



POLYMERIZATION

of monomers with organic peroxides

PERGAN
The Peroxide Company



PERGAN

The Peroxide Company

Reliable, competent, flexible - for 35 years your partner for organic peroxides. Since its foundation in 1981, Pergan has established itself in the national and international market as a manufacturer of organic peroxides.

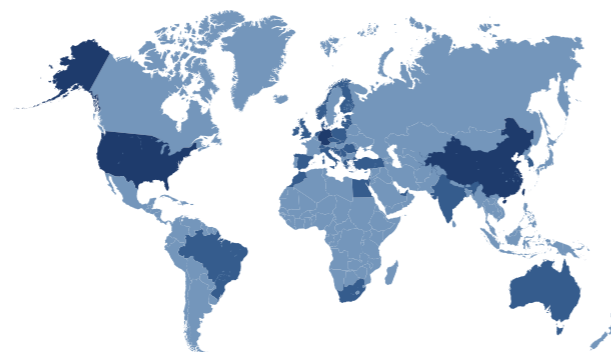
Our business activities are conducted from two production facilities in Germany, one production facility in the United States, through a network of more than 30 representatives worldwide and a joint venture company in China. We foster constructive and trusting business connections with our national and international partners.

Organic peroxides

The main stress of our business activity is put on the production and trade of organic peroxides. These are more or less stable chemical compounds which exclusively consist of carbon, hydrogen and oxygen. They are used as initiators and reaction substances in the plastics and rubber industry, because they easily decay in extremely active radicals.

Organic peroxides are used for:

- polymerization of monomers for plastics manufacture
- crosslinking and modification of polymers,
- as the curing of unsaturated polyester-, vinylester- and acrylic resins



■ Production sites ■ Representatives ■ delivery area

Organic peroxides are furthermore used as oxidation materials for medical preparations and for complicated chemical synthesis.

Safety and environmental conservation out of responsibility

Organic peroxides are highly reactive chemicals. The manufacturing, transport, storage, handling and last but not least the disposal of organic peroxides requires strict precautions. We have effected considerable investments into

safety to eliminate risks, to avoid faults and to protect people and environment from becoming endangered. Naturally, we provide our customers support in any kind of safety, handling, or storage issue.

Customer orientation – a recipe for success

Reliable

Quality does not only mean reliability but also includes services such as consultation and support for our customers helping them to solve their problems. Quality results from the performance of all employees. We work towards strengthening quality awareness through the help of information, internal and external training and motivation.

Competent

Part of our service also includes examining our customers' applications so that we can develop optimal product formulations and supply them with suitable peroxide- and other additive preparations for their process. Therefore we do not offer only products but moreover solutions to problems. The positive feedback from satisfied customers motivates us to keep continuing along this line.

Flexible

As a medium sized company flexibility is one of our greatest strengths. We are able to react quickly, competently and efficiently to the individual wishes and requirements of our customers. In recognition of exceptional business achievements PERGAN was awarded the jury award „Company of the Year 2010“ by Stadtparkasse Bocholt.



Our company holds ISO 9001 and ISO 14001 certification



POLYMERIZATION

of monomers with organic peroxides

A wide range of organic peroxides and azo compounds are used as initiators for the radical polymerization of monomers. Organic peroxides can be divided into diacyl peroxides, hydroperoxides, dialkyl peroxides, peroxyesters, peroxyketals and peroxy(di)carbonates.

The main areas of application for these initiators are low density polyethylene (LDPE), polyvinylchloride (PVC), styrenics (PS/EPS), acrylics (PMMA) and other polymers. The polymerization of monomers takes place under varying controlled conditions, to which the properties of the initiator have to be adapted. Certain types of organic peroxides are also used for the chain degradation of polypropylene (PP).

Half life

An important factor for selecting an appropriate initiator is its decomposition rate, which is determined using its half life time. The half life is the time taken for half of the peroxide quantity to decompose in a specific solvent at a given temperature.

With the exception of hydroperoxides, the half life times were determined using a solution of the peroxide (0.1 mol/l) in monochlorobenzene. Listed are the temperatures at which the half lives are 10h, 1h and 1 min. Based on the 1h half life temperature, the initiators in our product guide are arranged in descending order of activity.

Storage temperatures

Organic Peroxides are more or less stable products but will decompose under the influence of heat. To prevent a loss of quality during storage, it is important that the recommended maximum storage temperature is not exceeded and the minimum storage temperature not breached.

UN-Number

The transport of the listed organic peroxides classified from UN 3111 to UN 3120, as well as the listed Azo compounds under UN 3234 and 3236 has to be temperature controlled.

SADT

The SADT is the lowest temperature at which a self accelerating decomposition may occur.

Emergency temperature

The emergency temperature is derived from the SADT. It is the temperature at which emergency actions have to be taken.

Control temperature

The control temperature is also derived from the SADT. The control temperature is the maximum temperature at which the product can be transported safely.

SAFETY FIRST

and environmental conservation for PERGAN out of responsibility

Organic peroxides are highly reactive chemicals. Therefore, they are - determined by national and international regulations - to some extent as dangerous materials (flammable, may cause fire and partly able to explode).

The manufacturing, transport, storage, handling and last but not least disposal of organic peroxides requires strict precautions. We have made considerable investments into safety to eliminate risks, avoid faults and protect people and the environment from becoming endangered. Naturally, we provide our customers with support in any kind of safety, handling, or storage issue.

European Organic Peroxide Safety Group (EOPSG)

PERGAN is a member of EOPSG and with this brochure we would like to give you a deeper insight in safe handling and transport operations of Organic Peroxides in road and sea transport. The described procedures and equipment, supplementary to the legal requirements, represent the standard practices of the authors of this guide.



[Download EOPSG brochure](#)
PDF files (appx. 2,4 MB)

Miscellaneous

We would be more than happy to provide you with technical information and safety data sheets concerning all of our products. Please refer to our web address: www.pergan.com



Packaging of liquid organic peroxides

As an alternative to our standard polyethylene container, we can supply certain initiator formulations in drums and reusable stainless steel IBCs (up to 1.25 m³ volume). Packaging in IBCs offers obvious ecological benefits as well as gains in terms of logistics by allowing automated and faster handling.

Applications

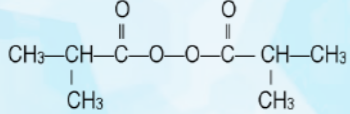
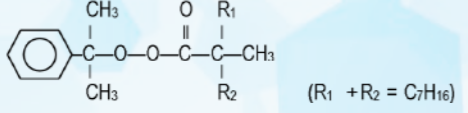
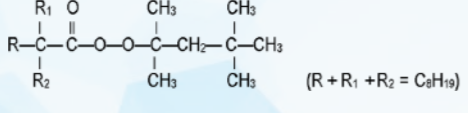
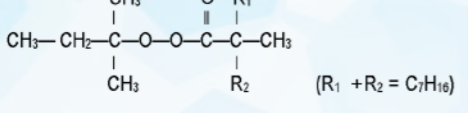
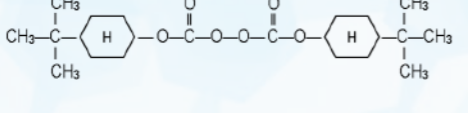
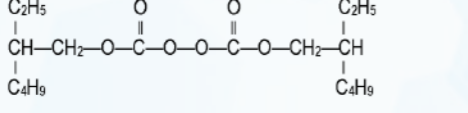
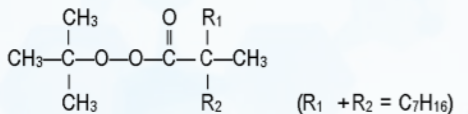
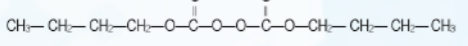
Product name <small>in alphabetical order</small>	LDPE	PP	PVC	PS	PMMA	Other	Type of initiator	Page
PEROXAN AEC				●	●		■ Peroxyester	14
PEROXAN AHP						●	■ Hydroperoxide	18
PEROXAN AIVN			●	●	●		■ Azo-Initiator	12
PEROXAN AIVN-PG			●	●	●		■ Azo-Initiator	12
PEROXAN APN	●		●				■ Peroxyester	8
PEROXAN APO	●			●	●		■ Peroxyester	12
PEROXAN APV	●		●		●		■ Peroxyester	10
PEROXAN AZDN			●	●	●		■ Azo-Initiator	12
PEROXAN AZDN-C			●	●	●		■ Azo-Initiator	12
PEROXAN BCC			●	●	●		■ Peroxydicarbonate	8
PEROXAN BCC-75			●				■ Peroxydicarbonate	8
PEROXAN BCC-40 W			●				■ Peroxydicarbonate	8
PEROXAN BEC	●			●	●		■ Peroxyester	14
PEROXAN BHP-10			●	●	●		■ Hydroperoxide	18
PEROXAN BHP-70			●	●	●		■ Hydroperoxide	18
PEROXAN BIB-1		●		●			■ Dialkyl peroxide	16
PERGAPROP BIB-40 PP-G		●					■ Dialkyl peroxide	16
PERGAPROP BIB-20 PP-FN		●					■ Dialkyl peroxide	16
PERGAPROP BIB-10 PP-EG		●					■ Dialkyl peroxide	16
PEROXAN BIC	●			●	●		■ Peroxyester	14
PEROXAN BP-25 WD				●	●		■ Diacyl peroxide	12
PEROXAN BU	●			●	●		■ Dialkyl peroxide	16
PEROXAN C124			●		●		■ Peroxydicarbonate	10
PEROXAN C124-35 W			●				■ Peroxydicarbonate	10
PEROXAN C126			●		●		■ Peroxydicarbonate	10
PEROXAN CND	●		●				■ Peroxyester	8
PEROXAN CND-50 WN-A			●				■ Peroxyester	8
PEROXAN CU-90 L				●	●		■ Hydroperoxide	18
PEROXAN CU-80 L				●	●		■ Hydroperoxide	18
PEROXAN DA	●	●			●		■ Dialkyl peroxide	16
PEROXAN DB	●	●		●	●		■ Dialkyl peroxide	18
PEROXAN DB-50	●						■ Dialkyl peroxide	18
PEROXAN DB-50 W		●					■ Dialkyl peroxide	18
PEROXAN DC				●	●		■ Dialkyl peroxide	16
PEROXAN DDP			●		●		■ Diacyl peroxide	10
PEROXAN DI-30			●				■ Diacyl peroxide	8
PEROXAN EPC-S			●		●		■ Peroxydicarbonate	8
PEROXAN EPC-75	●		●		●		■ Peroxydicarbonate	8
PEROXAN EPC-65	●		●		●		■ Peroxydicarbonate	8
PEROXAN EPC-60 WN-A			●				■ Peroxydicarbonate	8
PEROXAN EPC-50 WN-A			●				■ Peroxydicarbonate	8
PERGASAFE FR				●		●	■ C-C Initiator*	18
PERGASAFE FR GS				●		●	■ C-C Initiator*	18
PEROXAN HX		●					■ Dialkyl peroxide	16

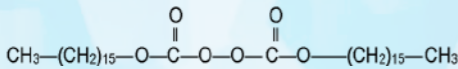
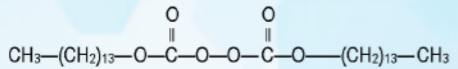
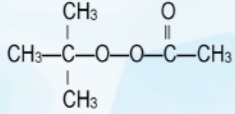
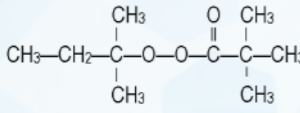
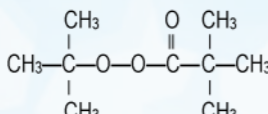
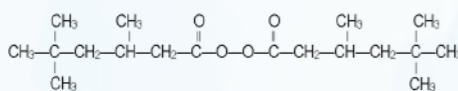


* Flame retardant synergist

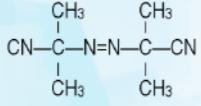
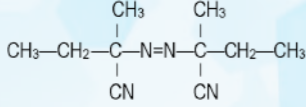
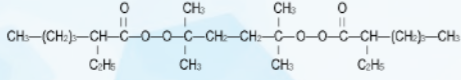
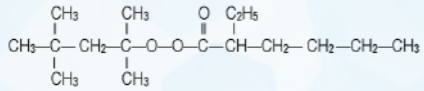
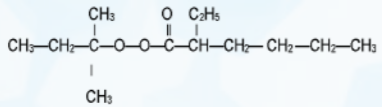
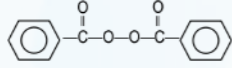
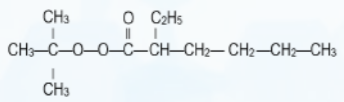
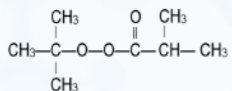
■ Dialkyl peroxide ■ Diacyl peroxide ■ Peroxyester ■ Azo-Initiator

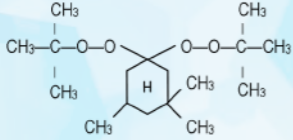
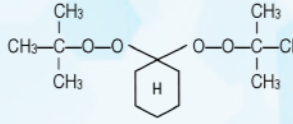
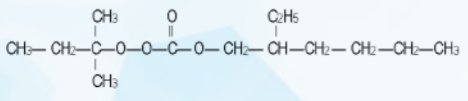
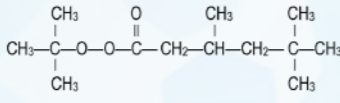
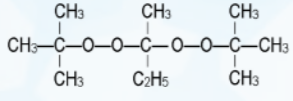
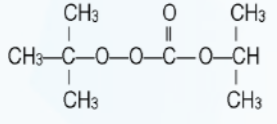
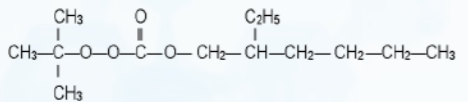
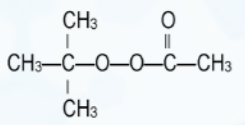
Product name	LDPE	PP	PVC	PS	PMMA	Other	Type of initiator	Page
PEROXAN HX-80		●					■ Dialkyl peroxide	16
PEROXAN HX-80 W		●					■ Dialkyl peroxide	16
PEROXAN HX-50 W		●					■ Dialkyl peroxide	16
PERGAPROP HX-20 PP		●					■ Dialkyl peroxide	16
PERGAPROP HX-10 PP		●					■ Dialkyl peroxide	16
PERGAPROP HX-7,5 PP		●					■ Dialkyl peroxide	16
PEROXAN HXP	●			●	●		■ Peroxyester	12
PEROXAN HXY-85 W	●			●	●		■ Dialkyl peroxide	16
PEROXAN IHP-50				●	●		■ Hydroperoxide	18
PEROXAN LP			●	●	●		■ Diacyl peroxide	10
PEROXAN LP-40 W			●		●		■ Diacyl peroxide	10
PEROXAN NBC-50	●		●				■ Peroxydicarbonate	8
PEROXAN NPO	●		●		●		■ Diacyl peroxide	10
PEROXAN NPO-50	●		●				■ Diacyl peroxide	10
PEROXAN NPO-50 WN-A			●				■ Diacyl peroxide	10
PEROXAN OHP						●	■ Hydroperoxide	18
PEROXAN OPH	●			●	●		■ Peroxyester	12
PEROXAN OPN-70	●		●				■ Peroxyester	8
PEROXAN OPN-50 WN-A			●				■ Peroxyester	8
PEROXAN OPV	●						■ Peroxyester	10
PEROXAN PA-50	●			●	●		■ Peroxyester	14
PEROXAN PAM						●	■ Hydroperoxide	18
PEROXAN PB	●			●	●		■ Peroxyester	16
PEROXAN PIN	●			●	●		■ Peroxyester	14
PEROXAN PIN-30	●						■ Peroxyester	14
PEROXAN PIV-50	●			●	●		■ Peroxyester	12
PEROXAN PK122 V-80				●	●		■ Peroxyketal	14
PEROXAN PK122 V	●			●	●		■ Peroxyketal	14
PEROXAN PK122 W	●			●	●		■ Peroxyketal	14
PEROXAN PK234 V	●			●	●		■ Peroxyketal	14
PEROXAN PK234 W	●			●	●		■ Peroxyketal	14
PEROXAN PK295 V-90	●			●	●		■ Peroxyketal	14
PEROXAN PK295 V-75	●			●	●		■ Peroxyketal	14
PEROXAN PK295 V	●			●	●		■ Peroxyketal	14
PEROXAN PND	●		●		●		■ Peroxyester	8
PEROXAN PND-75	●		●				■ Peroxyester	8
PEROXAN PND-25	●						■ Peroxyester	8
PEROXAN PND-50 WN-A			●				■ Peroxyester	8
PEROXAN PO	●			●	●		■ Peroxyester	12
PEROXAN PO-70	●			●	●		■ Peroxyester	12
PEROXAN PO-30	●						■ Peroxyester	12
PEROXAN PPV	●		●		●		■ Peroxyester	10
PEROXAN PPV-65	●		●		●		■ Peroxyester	10
PEROXAN PPV-25	●						■ Peroxyester	10

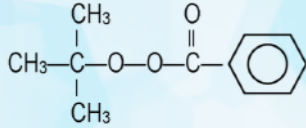
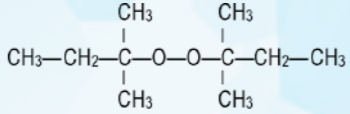
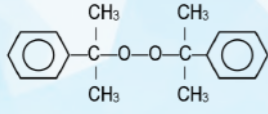
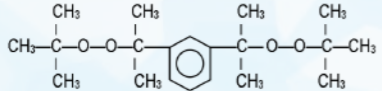
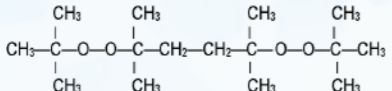
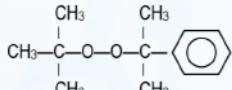
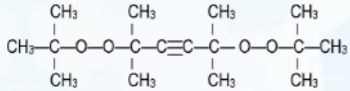
■ Peroxydicarbonate ■ C-C Initiator ■ Hydroperoxide ■ Peroxyketal

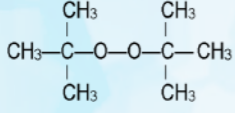
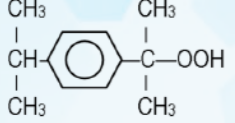
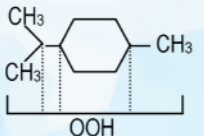
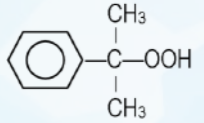
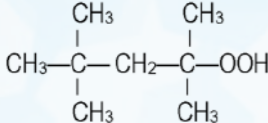
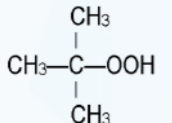
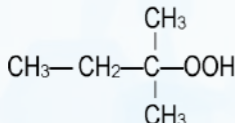
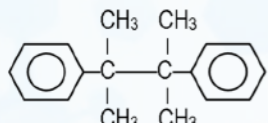
Type of initiator / Trade name	Chemical name / Chemical structure	CAS number / Physical form	Molecular weight	Peroxide assay	Active oxygen assay	Standard package	Storage temperatures		Half life temperatures			Safety temperatures			UN- No.
							max.	min.	10h	1h	1min	Control temperature	Emergency temperature	SADT	
Diacyl peroxide	Diisobutyl peroxide	3437-84-1	174,2		9,18%				23°C	39°C	73°C				
PEROXAN DI-30		Solution in OMS		30%	2,76%	25kg Container	-20°C					-20°C	-10°C	0°C	3115
Peroxyester	Cumyl peroxyneodecanoate	26748-47-0	306,4		5,22%				38°C	56°C	91°C				
PEROXAN CND PEROXAN CND-50 WN-A		Solution in OMS Emulsion in water and methanol		75% 90%	3,92% 2,61%	25kg Container 25kg Container 1100kg IBC	-15°C -15°C -15°C	-25°C -25°C				-10°C -10°C -15°C	0°C 0°C -5°C	10°C 10°C 0°C	3115 3119 3119
Peroxyester	1,1,3,3-Tetramethylbutyl peroxyneodecanoate	51240-95-0	300,5		5,32%				40°C	57°C	93°C				
PEROXAN OPN-70 PEROXAN OPN-50 WN-A		Solution in OMS Emulsion in water and methanol		70% 50%	3,73% 2,66%	25kg Container 25kg Container, 900kg IBC	-15°C -15°C	-20°C				-5°C -5°C	5°C 5°C	15°C 15°C	3115 3119
Peroxyester	tert-Amyl peroxyneodecanoate	68299-16-1	258,4		6,19%				43°C	61°C	98°C				
PEROXAN APN		Solution in OMS		75%	4,64%	25kg Container	-15°C	-25°C				0°C	10°C	20°C	3115
Peroxydicarbonate	Di-(4-tert-butyl-cyclohexyl)-peroxydicarbonate	15520-11-3	398,5		4,01%				48°C	64°C	98°C				
PEROXAN BCC PEROXAN BCC-75 PEROXAN BCC-40 W		Powder Powder, wet Suspension in water		95% 75% 40%	3,80% 3,00% 1,60%	20kg Cardboard box 20kg Cardboard box 25kg Container, 900kg IBC	15°C 15°C 15°C 15°C	5°C 5°C				30°C 30°C 30°C 30°C	35°C 35°C 35°C 35°C	40°C 40°C 40°C 40°C	3114 3114 3119 3119
Peroxydicarbonate	Di-(2-ethylhexyl)-peroxydicarbonate	16111-62-9	346,5		4,62%				47°C	64°C	99°C				
PEROXAN EPC-S PEROXAN EPC-75 PEROXAN EPC-65 PEROXAN EPC-60 WN-A PEROXAN EPC-50 WN-A		Liquid Solution in OMS Solution in OMS Emulsion in water and methanol Emulsion in water and methanol		95% 75% 65% 60% 50%	4,39% 3,46% 3,00% 2,77% 2,31%	25kg Container 25kg Container 25kg Container 25kg Container, 1100kg IBC 25kg Container, 1100kg IBC	-20°C -15°C -15°C -15°C -15°C -15°C	-30°C -25°C -25°C -20°C -20°C				-20°C -15°C -15°C -15°C -20°C -15°C -20°C	-10°C -5°C -5°C -5°C -10°C -5°C	0°C 5°C 5°C 5°C 0°C 5°C 0°C	3113 3115 3115 3119 3119 3119 3119
Peroxyester	tert-Butyl peroxyneodecanoate	26748-41-4	244,4		6,55%				46°C	64°C	101°C				
PEROXAN PND PEROXAN PND-75 PEROXAN PND-25 PEROXAN PND-50 WN-A		Liquid Solution in OMS Solution in OMS Emulsion in water and methanol		95% 75% 25% 50%	6,22% 4,91% 1,64% 3,28%	25kg Container 25kg Container 25kg Container, 900kg IBC 25kg Container, 900kg IBC	-10°C -10°C -10°C -10°C -10°C	-20°C				-5°C 0°C 0°C 0°C 0°C -5°C	5°C 10°C 10°C 10°C 10°C 5°C	15°C 20°C 20°C 20°C 20°C 15°C	3115 3115 3119 3119 3119 3119
Peroxydicarbonate	Di-n-butyl peroxydicarbonate	16215-49-9	234,3		6,83%				49°C	65°C	99°C				
PEROXAN NBC-50		Solution in OMS		50%	3,41%	25kg Container	-15°C					-15°C	-5°C	5°C	3115

Type of initiator / Trade name	Chemical name / Chemical structure	CAS number / Physical form	Molecular weight	Peroxide assay	Active oxygen assay	Standard package	Storage temperatures		Half life temperatures			Safety temperatures			UN- No.
							max.	min.	10h	1h	1min	Control temperature	Emergency temperature	SADT	
Peroxydicarbonate	Dicetyl peroxydicarbonate	26322-14-5	570,9		2,80%				48°C	65°C	100°C				
PEROXAN C124 PEROXAN C124-35 W		Flakes Suspension in water		94% 35%	2,63% 0,98%	20kg Cardboard box 25kg Container, 900kg IBC	15°C 15°C 15°C	5°C 5°C				30°C 30°C 30°C	35°C 35°C 35°C	40°C 40°C 40°C	3116 3119 3119
Peroxydicarbonate	Dimyristyl peroxydicarbonate	53220-22-7	514,8		3,11%				48°C	65°C	100°C				
PEROXAN C126		Flakes		95%	2,95%	20kg Cardboard box	15°C					20°C	25°C	35°C	3116
Peroxyester	1,1,3,3-Tetramethylbutylperoxypivalate	22288-41-1	230,4		6,95%				48°C	66°C	103°C				
PEROXAN OPV		Solution in OMS		75%	5,21%	25kg Container	-15°C	-25°C				0°C	10°C	20°C	3115
Peroxyester	tert-Amyl peroxypivalate	29240-17-3	188,3		8,50%				55°C	72°C	107°C				
PEROXAN APV		Solution in OMS		75%	6,37%	25kg Container	-10°C					10°C	15°C	25°C	3113
Peroxyester	tert-Butyl peroxypivalate	927-07-1	174,2		9,18%				57°C	75°C	111°C				
PEROXAN PPV PEROXAN PPV-65 PEROXAN PPV-25		Solution in OMS Solution in OMS Solution in OMS		75% 65% 25%	6,89% 5,97% 2,30%	25kg Container 25kg Container 25kg Container, 900kg IBC	-5°C -5°C -5°C -5°C					0°C 0°C 30°C 10°C	10°C 10°C 35°C 15°C	20°C 20°C 40°C 25°C	3113 3115 3119 3119
Diacyl peroxide	Di-(3,5,5-trimethylhexanoyl)-peroxide	3851-87-4	314,5		5,09%				59°C	77°C	112°C				
PEROXAN NPO PEROXAN NPO-50 PEROXAN NPO-50 WN-A		Solution in OMS Solution in OMS Emulsion in water and methanol		75% 50% 50%	3,82% 2,54% 2,54%	25kg Container 25kg Container, 900kg IBC 25kg Container, 900kg IBC	0°C 0°C 0°C 0°C 0°C	-8°C -8°C -8°C -20°C -20°C				0°C 0°C 0°C 10°C 10°C	10°C 10°C 10°C 15°C 15°C	20°C 20°C 20°C 25°C 25°C	3115 3115 3115 3119 3119
Diacyl peroxide	Dilauroyl peroxide	105-74-8	398,6		4,01%				61°C	79°C	117°C				
PEROXAN LP PEROXAN LP-40 W		Flakes Suspension in water		99% 40%	3,97% 1,61%	25kg Cardboard box 25kg Container, 900kg IBC	30°C 30°C 30°C	5°C 5°C				- - -	- - -	50°C 50°C 50°C	3106 3109 3109
Diacyl peroxide	Didecanoyl peroxide	762-12-9	342,5		4,67%				63°C	80°C	116°C				
PEROXAN DDP		Flakes		98%	4,58%	20kg Cardboard box	10°C					30°C	35°C	40°C	3114

Type of initiator / Trade name	Chemical name / Chemical structure	CAS number / Physical form	Molecular weight	Peroxide assay	Active oxygen assay	Standard package	Storage temperatures		Half life temperatures			Safety temperatures			UN-No.
							max.	min.	10h	1h	1min	Control temperature	Emergency temperature	SADT	
Azo-Initiator	2,2'-Azodiisobutyronitrile	78-67-1	164,2						64°C	82°C	118°C				
PEROXAN AZDN PEROXAN AZDN-C		Powder Crystalline				20kg Cardboard box 20kg Cardboard box	25°C 25°C		40°C 40°C	45°C 45°C	50°C 50°C	3234 3234			
Azo-Initiator	2,2'-Azodi-(2-methylbutyronitrile)	13472-08-7	192,3						66°C	84°C	121°C				
PEROXAN AIVN PEROXAN AIVN-PG		Crystalline Granules				20kg Cardboard box 20kg Cardboard box	25°C 25°C		35°C 35°C	40°C 40°C	45°C 45°C	3236 3236			
Peroxyester	2,5-Dimethyl-2,5-di(2-ethylhexanoylperoxy)-hexane	13052-09-0	430,6		7,43%				68°C	86°C	123°C				
PEROXAN HXP		Liquid		90%	6,69%	25kg Container	15°C		20°C	25°C	35°C	3113			
Peroxyester	1,1,3,3-Tetramethylbutyl peroxy-2-ethylhexanoate	22288-43-3	272,4		5,87%				69°C	88°C	127°C				
PEROXAN OPH		Liquid		90%	5,29%	25kg Container	5°C -10°C		15°C	20°C	30°C	3115			
Peroxyester	tert-Amyl peroxy-2-ethylhexanoate	686-31-7	230,4		6,95%				73°C	91°C	128°C				
PEROXAN APO		Liquid		95%	6,60%	25kg Container	5°C		20°C	25°C	35°C	3115			
Diacyl peroxide	Dibenzoyl peroxide	94-36-0	242,2		6,61%				71°C	91°C	132°C				
PEROXAN BP-25 WD		Powder, wet		75%	4,95%	20kg Cardboard box	30°C 5°C		-	-	80°C	3104			
Peroxyester	tert-Butyl peroxy-2-ethylhexanoate	3006-82-4	216,3		7,40%				72°C	91°C	131°C				
PEROXAN PO PEROXAN PO-70 PEROXAN PO-30		Liquid Solution in OMS Solution in OMS		98% 70% 30%	7,25% 5,18% 2,22%	25kg Container 25kg Container 900kg IBC, 25kg Container	15°C 15°C 15°C 15°C		20°C 20°C 30°C 40°C	25°C 25°C 35°C 45°C	35°C 35°C 40°C 50°C	3113 3113 3119 3119			
Peroxyester	tert-Butyl peroxyisobutyrate	109-13-7	160,2		9,99%				79°C	98°C	136°C				
PEROXAN PIV-50		Solution in OMS		50%	4,99%	23kg Container	5°C		15°C	20°C	30°C	3115			

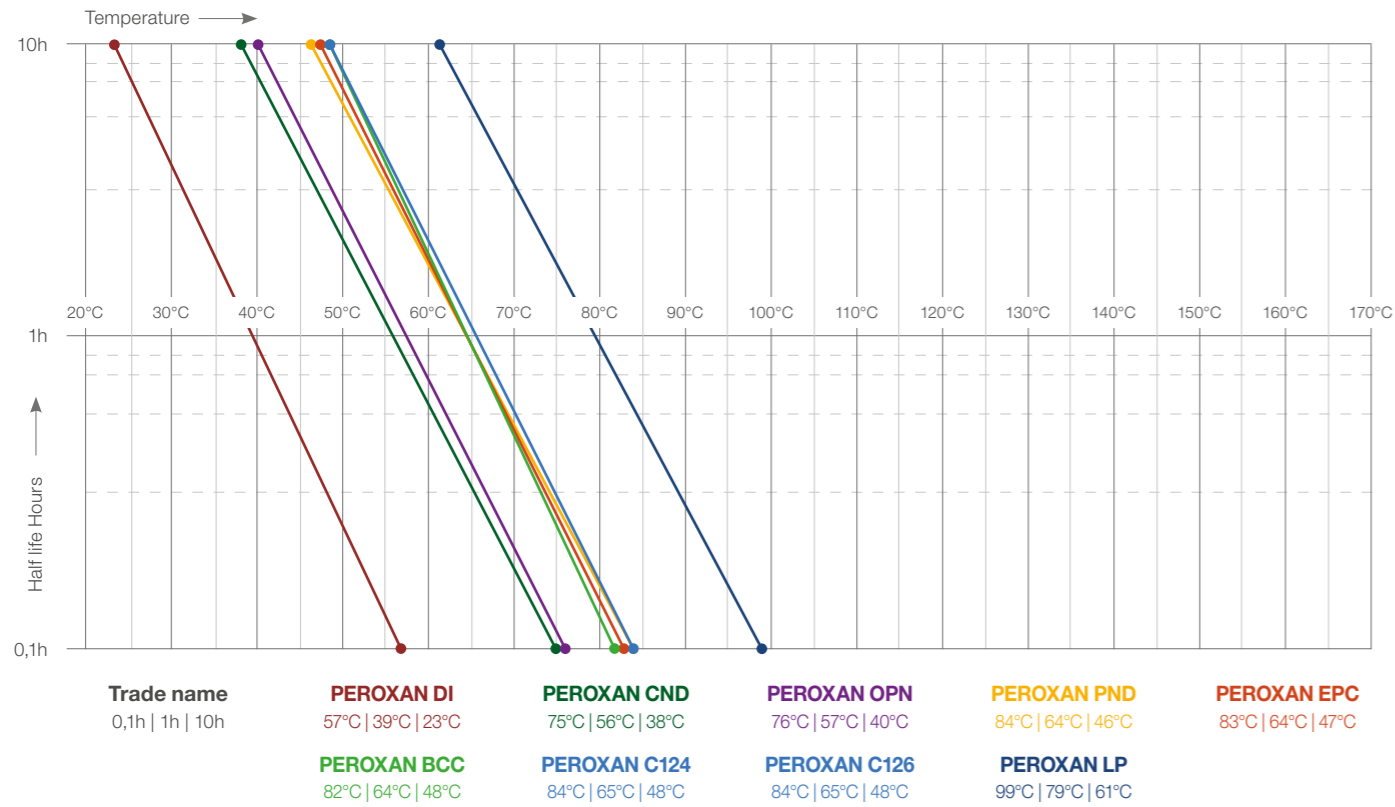
Type of initiator / Trade name	Chemical name / Chemical structure	CAS number / Physical form	Molecular weight	Peroxide assay	Active oxygen assay	Standard package	Storage temperatures		Half life temperatures			Safety temperatures			UN- No.
							max.	min.	10h	1h	1min	Control temperature	Emergency temperature	SADT	
Peroxyketal	1,1-Di-(tert-butylperoxy)-3,3,5-trimethylcyclohexane	6731-36-8	302,5		10,58%				85°C	105°C	148°C				
PEROXAN PK295 V-90 PEROXAN PK295 V-75 PEROXAN PK295 V		Solution in OMS Solution in OMS Solution in OMS		90% 75% 50%	9,52% 7,93% 5,29%	25kg Container 25kg Container 20kg Container		30°C 30°C 30°C				- - -	- - -	60°C 60°C 60°C	3103 3103 3107
Peroxyketal	1,1-Di-(tert-butylperoxy)-cyclohexane	3006-86-8	260,4		12,29%				94°C	113°C	152°C				
PEROXAN PK122 V-80 PEROXAN PK122 V PEROXAN PK122 W		Solution in OMS Solution in OMS Solution in white oil		80% 50% 50%	9,83% 6,14% 6,14%	20kg Container 20kg Container 20kg Container		25°C 30°C 30°C				- - -	- - -	60°C 70°C 70°C	3103 3105 3105
Peroxyester	tert-Amyl peroxy-2-ethylhexylcarbonate	70833-40-8	260,4		6,14%				95°C	113°C	151°C				
PEROXAN AEC		Liquid		94%	5,78%	25kg Container		25°C				-	-	55°C	3105
Peroxyester	tert-Butyl peroxy-3,5,5-trimethylhexanoate	13122-18-4	230,3		6,95%				94°C	114°C	154°C				
PEROXAN PIN PEROXAN PIN-30		Liquid Solution in OMS		98% 30%	6,81% 2,09%	25kg Container 900kg IBC		30°C 30°C				- -	- -	60°C 60°C	3105 3109
Peroxyketal	2,2-Di-(tert-butylperoxy)-butane	2167-23-9	234,2		13,66%				98°C	116°C	153°C				
PEROXAN PK234 V PEROXAN PK234 W		Solution in OMS Solution in white oil		50% 50%	6,83% 6,83%	20kg Container 25kg Container		30°C 30°C				- -	- -	70°C 70°C	3103 3103
Peroxyester	tert-Butyl peroxyisopropylcarbonate	2372-21-6	176,2		9,08%				98°C	117°C	155°C				
PEROXAN BIC		Solution in OMS		75%	6,81%	25kg Container		25°C 0°C				-	-	60°C	3103
Peroxyester	tert-Butyl peroxy-2-ethylhexylcarbonate	34443-12-4	246,3		6,49%				98°C	117°C	154°C				
PEROXAN BEC		Liquid		95%	6,17%	25kg Container		30°C				-	-	60°C	3105
Peroxyester	tert-Butyl peroxyacetate	107-71-1	132,2		12,11%				100°C	119°C	157°C				
PEROXAN PA-50		Solution in OMS		50%	6,05%	20kg Container		10°C				-	-	70°C	3103

Type of initiator / Trade name	Chemical name / Chemical structure	CAS number / Physical form	Molecular weight	Peroxide assay	Active oxygen assay	Standard package	Storage temperatures		Half life temperatures			Safety temperatures			UN- No.
							max.	min.	10h	1h	1min	Control temperature	Emergency temperature	SADT	
Peroxyester	tert-Butyl peroxybenzoate	614-45-9	194,2		8,24%				103°C	122°C	160°C				
PEROXAN PB		Liquid		98%	8,07%	25kg Container	30°C	10°C				-	-	60°C	3103
Dialkyl peroxide	Di-tert-amylperoxide	10508-09-5	174,3		9,18%				108°C	128°C	169°C				
PEROXAN DA		Liquid		93%	8,53%	20kg Container	30°C					-	-	50°C	3107
Dialkyl peroxide	Dicumyl peroxide	80-43-3	270,4		5,92%				112°C	132°C	172°C				
PEROXAN DC		Granules		98%	5,80%	20kg Cardboard box	30°C					-	-	80°C	3110
Dialkyl peroxide	Di-(2-tert-butyl-peroxyisopropyl)-benzene	25155-25-3	338,5		9,45%				114°C	134°C	174°C				
PEROXAN BIB-1 PERGAPROP BIB-40 PP-G PERGAPROP BIB-20 PP-FN PERGAPROP BIB-10 PP-EG		Powder Granules with polypropylene Fine granules with polypropylene Extruded granules with polypropylene		95% 40% 20% 10%	8,98% 3,78% 1,89% 0,95%	20kg Cardboard box 20kg Cardboard box 20kg Cardboard box 20kg Cardboard box	30°C 30°C 30°C 30°C					- - - -	- - - -	80°C 80°C 80°C 80°C	3106 none none none
Dialkyl peroxide	2,5-Dimethyl-2,5-di-(tert-butylperoxy)-hexane	78-63-7	290,4		11,02%				115°C	134°C	174°C				
PEROXAN HX PEROXAN HX-80 PEROXAN HX-80 W PEROXAN HX-50 W		Liquid Solution in OMS Solution in white oil Solution in white oil		92% 80% 80% 50%	10,14% 8,82% 8,82% 5,51%	25kg Container 20kg Container 25kg Container 20kg Container, 900kg IBC	40°C 40°C 40°C 40°C	10°C 5°C 5°C 5°C				- - - -	- - - -	80°C 90°C 90°C 90°C	3103 3105 3105 3109
PERGAPROP HX-20 PP PERGAPROP HX-10 PP PERGAPROP HX-7,5 PP		Granules with polypropylene Granules with polypropylene Granules with polypropylene		20% 10% 7,5%	2,20% 1,10% 0,83%	20kg Cardboard box 20kg Cardboard box 20kg Cardboard box	40°C 40°C 40°C	10°C 10°C 10°C				- - -	- - -	80°C 80°C 80°C	3108 3108 none
Dialkyl peroxide	tert-Butylcumyl peroxide	6457-61-2	208,3		7,68%				115°C	136°C	178°C				
PEROXAN BU		Liquid		94%	7,22%	25kg Container	30°C	15°C				-	-	90°C	3107
Dialkyl peroxide	2,5-Dimethyl-2,5-di(tert-butylperoxy)hexyne-3	1068-27-5	286,4		11,17%				120°C	141°C	184°C				
PEROXAN HXY-85 W		Solution in white oil		85%	9,50%	25kg Container	30°C	10°C				-	-	80°C	3103

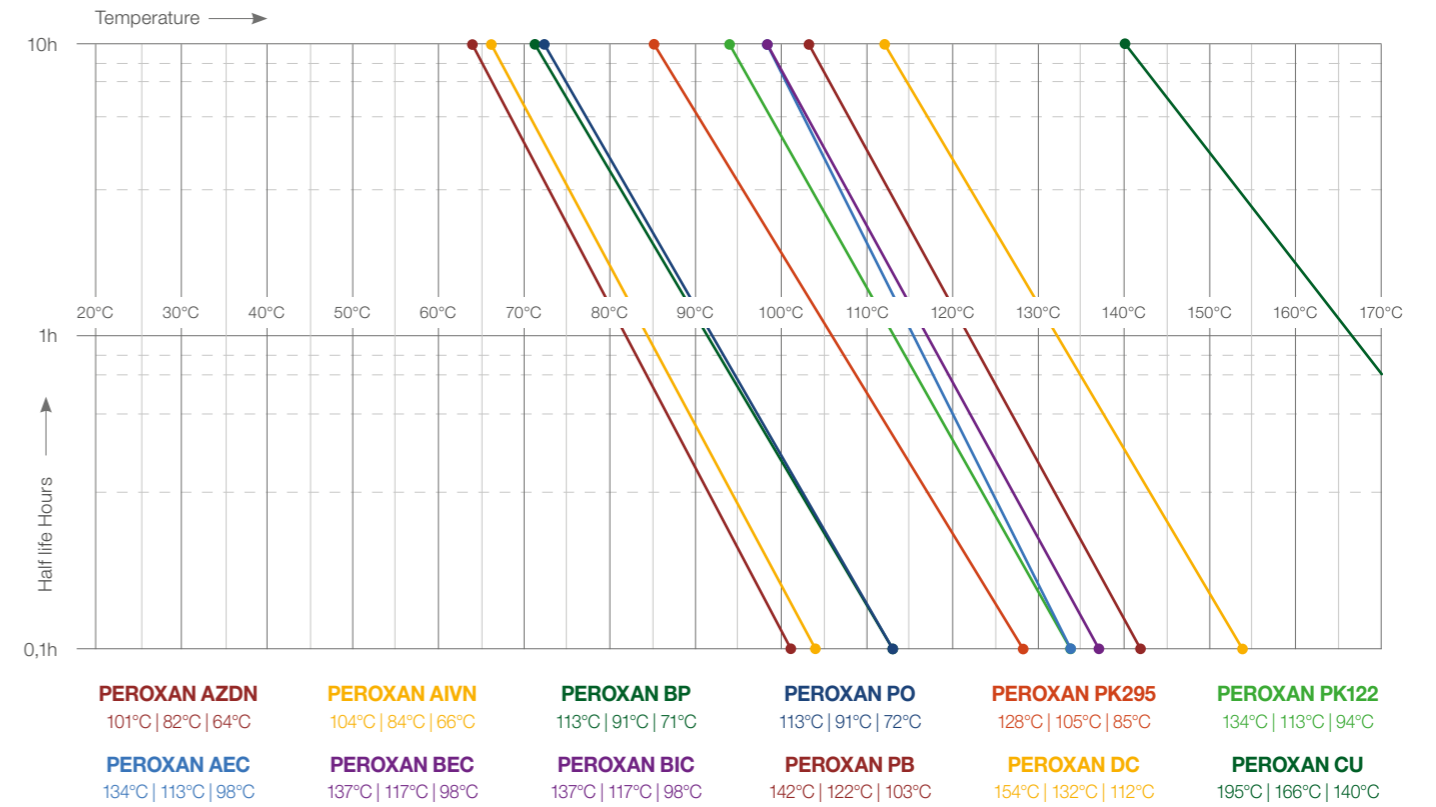
Type of initiator / Trade name	Chemical name / Chemical structure	CAS number / Physical form	Molecular weight	Peroxide assay	Active oxygen assay	Standard package	Storage temperatures		Half life temperatures			Safety temperatures			UN- No.
							max.	min.	10h	1h	1min	Control temperature	Emergency temperature	SADT	
Dialkyl peroxide	Di-tert-butyl peroxide	110-05-4	146,2		10,94%				121°C	141°C	183°C				
PEROXAN DB		Liquid		98%	10,72%	20kg Container, 160kg Drum	40°C					-	-	80°C	3107
PEROXAN DB-50		Solution in OMS		50%	5,47%	20kg Container, 900kg IBC	40°C					-	-	80°C	3107
PEROXAN DB-50 W		Solution in white oil		50%	5,47%	20kg Container, 900kg IBC	40°C					-	-	80°C	3109
Hydroperoxide	Di-isopropylbenzene-mono hydroperoxide	26762-93-6	194,3		8,24%				129°C	154°C	207°C				
PEROXAN IHP-50		Solution in diisopropylbenzene		50%	4,12%	25kg Container, 180kg Drum	25°C					-	-	80°C	3109
Hydroperoxide	p-Menthan hydroperoxide	26762-92-5	172,3		9,28%				133°C	163°C	218°C				
PEROXAN PAM		Solution in hydrocarbon		50%	4,64%	25kg Container, 185kg Drum, 925kg IBC	25°C					-	-	80°C	3109
Hydroperoxide	Cumyl hydroperoxide	80-15-9	152,2		10,51%				140°C	166°C	222°C				
PEROXAN CU-90 L		Solution in cumene		90%	9,46%	25kg Container, 200kg Drum	30°C	0°C				-	-	70°C	3109
PEROXAN CU-80 L		Solution in cumene		80%	8,41%	25kg Container, 200kg Drum	30°C	0°C				-	-	70°C	3109
Hydroperoxide	1,1,3,3-Tetramethylbutyl hydroperoxide	5809-08-5	146,2		10,94%				153°C	182°C	247°C				
PEROXAN OHP		Solution in diisobutylene		85%	9,30%	25kg Container	25°C					-	-	60°C	3105
Hydroperoxide	tert-Butyl hydroperoxide	75-91-2	90,1		17,75%				164°C	185°C	227°C				
PEROXAN BHP-70		Solution in water		70%	12,43%	25kg Container, 190kg Drum, 1000kg IBC	30°C	5°C				-	-	90°C	3109
PEROXAN BHP-10		Solution in water		10%	1,78%	1000kg IBC	30°C	5°C				-	-	90°C	3109
Hydroperoxide	tert-Amyl hydroperoxide	3425-61-4	104,2		15,36%				165°C	190°C	250°C				
PEROXAN AHP		Solution in water		80%	12,30%	25kg Container	30°C	5°C				-	-	80°C	3107
C-C Initiator	2,3-Dimethyl-2,3-diphenylbutan	1889-67-4	238,4						237°C	259°C	305°C				
PERGASAFE FR PERGASAFE FR GS (Synergist for flame retardant system)		Powder Granules		-	-	20kg Cardboard box 20kg Cardboard box	30°C					-	-	-	none
				-	-		30°C					-	-	-	none

HALF LIFE CHARTS

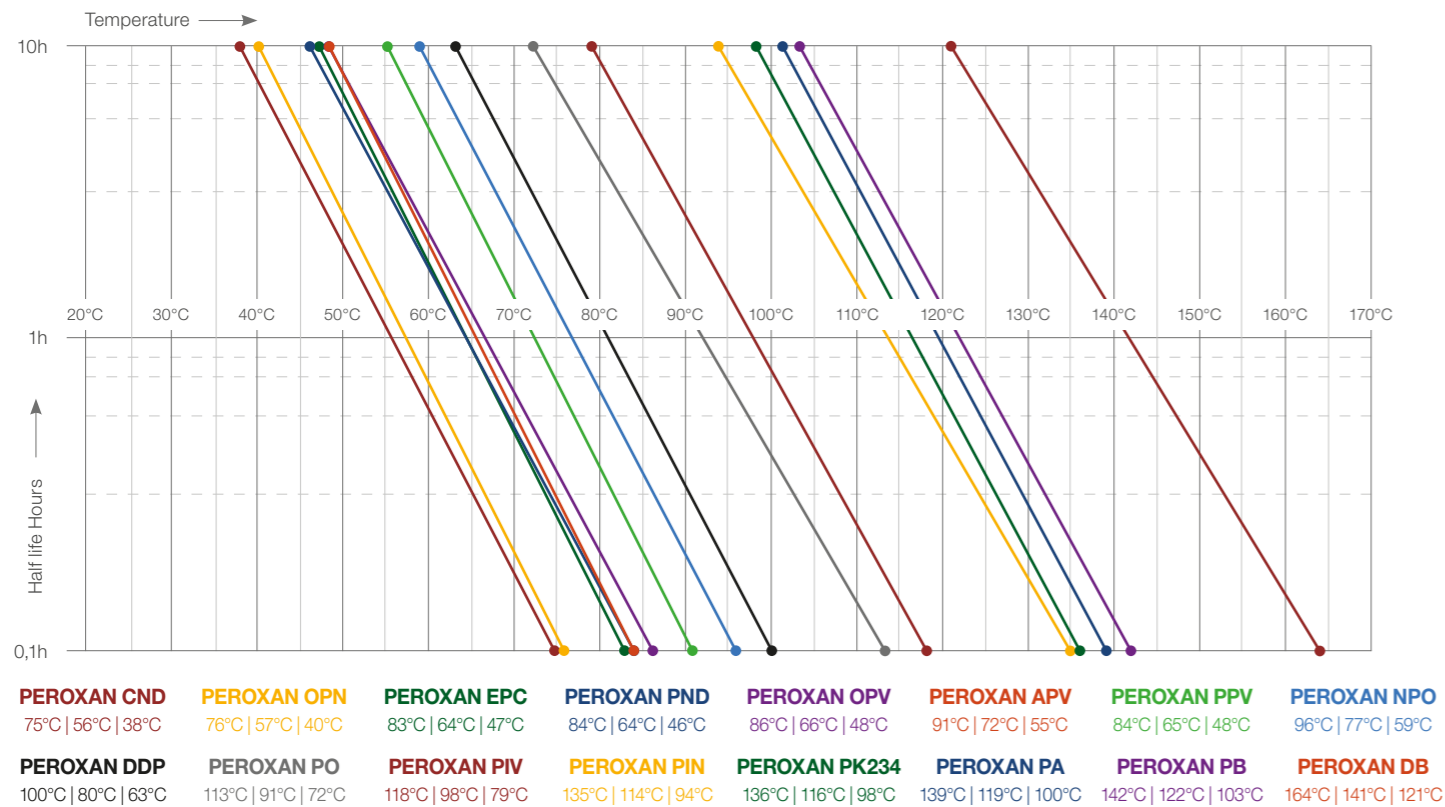
Initiators for PVC



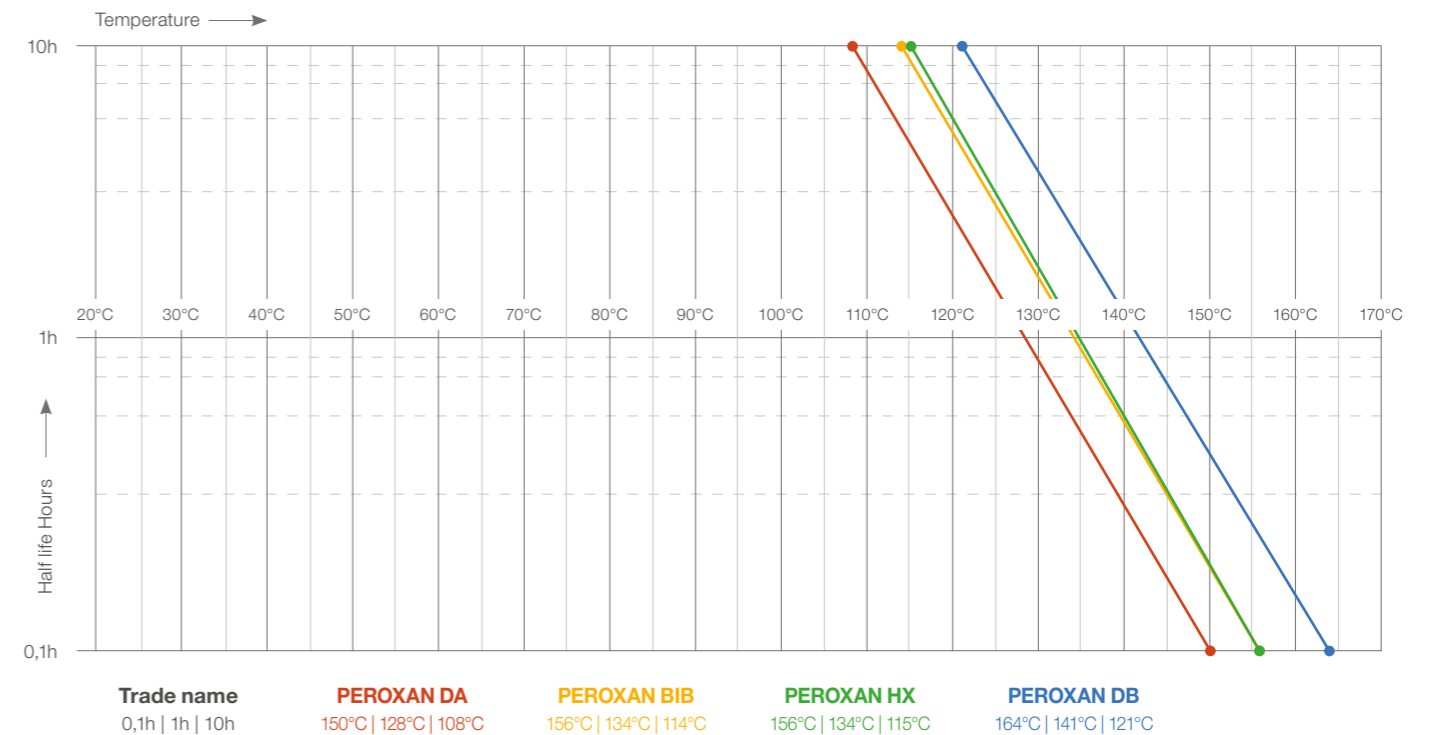
Initiators for Styrenics



Initiators for LDPE



Initiators for CRPP



MAJOR DECOMPOSITION

products of organic peroxides

Chemical name / Trade name Major decomposition products

Diisobutyl peroxide

PEROXAN DI-30 Carbon dioxide, Propane, Propene

Cumyl peroxyneodecanoate

PEROXAN CND
PEROXAN CND-50 WN-A Carbon dioxide, Methane, Neodecanoic acid, Isoaliphatics, 2-Phenylpropanol-2, Acetophenone, Cumene

1,1,3,3-Tetramethylbutyl peroxyneodecanoate

PEROXAN OPN-70
PEROXAN OPN-50 WN-A Carbon dioxide, 2,2-Dimethylpropane, 2,4,4-Trimethyl-2-pentanol, Isomers of isooctane

tert-Amyl peroxyneodecanoate

PEROXAN APN Carbon dioxide, tert-Amyl alcohol, Isomers of isooctane

Di-(4-tert-butyl-cyclohexyl)-peroxydicarbonate

PEROXAN BCC
PEROXAN BCC-75
PEROXAN BCC-40 W Carbon dioxide, 4-tert-butylcyclohexanol, 4-tert-butylcyclohexanone

Di-(2-ethylhexyl)-peroxy-dicarbonate

PEROXAN EPC-S
PEROXAN EPC-75
PEROXAN EPC-65
PEROXAN EPC-60 WN-A
PEROXAN EPC-50 WN-A Carbon dioxide, 2-Ethylhexanol

Dibenzoyl peroxide

PEROXAN BP-25 WD Carbon dioxide, Benzene, Benzoic acid

tert-Butyl peroxy-2-ethylhexanoate

PEROXAN PO
PEROXAN PO-70
PEROXAN PO-30 Carbon dioxide, tert-Butanol, Heptane, 3-tert-Butoxyheptane

tert-Butyl peroxyisobutyrate

PEROXAN PIV-50 Carbon dioxide, Propane, Propene, tert-Butanol, 2-Isopropoxy-2-ethylpropane

1,1-Di-(tert-butylperoxy)-3,3,5-trimethylcyclohexane

PEROXAN PK295 V-90
PEROXAN PK295 V-75
PEROXAN PK295 V Carbon dioxide, Methane, 3,3,5-Trimethylcyclohexanone, tert-Butanol, Acetone

1,1-Di-(tert-butylperoxy)-cyclohexane

PEROXAN PK122 V-80
PEROXAN PK122 V
PEROXAN PK122 W Carbon dioxide, Methane, tert-Butanol, Acetone, Hexanoic acid

Chemical name / Trade name Major decomposition products

tert-Amyl peroxy-2-ethylhexylcarbonate

PEROXAN AEC Carbon dioxide, 2-Ethylhexanol, tert Amyl alcohol

tert-Butyl peroxy-3,5,5-trimethylhexanoate

PEROXAN PIN
PEROXAN PIN-30 Carbon dioxide, Methane, tert-Butanol, Acetone, 2-tert-Butyloxy-2,4,4-trimethylpentane

2,2-Di-(tert-butylperoxy)-butane

PEROXAN PK234 V
PEROXAN PK234 W Methane, Ethane, Acetone, tert-Butanol, Carbon dioxide, 2-Methoxy-2-methylpropane

tert-Butyl peroxyneodecanoate

PEROXAN PND
PEROXAN PND-75
PEROXAN PND-25
PEROXAN PND-50 WN-A Carbon dioxide, tert-Butanol, Isomers of isooctane

Di-n-butyl peroxydicarbonate

PEROXAN NBC-50 Carbon dioxide, Butanol

Dicetyl peroxydicarbonate

PEROXAN C124
PEROXAN C124-35 W Carbon dioxide, Hexadecanol

Dimyristyl peroxydicarbonate

PEROXAN C126 Carbon dioxide, Tetradecanol

1,1,3,3-Tetramethylbutyl-peroxypivalate

PEROXAN OPV Carbon dioxide, Isobutane, Isobutene, 2,4,4-Trimethyl-2-pentanol

tert-Amyl peroxypivalate

PEROXAN APV Carbon dioxide, Ethane, Isobutane, Isobutene, Aceton, Methyl ethylketon, tert-Amyl alcohol

tert-Butyl peroxypivalate

PEROXAN PPV
PEROXAN PPV-65
PEROXAN PPV-25 Carbon dioxide, Isobutane, Isobutene, tert-Butanol

Di-(3,5,5-trimethylhexanoyl)-peroxide

PEROXAN NPO
PEROXAN NPO-50
PEROXAN NPO-50 WN-A Carbon dioxide, 2,2,4,7,9,9-Hexamethyldecane, 2,4,4-Trimethylpentane

tert-Butyl peroxyisopropyl-carbonate

PEROXAN BIC Carbon dioxide, Methane, Acetone, tert-Butanol, Isopropanol

Chemical name / Trade name Major decomposition products

tert-Butyl peroxy-2-ethylhexyl-carbonate

PEROXAN BEC Carbon dioxide, tert-Butanol, 2-Ethylhexanol

tert-Butyl peroxyacetate

PEROXAN PA-50 Carbon dioxide, Acetone, Methane, tert-Butanol, 2-Methoxy-2-methylpropane

tert-Butyl peroxybenzoate

PEROXAN PB Carbon dioxide, Acetone, Methane, tert-Butanol, Benzoic acid, Benzene

Di-tert-amylperoxide

PEROXAN DA Methane, tert-Amyl alcohol

Dicumyl peroxide

PEROXAN DC Acetophenone, Methane, 2-Phenylisopropanol

Di-(2-tert-butyl-peroxyisopropyl)-benzene

PEROXAN BIB-1
PERGAPROP BIB-40 PP-G
PERGAPROP BIB-20 PP-FN
PERGAPROP BIB-10 PP-EG tert-Butanol, Methane, Acetone, Bis-(2-hydroxyisopropyl)-benzenes, 2-(3-Acetylphenyl)-2-propanol, 2-(4-Acetylphenyl)-2-propanol

2,5-Dimethyl-2,5-di-(tert-butylperoxy)-hexane

PEROXAN HX
PEROXAN HX-80
PEROXAN HX-80 W
PEROXAN HX-50 W
PERGAPROP HX-20 PP
PERGAPROP HX-10 PP
PERGAPROP HX-7,5 PP Acetone, Methane, tert-Amyl alcohol, tert-Butanol, Ethane

tert-Butylcumyl peroxide

PEROXAN BU Acetone, Methane, 2-Phenylisopropanol, tert-Butanol Acetophenone, Ethane

Dilauroyl peroxide

PEROXAN LP
PEROXAN LP-40 W Carbon dioxide, Docosane, Undecane, Undecyl dodecanoate

Didecanoyl peroxide

PEROXAN DDP Carbon dioxide, Nonane, Octadecane, Nonyl decanoate

2,2'-Azodiisobutyronitrile

PEROXAN AZDN
PEROXAN AZDN-C Nitrogen, Tetramethyl succinonitrile, 2-Methylpropanenitrile, Methacrylonitrile, 2-Cyanopropane

2,2'-Azodi-(2-methylbutyronitrile)

PEROXAN AIVN
PEROXAN AIVN-PG Nitrogen, 2,3-Diethyl-2,3-dimethyl-butane-dinitrile, 2-Methylbutanenitrile, 2-Methyl-2-butenitrile

2,5-Dimethyl-2,5-di(2-ethyl-hexanoylperoxy)-hexane

PEROXAN HXP Carbon dioxide, Acetone, 2-Pentanone, Heptane, Heptenes, tert-Amyl alcohol, 2,5-Bis(1-ethylpentoxy)- 2,5-di-methylhexane, 2,5-Dimethyl-2,5-hexanediol

Chemical name / Trade name Major decomposition products

1,1,3,3-Tetramethylbutyl peroxy-2-ethylhexanoate

PEROXAN OPH Carbon dioxide, 2,2-Dimethylpropane, Acetone, Heptane, Heptenes, 2,4,4-Trimethyl-2-pentanol, 2-(1-Ethylpentoxy)-2,4,4-trimethylpentane

tert-Amyl peroxy-2-ethylhexanoate

PEROXAN APO Carbon dioxide, Methane, tert-Amyl alcohol, Heptane, Ethane, Acetone, 3-(1,1-Dimethylpropoxy)heptane

2,5-Dimethyl-2,5-di(tert-butylperoxy)hexyne-3

PEROXAN HXY-85 W Methane, 2,5-Dimethyl-3-hexyn-2,5-diol, Acetone, tert-Butanol

Di-tert-butyl peroxide

PEROXAN DB
PEROXAN DB-50
PEROXAN DB-50 W Acetone, Methane, tert-Butanol, Acetaldehyde, Isobutylene oxide

Di-isopropylbenzene-mono hydroperoxide

PEROXAN IHP-50 Methane, 3-Isopropylacetophenone, 3-(2-Hydroxyisopropyl) isopropylbenzene, Ethane

p-Menthan hydroperoxide

PEROXAN PAM Methane, Ethane, Acetone, Menthan alcohol, Isomers

Cumyl hydroperoxide

PEROXAN CU-90 L
PEROXAN CU-80 L Acetophenone, 2-Phenylisopropanol, Methane, Ethane, Benzaldehyde, Phenol, Acetone

1,1,3,3-Tetramethylbutyl hydroperoxide

PEROXAN OHP Methane, Ethane

tert-Butyl hydroperoxide

PEROXAN BHP-70
PEROXAN BHP-10 Methane, Acetone, tert-Butanol, Ethane

tert-Amyl hydroperoxide

PEROXAN AHP Methane, Ethane, tert-Amyl alcohol

PERGAN
PERGAN MARSHALL LLC

PERGAN Marshall LLC
710 Bussey Rd
Marshall, TX 75670
USA

T +1 903-938-5141
info@perganmarshall.com

PERGAN
The Peroxide Company

PERGAN GmbH
Schlavenhorst 71
46395 Bocholt
Deutschland

T +49 (0) 2871 / 99 02-0
F +49 (0) 2871 / 99 02-50
sales@pergan.com

PERGAN
天津博金精细化工有限公司

PERGAN Fine Chemical Co. Ltd.
Maotiao Road, Nanhe Industrial Zone
Tianjin, 300382
P.R. China

T +86-22-23982200
F +86-22-23983300
yeekew@yahoo.com