

Used for esterification of synthetic lubricants for mechanical systems

FASCAT 4100 & 4200 Series

Used in unsaturated polyester resin production for composites, gelcoat resin production, and for urethane topcoat curing

FASCAT 4100 & 4200 Series

Used for coatings resin production and urethane topcoat curing

pmc organometallix™

For more information on our FASCAT® catalysts and their applications,

Visit our website at www.FASCAT.com

About PMC Group

PMC Group is a growth oriented, diversified, global chemicals company dedicated to innovative solutions to everyday needs in a broad range of end markets including plastics, consumer products, electronics, paints, packaging, personal care, food, automotive and pharmaceuticals. The Company was built on a sustainable model of growth through innovation while promoting social good. Dedicated to sustainability, PMC operates from a global manufacturing, innovation and marketing platform with facilities and personnel in the Americas, Europe and Asia.

Today, through a combination of innovative organic growth coupled with strategic acquisitions, PMC has become a global organization with manufacturing, research and marketing organizations throughout the world all fueled by continuous innovation and a dedication to unassailable quality, service and safety of our people and the environment.

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