Nouryact™ Cobalt-free accelerators

Proudly presented by AkzoNobel

Just as nature likes to put on an impressive display, we are proud to show off the results of our efforts in sustainability and innovation.

Anticipating increasing environmental pressure on cobalt, we are leading the way with a range of breakthrough, Cobalt-free accelerators for the curing of unsaturated polyester and vinyl ester resins. These products, based on Copper, Manganese and Iron offer sustainable alternatives to traditional cobalt octoate and cobalt acetate.

Nouryact™ accelerators combine high reactivity with process flexibility to secure the desired mechanical properties in the required product cycle time.

www.nouryact.com

AkzoNobel
Tomorrow's Answers Today

BluCure™
100% Cobalt-Free

Be Cobalt-free

Innovation continues unabated and we're leading the way with a new generation of more sustainable thermoset accelerators.

Our Cobalt-free accelerators are based on Copper, Manganese and Iron and can be used as alternatives for conventional Cobalt-based accelerators, while maintaining or even improving existing cycle times and mechanical properties.

Our Nouryact™ range of Cobalt-free accelerators is part of our continuous drive towards an innovative, Cobalt-free composites world.

Cobalt-free Nouryact accelerators

Nouryact accelerators are highly reactive and can be used in most standard UP resin types, including VE and DCPD resins. They can be fine-tuned on geltime, time to peak and peak exotherm. We can recommend a Cobalt-free curing system that matches your specific application.

Nouryact CF12
- Copper-based
- Recommended for ambient temperature curing
- Suitable to pre-accelerate VE resins allowing curing with Butanox® M-50 (standard MEKP) without gassing

Nouryact CF13
- Copper-based
- Recommended for ambient temperature curing
- To increase pot-life of pre-accelerated resins with limited geltime drift

Nouryact CF20
- Manganese-based
- Recommended for elevated temperature curing
- Very low discoloration after curing

Nouryact CF30
- Iron-based
- Ability to reduce the activation temperature of peroxyesters
- Suitable for curing agglomerated stone slabs at elevated temperature using tert-butyl peroxybenzoate

Nouryact CF31
- Metal mix complex
- Suitable for both ambient and elevated temperature curing
- Suitable for most applications including continuous filament winding and casting processes
- Low discoloration after curing
- To increase pot-life of pre-accelerated resins with limited geltime drift

Nouryact CF32
- Metal mix complex
- Suitable for ambient temperature curing
- Low discoloration after curing

Proven performance

Our Copper-based accelerators can serve as an excellent alternative to traditional Cobalt-containing accelerators. For both Nouryact CF12 and Nouryact CF13 the peak exotherm is higher. Consequently the Barcol development and curing is faster and more efficient resulting in lower residual styrene levels. For an actual GRP end product with a different laminate thickness the intakes can be adjusted and fine-tuned to suit the required curing characteristics.

	Intakes in parts per 100 resin (phr)		
Medium reactive orthophthalic resin	100	100	100
Butanox M-50	1.5	1.5	1.5
Accelerator NL-49P (Cobalt-1%)	1.0		
Nouryact CF13		1.5	
Nouryact CF12			1.5
Laminate (30% glass) 4 mm at 20°C			
Geltime (min.)	14	10	12
Time to peak exotherm (min.)	43	21	28
Peak exotherm (°C)	36	92	79
Barcol hardness			
- after 2 hrs	0	55	55
- after 4 hrs	35	55	55
- after 24 hrs	50	55	55

Our sustainable journey continues

The second generation in Cobalt-free curing are our new, versatile Nouryact accelerators based on a metal mix complex: Nouryact CF31 and Nouryact CF32.

The reactivity data of the two products is measured extensively. The below table shows curing data in a high reactive orthophthalic resin in combination with standard MEKP.

	Intakes in parts per 100 resin (phr)		
High reactive orthophthalic resin	100	100	100
Butanox M-50	1.5	1.5	1.5
Accelerator NL-49P (Cobalt-1%)	1.0		
Nouryact CF31		1.0	
Nouryact CF32			1.0
Laminate (30% glass) 4 mm at 20°C			
Geltime (min.)	13	5	6
Time to peak exotherm (min.)	32	11	13
Peak exotherm (°C)	43	94	101
Barcol hardness			
- after 2 hrs	8	38	34
- after 4 hrs	20	44	56
- after 24 hrs	47	44	56

The new metal mix complex accelerators are highly reactive and suitable for curing at both ambient and elevated temperatures. They can be used in combination with most general purpose resin types and curing systems including the main curing agents such as Butanox M-50 (standard MEKP), Butanox LPT and in some cases Trigonox 44B (AAP).

In case the geltime is too fast then standard inhibitors like Inhibitor NLC-10 (TBC) and Inhibitor NLD-20 (BHT) can be used. This way the curing system can be fine-tuned on the existing end product or production line.

Nouryact Cobalt-free accelerators show no gassing when used in combination with standard MEKP to cure an epoxy based VE resin at ambient temperature.

Product Data Sheets of our Nouryact accelerators are available at www.nouryact.com. On request we can also provide relevant test data.

Accelerate your business

Nouryact accelerators offer you a long-term sustainable advantage and help you grow your business. We are ready for a Cobalt-free composites world. Are you?

For more information please contact your AkzoNobel account manager or

AkzoNobel Functional Chemicals
P.O. Box 247
3800 AE Amersfoort
The Netherlands
T +31 33 467 6767
F +31 33 467 6116
E thermoset.chemicals@akzonobel.com
W www.akzonobel.com/polymer

BluCure™ 100% Cobalt-Free

Nouryact™ accelerators are BluCure™ products. BluCure™ is synonymous with state-of-the-art technologies related to Cobalt-free curing of composite resins. Developed by industry leaders in innovation and sustainability, BluCure™ Technology is available through license to all composite component and resin manufacturers. BluCure™ Technology offers opportunities for outstanding performance and sustainable end-user value, both now and in the future. The BluCure™ Seal is a guarantee to you and your customers that your products are 100% Cobalt-free. More information can be found at **www.BluCure.com**