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## I. Catalysts for PU Foam Systems

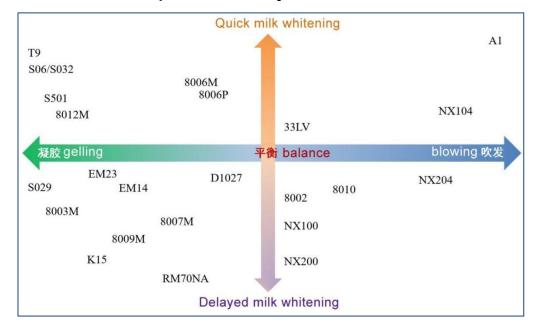
| Product  | Model            | Characteristic   | Application   |
|--|------------------|--|---|
| Gel catalyst   | FOCAT-8003M      | Eco-friendly tin free. Significantly extend the cream time when used with amine catalyst. Stable and faster post curing  | MDI polyether system. Integral skin foam, steering wheel and tire.  |
|  | FOCAT-8009M      | Post curing catalyst, good synergy with amine catalysts  | Aliphatic bra sponge  |
|  | FOCAT-8012M      | Eco-friendly tin catalyst, used in combination with balanced catalyst, can be cured quickly without bubble collapse.   | General purposed. Can reduce the amount of amine catalyst used. Used for high resilience foam, with lower compression set and better permeability |
|  | TCAT-S501        | Anti-hydrolysis and eco-friendly tin catalyst.  Compliant with REACH&RoHS.   |   |
|  | TCAT-S06         | Highly active organotin catalyst with high hydrolysis resistance.  |   |
|  | TCAT-S029        | Anti-hydrolysis delayed tin catalyst, with a longer cream time and faster post curing.   |   |
|  | TCAT-S032        | Anti-hydrolysis highly active tin catalyst   |   |
|  | TCAT-WS19        | Reactive high activity organotin catalyst, eco-friendly with low odor, no TVOC emissions. compliant with REACH&ROHS  | Universal high activity catalyst. Eco-friendly replacement of T9  |
|  | BX-EM14          | <b>Eco-friendly</b> composite catalysts of organo bismuth and zinc, gel type, substitutes of T9.   | General purpose. Eco-friendly and tin free.   |
|  | BCAT-E20CX       | Low acid value special organic bismuth catalyst, eco-friendly  | HFO foaming system  |
| Post Curing<br>Catalysts                                 | CUCAT-<br>RM70NA | Strong gelling catalyst, fast demoulding. Normally used with balanced catalyst NX100 / NX200 or other balanced catalysts. If the foaming ratio is not sufficient, add a small amount of blowing catalyst NX104 or NX204. | General purpose.  Eco-friendly tin-free. replacing T9/T12   |
|  | FOCAT-K15        | Low odor post curing potassium catalyst  | Rigid foam, MDI molding   |
|  | FOCAT-XD4        | Post curing auxiliary catalyst, reduces demolding time and improves skin smoothness.   | Foam system such as shoe<br>materials   |
| Comprehen<br>sive<br>blowing-gel<br>balanced<br>catalyst | FOCAT-8002       | Significantly prolong the cream time, and the post-curing is faster, effectively improve the production efficiency; Prevent the collapse of foam, and ensure the dimensional stability of foam.                          | High-density foam that require fast post-curing and demoulding, shoe soles, immitation wood, etc.   |
|  | FOCAT-8006P      | Delay foaming catalyst, Delay the cream time, but promote fast post curing. It can be used alone or in combination with catalysts FOCAT-NX100 and NX104.   | Used for block sponge, suitable for continuous production method.   |
|  | FOCAT-8006M      |  | Integral skin foam, fulll-water foaming. Suitable for systems with high powder content.   |
|  | FOCAT-33LV       | Normal balanced catalyst, analogue of A33.   | General purpose   |
|  | FOCAT-D1027      | Compared to 33LV, the cream time is longer and the curing is faster.   | General purpose   |
|  | FOCAT-C25        | Fast forming, high foaming ratio, improve foam porosity  | Soft foam, molded foam  |

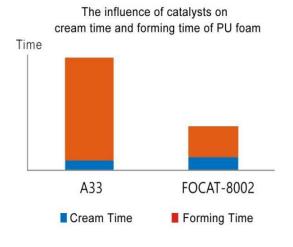
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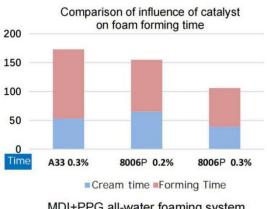
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| Delay<br>blowing-gel<br>balanced<br>catalyst | FOCAT-C25B  | Delayed creaming, smooth blowing, fast post curing, used as main catalyst.   | General purpose              |
|--|-------------|--|------------------------------|
|  | FOCAT-NX100 | Delay blowing balanced catalyst  |                              |
|  | FOCAT-NX200 | Balanced catalyst with super long cream time.  |                              |
|  | FOCAT-8010  | Delayed creaming, stable catalysis, good internal curing of foam, no bubble collapse   | Rigid foam, MDI molded foam. |
|  | FOCAT-8013  | Delayed creaming, fast curing and good storage stability.  | HFO foaming system           |
|  | FOCAT-8014  | Delayed creaming, stable catalysis, good storage stability, and improved foam porosity.  |                              |
| Blowing catalyst                             | FOCAT-A01   | Quick blowing, increase the foaming ratio of the system, generally not used alone.   | General purpose              |
| Delay<br>blowing<br>catalyst                 | FOCAT-NX104 | For formulas with insufficient foaming rate, NX104 starts blowing about 50-60% faster than NX204; Generally used with the balanced main catalyst NX100 / NX200, etc. | General purpose              |
|  | FOCAT-NX204 |  |                              |

## Comparison of catalytic characteristics







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## **II. Functional Additives for PU Foam Systems**

| Viscosity<br>Reducer                  | YRFC-FM02   | Adding a small amount can greatly reduce the viscosity of the powdery white material, improve the fluidity, and prevent the powder filler from settling at the bottom of the barrel; Improve foaming uniformity, improve quality and reduce cost. | Used for foaming P material (polyol component) with high powder content.              |
|---------------------------------------|-------------|---|---|
| Anti-yellowing<br>Agent               | UVK-CL4     | Prevent discoloration during storage in cardboard boxes.  | Polyether Systems   |
| Antioxidant                           | UVK-TE      | Efficient oxidation resistance, prevent foam from burning core.   | General purpose   |
|                                       | UVK-TF      | Efficient oxidation resistance, low odor, prevent foam from burning core.   |   |
| Anti-hydrolysi<br>s Agent             | CUWR-AH01   | It can effectively inhibit and delay the hydrolysis and chain breakage of ester bonds, extending the service life of polyester polyurethane products.   | Polyester Systems   |
| Antistatic<br>Agent                   | CUCE-ASW    | Excellent antistatic effect, low addition, no effect on foaming, antistatic effect can reach $10^8\Omega$   | General purpose   |
| Anticatalyst                          | NCAT-YC02   | Reduce the reaction rate and give longer cream time.  | General purpose   |
| Release Agent                         | CUBD-INR02F | Premixed in material, no influence on curing and forming time.  | General purpose   |
|                                       | CUBD-TM04   | Efficient cleaning type release agent, with low dosage and high efficiency, reduces residue, and is easy to clean.  |   |
| Foam<br>Stabilizer                    | YRWP-LDF01  | Silicone oil for balancing foam stability and cell opening, no shrinkage of foam and no peeling.  | Rigid foam, molded foam, etc  |
|                                       | YRWP-G53    | Silicone oil for universal polyether flexible foam. with excellent foam stability and cell opening properties   | Suitable for low-density and medium density foam systems, all water foam systems, etc |
|                                       | YRWP-G58    | Silicone oil for universal flexible foam and polyether foam, good foam stability, uniform and delicate foam cell, smooth product skin, foam height greater than G53.  |   |
| Open Cell<br>Agent                    | YRWP-OF4    | Good cell opening performance, especially recommended for flexible foam to solve the problems of foam closing, shrinkage and gas expansion.   | Flexible foam, high rebound, slow rebound and other foam                              |
|                                       | YRWP-OF7    | Universal cell opening agent for rigid foam. with high cell opening rate. and can be used with foam stabilizer to achieve fine and even foam effect.  | Suitable for formula systems such as rigid foam and semi rigid foam.                  |
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