

Expert of Polyurethane Catalyst Specialized in Eco-friendly Metal Catalyst

广州优润合成材料有限公司 Guangzhou Yourun Synthetic Material Co.,Ltd.

- ◆ BCAT / ZCAT Series —Organic Bismuth / Zinc Catalyst
- ◆ AUCAT Series —Anti-hydrolysis Tin Free Eco-friendly Catalyst
- ◆ CUCAT Series —Non foaming Catalyst
—Substitutes for Organic Mercury / Lead / Tin
- ◆ WCAT Series —Moisture-cured Eco-friendly Catalyst
- ◆ FOCAT Series —Specialized Catalyst for PU foam

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Company Brief

Founded in 2013, **Guangzhou Yourun Synthetic Material Co., Ltd.** is a scientific research and production enterprise committed to the development and application of polyurethane eco-friendly metal catalyst (substitutes for organic mercury, lead and tin catalyst) and other functional additives. Relying on the professional advantages and rich experience in the field of polyurethane, we provide customers with high-quality and differentiated technical solutions through innovative functional additives.

With the profound accumulation of the expert team and years of continuous R & D and innovation, Yourun catalyst has developed from a single series of CUCAT that initially replaced organic mercury to nearly 100 products of six series of CUCAT / AUCAT / WCAT / BCAT / ZCAT / FOCAT catalysts that now completely replace mercury, lead and tin catalysts. Among them, organic bismuth and zinc catalysts have realized the undifferentiated docking with known imported bismuth zinc catalyst products. Functional catalysts such as non foaming catalysts (substitutes for mercury catalyst), hydrolysis resistance catalysts (not lose effectiveness in hydrous materials), low VOC, reactive metal catalysts and other products have filled the gap in the industry and achieved a leading position in the industry. The product application fields has achieved full coverage from the initial elastomer to the current CASE based polyurethane field.

As one of the most professional and reliable manufacturers of innovative eco-friendly metal catalysts in China's polyurethane industry, Yourun are deeply trusted by the market, and has reached extensive and in-depth strategic cooperation with many leading enterprises in the industry.



R&D office



Working Shop



Warehouse



Research & Development



On Exhibition



Sales Office



Certificate of High & New Tech Enterprise



TUV On Site Audited Report



Invention Patent



REACH Report



ISO9001 Management Certificate



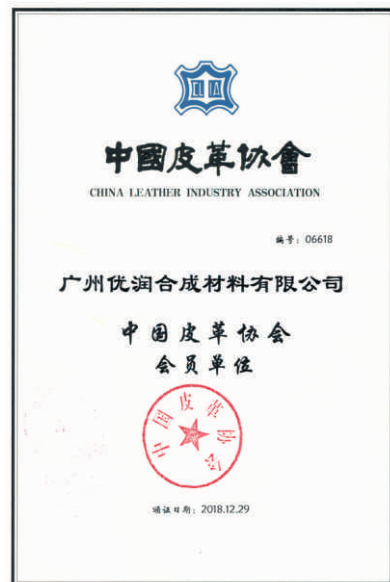
Council Member of China PU Industry Association



Integrated platform of industry, education and scientific research



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CATALOGUE

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Product Introduction

1.1 Catalyst Products

In today's increasingly stringent environmental protection requirements, the limit requirements of organic mercury, lead and tin catalyst in various global environmental protection laws and regulations are getting lower and lower, even reaching the forbidden level that can not be detected. The selection of environmental protection catalysts to replace organic mercury, lead and tin catalyst has become a necessary choice for polyurethane manufacturers.

Guangzhou Yourun catalyst products are roughly divided into general purpose type and functional type, which fully meet the specific needs of various fields of polyurethane.

1.1.1 General Purpose Catalyst :

Includes **BCAT** organic bismuth, **ZCAT** organic zinc, **BX** bismuth zinc composite and **other metal catalyst**, a total of four series.

1.1.1.1 BCAT series organic bismuth catalyst

General features of organic bismuth catalyst :

- ◆ Environmental protection: meet the requirements of international environmental protection regulations
- ◆ Promote NCO / OH reaction, reduce the side reaction between water and – NCO and reduce the generation of CO₂ compared with organotin catalyst; However, the selectivity of reducing the reaction between isocyanate and water is not as good as CUCAT series catalysts.
- ◆ The catalytic activity is quite high, but lower than that of organotin catalyst.
- ◆ It is easy to hydrolyze and inactivate in water, but it is more stable than T-9; For hydrolysis resistant and eco-friendly catalysts, please select AUCAT series.
- ◆ It will affect transparency when used in polyester system. AUCAT series is recommended for polyester system.
- ◆ The flowable time is short in the early stage and the strength increases slowly in the later stage.

Classification of organic bismuth catalysts: it is subdivided into five sub series of BCAT, BCAT-A, BCAT-B, BCAT-C and BCAT-T, with dozens of models. Yourun is one of the companies that produce the largest variety of organic bismuth catalyst in the world. In addition to products that have no difference with imported brands of organic bismuth, it also provides products for special or specific purposes, such as TPU, polyester, low VOC, reactive organic bismuth, etc.

Representative products are as follows :

Product Type		Product Model	Metal Content	Application Field	Compatibility With Imported Products
Organic Bismuth	Conventional Type	BCAT-E16	16±0.5%	General purpose fields	Compatible and no different
		BCAT-E20	20±0.5%	General purpose fields	Compatible and no different
		BCAT-E25A	25±0.5%	Coating, blocked isocyanate baking paint, etc.	Compatible and no different
		BCAT-E28A	28±0.5%	Shoe material, two-components PU coating, etc.	Compatible and no different
	Innovative Type	BCAT-T100R	10±0.5%	Reactive, zero VOC, recommended for automotive interiors and other fields with high environmental requirements	Yourun innovative products
		BCAT-E20CX	20±0.5%	Thermoplastic TPU without side reaction	Yourun innovative products

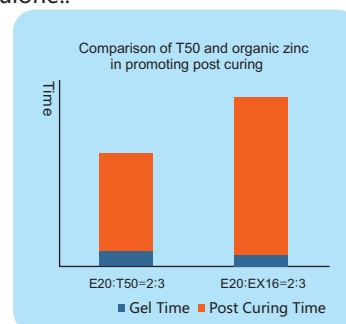
1.1.1.2 ZCAT series organic zinc catalysts

General characteristics of organic zinc :

- ◆ Environmental protection: meet the requirements of international environmental protection regulations.
- ◆ The catalytic activity is weak. In most cases, it is not used alone and needs to be combined with bismuth; Special organic zinc catalyst such as T50 has high activity and can be used alone..
- ◆ Weakly promote post curing reaction; Special organic zinc catalyst such as T50 promotes fast post curing.
- ◆ The influence of flow period is small.

Classification of organic zinc catalysts :

It is subdivided into four sub series: ZCAT, ZCAT-E, ZCAT-Z and ZCAT-T. In addition to the products that have no difference with imported brands, it also provides special organic zinc catalyst, such as ZCAT-T50 with faster curing at low temperature.



Representative products are as follows :

Product Type		Product Model	Metal Content	Application Field	Compatibility With Imported Products
Organic Zinc	General	ZCAT-EY18	18±0.5%	General purpose fields	Compatible and no different
		ZCAT-EX16	16±0.5%	General fields, low viscosity and good compatibility	Compatible and no different
		ZCAT-EZ19	19±0.5%	General purpose fields	Compatible and no different
		ZCAT-EZ22	22±0.5%	General purpose fields Especially suitable for aliphatic isocyanate system	Compatible and no different
	Innovative	ZCAT-T50	Fast post curing; Keep good activity at low temperature; It is especially suitable for soft PU elastomers, such as gel glue, cooling pad, shoe material, etc. to improve the easy viscosity of soft PU surface, close to the silica gel characteristics of soft but non stick.		Yourun innovative products

1.1.1.3 BX series composite organic bismuth-zinc catalysts

It can provide customized bismuth-zinc catalysts of special types and different metal contents, and support differentiated compounding requirements.

Representative products are as follows :

Product Type	Product Model	Compound Ratio	Compatibility With Imported Products
composite organic bismuth-zinc catalysts	BX-EM14	Organic Bismuth : Organic Zinc = 1:4	Compatible and no different
	BX-EM23	Organic Bismuth : Organic Zinc = 2:3	Compatible and no different

1.1.2 Functional Catalyst

Different from the general purpose catalyst, the functional catalyst is a series of catalysts developed to replace organic mercury, lead and tin catalyst in various applications of polyurethane or to meet certain specific catalytic requirements according to the reaction characteristics and molding process of various isocyanates and active hydrogen:

Series Name	Significant Characteristics	Application Field
CUCAT series	It is an eco-friendly metal catalyst that is insensitive to water and does not targetly catalyze (weakly catalyze) the reaction between water and isocyanate, which is environmentally friendly and similar to the catalytic characteristics of organic	All fields especially CASE field
AUCAT series	Hydrolysis resistant, non foaming, eco-friendly, free of tin	All fields
WCAT series	One component moisture-cured catalyst, non foaming, high activity at low temperature	Coating, adhesive, sealant
FOCAT series	Innovative eco-friendly catalyst for polyurethane foam; Catalytic activity is slow before and fast after; The catalytic activity in aqueous white material is stable and does not fail; substitute for tin catalyst.	PU foam

1.1.2.1 CUCAT series: substitute for mercury catalyst in non foaming CASE field

Organic mercury catalyst has four unique characteristics: activity is slow before but fast after, no foaming and high performance. In particular, the characteristic of no foaming is the unique symbol of organic mercury. It is generally used in various isocyanate and active hydrogen systems, but the high toxicity of organic mercury makes it almost banned in the world. Years of research have proved that it is impossible to completely replace organic mercury with only one environmental protection catalyst. CUCAT series catalysts are developed by subdividing the application of organic mercury in various polyurethane systems. The catalytic effect of organic mercury can be achieved or even exceeded by selecting different CUCAT catalysts for different systems.

Remarkable characteristics of CUCAT series catalysts: no foaming

Conventional catalysts in polyurethane industry basically have a strong catalytic effect on the reaction between isocyanate and water, which is difficult to meet the requirements of no bubbles in most products of CASE field. At present, it is recognized that organic bismuth, whose catalytic properties are closer to that of organic mercury, can not avoid foaming, bulging and cracking even if a more stringent moisture control production process is adopted, for only controlling the moisture in raw materials is not enough, environmental factors, including trace moisture in the air, are difficult to control but have a great impact. Organic bismuth is still unsatisfactory, organotin and amine catalysts that are more sensitive to water are even less applicable.

CUCAT series catalysts are developed to meet the bubble free requirements of products in CASE field especially polyurethane elastomer. Different from the common moisture sensitive amine/tin catalysts, it does not catalyze (weakly catalyze) the reaction of trace moisture with isocyanate, so as to avoid generating CO₂ bubbles. Under the working conditions of high temperature and high humidity, it can also effectively avoid the result of multi bubbles, cracking, bulging, peeling and lusterless, surface stickiness, etc.

Taking CUCAT-DG02 catalyst suitable for MOCA curing as an example, its typical characteristics are very close to organic mercury. See the following charts for details:



Diagram ① Features of water insensitive and non foaming

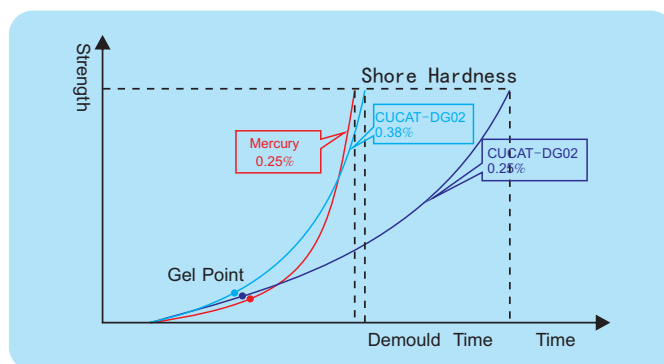


Diagram ② Process performance of slow before and fast after

Representative products are as follows :

Product Type	Product Name	Most suitable system & catalytic characteristics	Application Fields
Conventional functional	CUCAT-DG02	Polyether + ISO + MOCA; Similar to mercury catalyst	MOCA cured elastomer castors, rollers, miscellaneous parts, etc
	CUCAT-HAA	General purpose catalyst; Very insensitive to moisture	General purpose catalyst, applicable to case field
	CUCAT-K6	General purpose catalyst; The flow time is slightly longer	General purpose catalyst, applicable to case field
	CUCAT-SW02D	Polyester system; It has thermal activity, activity is slow before but fast after; Substitute for tin catalyst	Screen, KPU shoe material, solvent-free leather, etc
	CUCAT-GF02	PAPI + castor oil; activity is slow before but fast after	Electronic grouting glue, especially castor oil
	CUCAT-HA02	Polyether + amine + MDI; viscosity / strength rise fast	Spray polyurethane urea, faster than bismuth at low temperature, better aging resistance.
	CUCAT-HS	MDI + BDO + Polyester / PTMG; activity is slow before but fast after	Elastomer of MDI system, wheel, screen, etc.
	CUCAT-E01/E02/E03	TDI + polyether + DETDA; substitute for mercury and lead	Transparent elastomer does not fog and turn white
	CUCAT-S01	MDI system, the flow time is longer than that of T12	Suitable for extrusion polyurethane; In the occasion when the flow time is too short by using T12.
	CUCAT-HST	MDI+PPG+BDO system; mild heating and fast post curing	CASE field especially for MDI+PPG+BDO system. mild gelling, small shrinkage.
Heat sensitive	CUCAT-RM60	General purpose catalyst with thermal activity, low activity at room temperature, long flow time, rapid curing at elevated temperature	It can be used in products of CASE field such as soft glue, solvent-free leather and adhesive, especially in the process of weak heat sensitivity but fast post curing
Reactive and low TVOC	CUCAT-V18	General purpose catalyst for gelling; Reactive, zero VOC	It is recommended to the fields that strictly control VOC such as automobile, plastic runway and floor.
	CUCAT-V17		
Special functional	CUCAT-U2	Special catalyst for targeted catalytic reaction of isocyanate with carbamate	It is used in the synthesis of waterborne isocyanate curing agent to reduce viscosity, improve compatibility and chemical resistance, and help upgrade the performance of curing agent.
	CUCAT-G5A	Isocyanate trimerization catalyst, with mild activity and easy to control reaction	Synthetic TDI curing agent, reduce free TDI content < 0.5%
	CUCAT-WN	It is soluble with sodium silicate and the exothermic reaction is gentle	It is used for curing system of isocyanate and sodium silicate, such as coal seam reinforcement, which meets the new safety standard

1.1.2.2 AUCAT series hydrolysis resistant and tin free eco-friendly metal catalyst

Most organic metal catalysts such as bismuth, zinc and tin catalyst commonly used in polyurethane have hydrolysis failure in varying degrees. When premixed into hydrous raw materials, the catalytic activity gradually decreases until it is lost within a few days or even just a few hours. For example, the hydrolysis resistant tin catalyst with special structure has a stable storage period of only more than one month, and ordinary bismuth quickly hydrolyzes and loses catalytic activity within a few hours. As an important functional assistant, the hydrolysis failure of catalyst not only leads to inconvenient use, but also greatly hinders the innovation and development of polyurethane in some fields.

After years of unremitting efforts, Yunrun has pioneered the development of AUCAT series of hydrolysis resistant eco-friendly organometallic catalysts, which can be used in all fields of polyurethane, such as foam, coating, leather, elastomer and so on. Typical characteristics are as follows:

◆ Hydrolysis resistant

Stable storage in aqueous system, hydrolysis resistance, long-term storage, catalytic activity does not decay.

◆ Targeted catalytic feature

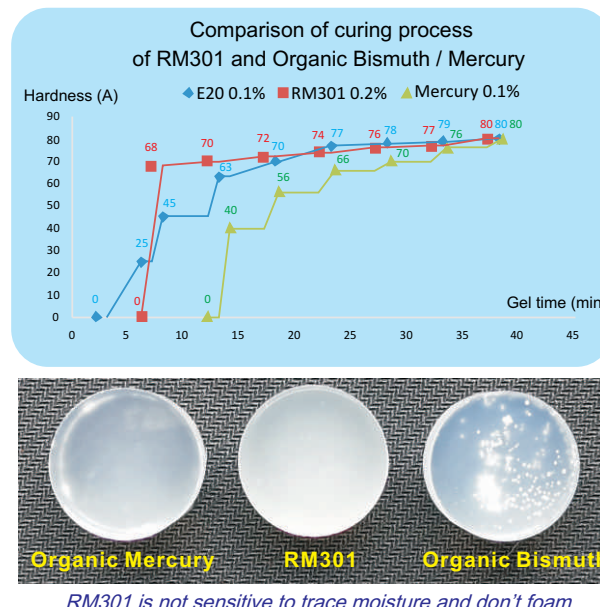
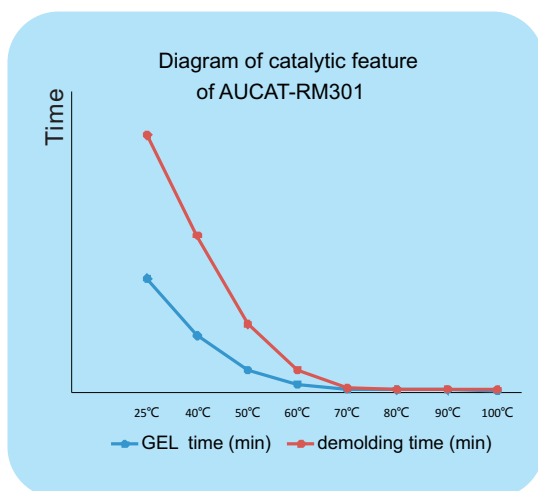
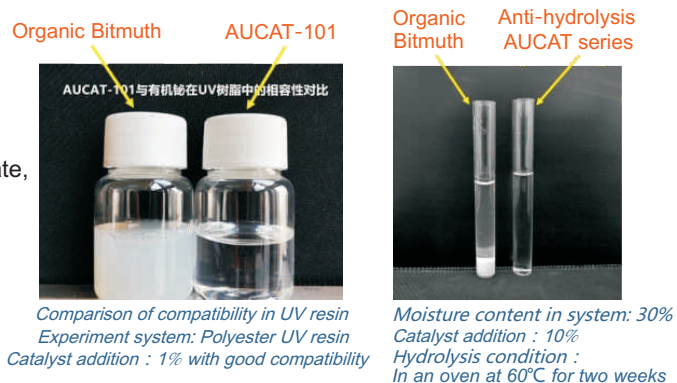
It selectively catalyzes the reaction of hydroxyl and isocyanate, with high strength, no bubbles and high gloss.

◆ Strong gel and high catalytic activity.

Substitute for Tin catalyst, be used in all PU fields such as foam, coating, adhesive, PU leather, elastomer, etc. It is especially suitable for foam as strong gelling catalyst.

◆ Eco-friendly and tin free.

Meet the needs of toys, shoe materials, clothing, coatings and other export products.



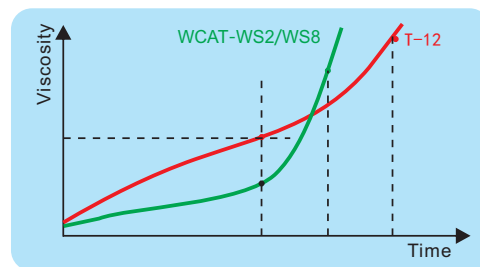
Representative products are as follows :

Product Type	Product Model	Catalytic Features	Application Field
Conventional	AUCAT-101	101 similar to strong gel bismuth, 201 is similar to organic zinc with long flow time. They can be collocated freely, and can meet various processing requirements such as fast curing, slow curing, slow before and fast after, ect.	Various general purpose polyurethane fields, such as coatings, resin synthesis, PUD, elastomer, foam, etc. 101 is used for soft foam, eco-friendly and non hydrolysis. It is widely used for foam of toys, clothing, shoes, automobiles, etc..
	AUCAT-201		
	AUCAT-101W	It has good compatibility for aqueous system and does not affect the gloss. 101W is the main catalyst for strong gelling, 201W is used as the post forming catalyst, and they can be ollocated freely to meet the requirements of various processes.	For waterborne coatings, directly added to waterborne emulsion for long-term storage without failure. The coating film does not lose gloss. It resolves the problems of barrel swelling, yellowing, viscosity increase and even curing, which are caused by the present catalysts that can only be added into the isocyanate curing agent component.
	AUCAT-201W		
	AUCAT-1001E	It is not sensitive to moisture and does not foam, and substitutes for mercury, lead and tin catalyst.	Universal type, mainly used in non foaming CASE field; Stronger gel than 101.
	AUCAT-T62	It is used as post forming catalyst to accelerate the post curing, which has no effect on the flow time.	CASE field, particularly for coating, the curing in winter is faster than Tin catalyst.
	AUCAT-1301	High activity is equivalent to that of tin. It has thermal activity. Recommended for resin synthesis.	Used for synthesis of aliphatic non yellowing resin, such as shoe glue, etc.
Heat sensitive	AUCAT-RM301	Heat sensitivity, high activity, long flow time, fast curing and forming;The activity at room temperature is low, and the catalytic activity increases geometrically after the thermal mutation point.	It can be used for back glue of carpet or artificial lawn, low deformation foam of electronic products, mine screen, etc. it is suitable for the whole PU field. In MDI + Polyester / polyether + BDO system, it has the characteristics of long flow period and fast post curing.

1.1.2.3 WCAT series one component moisture-cured eco-friendly catalyst

In view of the toxicity of T-12 (dibutyltin dilaurate) and its harm to the environment, the international environmental protection regulations have more and more stricter requirements on its limit, and it have been banned in some fields such as toys and clothing. In the fields where it can still be used, the prepared work should be done in advance for its elimination and substitution. T-12 also has some disadvantages, such as loss of catalytic activity at low temperature, foaming and cracking in application of elastomer.

WCAT is a series of catalysts developed for many shortcomings of T-12, such as high toxicity, many bubbles, low activity at low temperature, etc. In the application of one-component moisture-cured polyurethane, WCAT has many characteristics, such as reducing viscosity, reducing bubbles, shortening dry time, greatly improving the curing speed at low temperature and fast curing in winter.



Curing process curves of T12 and WCAT-WS8 in one component moisture-cured polyurethane

Representative products are as follows :

Product Type	Product Model	Catalytic Features	Application Field
Moisture-cured functional type	WCAT-WS2	Cure quickly at low temperature, reduce bubbles and dry quickly.	Recommended for waterproof coating, silicon PU, hot melt adhesive and coating. WS8 has more efficient characteristics of surface-drying and real-drying in TDI system.
	WCAT-WS8		
	WCAT-WH03	Eco-friendly, no tin element, reduce pinholes on the material surface, and cure quickly at low temperature.	Recommended for aromatic moisture-cured systems with high environmental requirements, sealants, hot melt adhesives, etc.
	WCAT-WP01	High catalytic activity, fast curing at low temperature	Non yellowing aliphatic moisture-cured system, such as anti-yellowing sealant, adhesive, coating, etc

1.1.2.4 FOCAT series special functional catalyst for PU foam

It mostly uses amine or the collocation of amine with strong gel metal catalyst T-9 (T-12) to product PU foam. However, tin has been strictly limited or tantamount to being banned in more and more export products such as toys, clothing, shoe materials and automobile interiors, etc. The only available eco-friendly strong gel metal catalyst without Tin is traditional organic bismuth. However, organic bismuth has many problems, such as low activity, short cream time, rapid hydrolysis and instability in hydrous white material. The industry urgently needs more excellent eco-friendly metal catalysts.

◆ Hydrolysis resistance without failure

It can be pre mixed into the hydrous white material, which is conducive to the confidentiality of the formula and avoid the trouble and error of on-site addition; However, organic bismuth and tin catalyst will gradually lose their catalytic activity when added to hydrous white materials.

◆ Eco-friendly, free of Tin, meeting VOC and TVOC requirements

Ensure compliance with harsh international environmental protection regulations such as REACH, ROHS, EN71-3, Standard 100 by OEKO-TEX, and meet the export requirements of foam such as toys, shoes and clothing.

◆ Extend the cream time, increase the strength quickly, and do not collapse or shrink.

Due to the catalytic characteristics of special thermally active metal catalysts, the flow time is not affected or extended. It release strong gel catalytic activity at late foaming stage.

◆ High catalytic activity and rapid increase the strength.

The activity is higher than that of ordinary organic bismuth

Representative products are as follows:

Product Type	Product Model	Catalytic Features	Application Field
Special functional type	FOCAT-8002	Long cream time, rapid post curing	High activity general purpose foaming catalyst
	FOCAT-8003M	Extend the cream time, solidify quickly in the later stage, and the skin is bright	MDI polyether foaming system, such as steering wheel, foaming tire, etc
	FOCAT-8004M	It does not affect the cream time, and the molding and demoulding are fast	Hydrolysis resistant, substitute for Tin catalyst in soft foam

Attached table: catalyst selection guide (divided by reaction system):

Product Model	①Applicable System															
	Aromatic Isocyanates														Castor Oil	Aliphatic iso-cyanate
	TDI				MDI50/PAPI				②PMDI/C-MDI							
	PPG/PTMG		Polyester		PPG/PTMG		Polyester		PPG		PTMG		Polyester			
Diamine	Diol	Diamine	Diol	Diamine	Diol	Diamine	Diol	Diamine	Diol	Diamine	Diol	Diamine	Diol			
CUCAT-DG02 [*]	★★	☆	☆		★★	☆	★★		★★	☆	★★	☆	☆			
CUCAT-K6 [*]	★	★	☆	☆	★	★	☆	☆	★	★	☆	★	☆		☆	★
CUCAT-HAB/HAA	★	★	☆	☆	★	★	☆	☆	★	★	☆	★	☆		☆	★
CUCAT-HA	★	☆			★	☆			☆	☆	☆	☆				
CUCAT-E02/E03	★	★	☆	☆	★	★	☆		★	★	☆	☆				☆
CUCAT-ET01	☆	☆	☆		★	★	☆		★	★	☆	☆				
CUCAT-PDAA	★	☆	★	☆	★	★	☆	☆	☆	☆		☆				★
CUCAT-HSF										★★		★		☆		
CUCAT-HS												★★	★	★★		
CUCAT-SW02D			★★				★					☆	★	★★		
CUCAT-SW05/SW06													★	★★		
CUCAT-RM50/RM60										★		★	★	★		
CUCAT-GF02						☆								☆	★★	
WCAT-WS8		★				★									★★	
WCAT-WP01																★★
WCAT-WH03		★				★										
AUCAT-101	★	★	☆	☆	★	★	☆	☆	☆	★		☆			☆	★
AUCAT-201/202	★	★	★	★	★	★	☆	★	★	★	☆	☆			☆	★
AUCAT-1001E	★	★	☆	☆	★	★	☆	☆	★	★		☆			☆	☆
AUCAT-AS11	★	★	☆	☆	★	★	☆	★	★	☆					☆	★
AUCAT-1301 [*]	☆	☆	☆	☆	☆	☆	☆	☆		☆		☆				★
AUCAT-RM301	★	★	★	★	★	★	★	★	★	★★	★	★★	☆	★★		★★
FOCAT-8002		★★		★★		★★		★★		★★		★★		★★		
FOCAT-8003M		★★				★★				★★		★★				
ZCAT-T50	★	★	★	★	★	★	★	★	★	★	★	★				★
BCAT/ZCAT 系列	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆				☆

Notes: ① Meaning of Icons : ★★ — Strongly recommended ★ — recommended ☆ — usable * — The catalyst has thermal activity
② PMDI — Pure MDI ; C-MDI — Carbodiimide modified MDI

(This guide is only a rough directional guidance. The actual formula and process are complex and diverse, which is subject to actual verification)

1.2 Other Functional Additives

1.2.1 General Purpose Additives for Polyurethane

In view of the application problems in the subdivided field of polyurethane, Yourun also provides a small amount of functional additives other than catalysts, which are listed as follows:

Product Name	Product Model	Appearance	Product Properties	Application Fields									
Defoamer	YRXP-02	Colorless transparent liquid	Non silicon efficient defoamer, good transparency, and has little effect on the transparency of products.	CASE field such as elastomer, coating, etc.									
	YRXP-06	Colorless transparent liquid	High efficiency defoamer, good foam inhibition and breaking effect, fast defoaming.	General purpose field, especially filler contained systems.									
Abrasion-resistant Agent	CUBD-NM01/NMF	Colorless transparent liquid	Greatly improve the abrasiveness of PU	PU wheel, roller and other elastomer									
Antistatic Agent	CUCE-W	Colorless transparent liquid	No foaming, no reduction in hardness, no effect on strength; High efficiency and low dosage.	CASE field such as elastomer, floor coating and other coating, etc.									
Anti-yellowing Antioxidant	UVK-CL2	Yellowish transparent liquid	Migration resistance, yellowing resistance, high efficiency and less dosage; Light color does not affect the appearance.	Various applications of polyurethane									
	UVK-TA	Colorless transparent liquid	Resist thermal oxidation and yellowing, and prevent yellowing in the reaction process	Various transparent and light colored polyurethane products									
Release Agent	CUBD-DC	Colorless transparent liquid	Concentrated liquid, not affect the surface printing of the product	Elastomer, microporous elastomer, etc									
Water Removing Foam Inhibitor	CUWR-WB50T	Milk white viscous liquid	Eliminate the influence of trace moisture in raw materials and reduce bubbles, bulges, hollows, pinholes and other phenomena.	CASE field such as elastomer, floor coating and other coating, etc.									
	CUWR-WB20	Colorless transparent liquid											
Anti-settle Dispersing Agent or Viscosity Depressant	YRFC-01	Milk white wax	Non ionic and neutral. Avoid the disadvantage of reducing thermal aging resistance caused by acidic dispersant. Improve leveling property, reduce viscosity, and prevent powder filler from settling at the bottom of the barrel. FC-03/03S has micro thixotropic effect, similar to BYK-410.	Filler contained systems, floor coating, and other coating, etc.									
	YRFC-03/03S	Colorless transparent liquid											
		YRFC-06A	Brown transparent liquid	Excellent dispersion performance, significantly reduce the viscosity of the system, improve leveling property, reduce the bubble problem caused by small holes in the substrate, and prevent the sinking and hardening of powder stored for a long time. Viscosity Viscosity Reduction Effect by YRFC-06A <table><tr><th>Condition</th><th>Viscosity</th></tr><tr><td>FC-06A zero</td><td>12000</td></tr><tr><td>FC-06A 0.05%</td><td>5000</td></tr><tr><td>FC-06A 0.1%</td><td>4500</td></tr><tr><td>FC-06A 0.2%</td><td>4000</td></tr></table> The system contains 60% powder material It is recommended to be used for solvent-free two-component PU coating with filler, foaming white material, etc. to greatly reduce viscosity and prevent precipitation and hardening.	Condition	Viscosity	FC-06A zero	12000	FC-06A 0.05%	5000	FC-06A 0.1%	4500	FC-06A 0.2%
Condition	Viscosity												
FC-06A zero	12000												
FC-06A 0.05%	5000												
FC-06A 0.1%	4500												
FC-06A 0.2%	4000												

1.2.2 Liquid Chain Extender

Product Model	Appearance	Equivalent Amount	Application Field	Product Properties
TDMA-02	Dark brown liquid	133	Plastic runway and other fields that restrict the use of MOCA	It does not contain MOCA and meets the environmental protection requirements.
TDMA-DLH02	Yellow liquid	115	Potting glue for transparent LED lamp strip	High activity, collocates with mercury-free catalyst, long flow time and no bubbles, suitable for TDI, IPDI and HMDI systems
TDMA-YGT01	Yellow liquid	135		Low activity, collocates with mercury-free catalyst, long flow time, no bubbles, suitable for all isocyanate systems
TRP	Colorless transparent liquid	122	Polyurethane soft rolle	Substitutes for solid chain extender trimethylolpropane (TMP), the dosage is calculated according to the equivalent amount.

1.2.3 Room temperature adhesive / primer for bonding polyurethane to various substrates

Product Model	Description	Appearance	Viscosity mPa.s. 25°C	Method of use	Application Field
CUBD-2	Bonding agent between CPU and metal	Light red - dark red viscous liquid	35±10	Use independently	CPU and molten TPU are firmly bonded with various polar substrates (aluminum steel, stainless steel, cement, PU, etc.) within a wide temperature range. It is suitable for casters, rubber rollers, etc
CUBD-3625A1	Bonding agent between CPU/TPU and metal	Brown transparent liquid	2300± 500	Use in combination	
CUBD-3625B		Emulsion liquid	40± 20		
CUBD-NL04	Bonding agent between CPU and nylon	Light brown viscous liquid	50-100	Use independently	CPU, structural and firm bonding with nylon in a wide temperature range, suitable for industrial wheels with nylon wheel core coated with polyurethane, etc.

