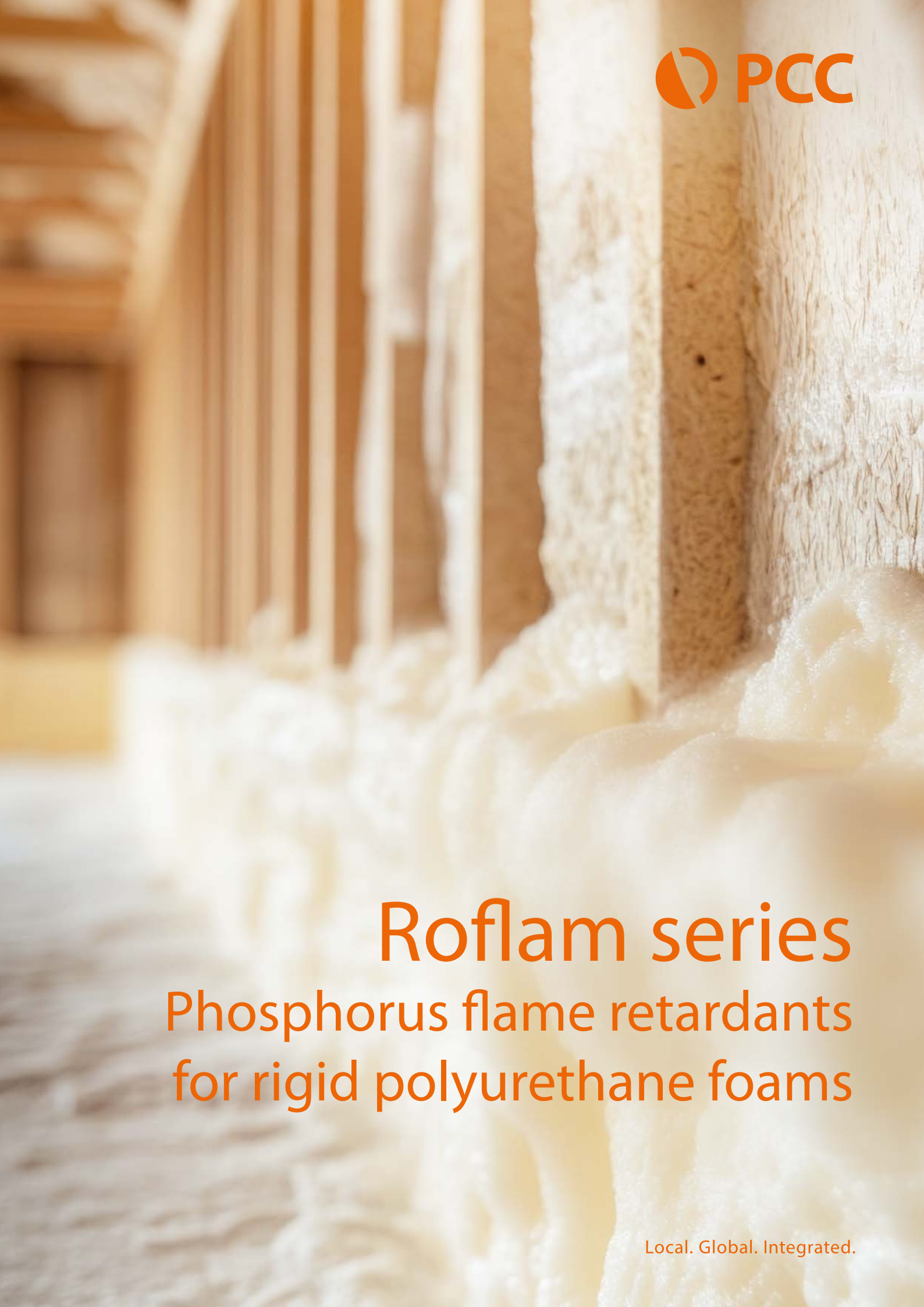


PCC

Roflam series

Phosphorus flame retardants for rigid polyurethane foams

Local. Global. Integrated.


Operating in 17 countries, in 39 different locations, PCC SE currently employs over 3 300 people.

About us

PCC Rokita SA is one of the largest chemical companies in Poland, offering a wide range of advanced products for various industrial sectors. The company has four main chemical complexes: Chlorine Complex, Polyols Complex, Phosphorus Chemicals Complex and Lubricants Complex. Each specialises in the production of innovative raw materials and additives used in a wide range of industries.
Thanks to modern technologies and strong research and development facilities, PCC Rokita SA plays an important role in the European chemical market, providing high quality products that meet the stringent requirements of its customers.
PCC Rokita pays particular attention to sustainable development, which is one of the key elements of its corporate strategy. In order to strengthen its competitive position in the chemical market, the company is committed to promoting responsible production and consumption along the entire value chain. The concept of sustainable development is therefore a key aspect of all the company's management and operational processes.

PCC ROKITA SA
PCC PCG
OXYALKYLATES
IRPC

Polyols

- Polyether polyols
- Polyester polyols
- Prepolymers
- Polyurethane Systems

PCC
ROKITA SA

Chlorine

- Chlorine
- MCAA
- Other Chlorine Downstream Product

PCC
ROKITA SA

Phosphorus

- Phosphorus derivatives
- Naphthalene derivatives
- Polycarboxyethers (PCE)

PCC EXOL SA
PCC CHEMAX INC
PCC PCG OXYALKYLATES

Surfactants

- Anionic surfactants
- Cationic surfactants
- Nonionic surfactants
- Amphoteric surfactants (betaines)
- Chemical formulation

PCC
SYNTEZA

Alkylphenols

- Nonylphenol
- Dodecylphenol
- Tristyrylphenol

PCC CONSUMER PRODUCTS SA

Consumer Products

- Household & industrial Cleaners, Detergents and Personal Care Products

PCC
ROKITA SA

Energy

- Renewable Energy
- Conventional Energy

PCC
INTERMODAL SA

Logistics

- Intermodal transport
- Road Haulage
- Rail Transport

PCC
BAKKISILICON HF.

Silicon

- Microsillica
- Silicon Metal

PCC
SE

Holding & Projects

- Portfolio Management
- Project Development

Roflam series – flame retardants

General info & uses

Roflam series – phosphorus-based flame retardants (FRs) thanks to their unique flame retarding profile are considered as one of the most efficient FR group. Phosphorus based FRs, both chloro-phosphates and non-halogenated provide a perfect balance of process ability, flame retardancy and physical properties. Roflam products are particularly suitable safety solutions for building and construction applications, furniture, and textile industry as well as for various application in the transport sector.

Features

- Excellent flame retarding profile
- Compatibility
- Easy for processing
- High efficiency

Applications

- Acoustic insulation systems
- Sound proofing foam for car interiors
- Foam for mattress fillings
- Upholstered furniture
- Composite foam
- Thermal insulation
- Spray foam systems
- One Component Foams
- CASE
- Abrasion resistant cable jacketing materials

Typical properties

Product name	Chemical name	Viscosity (at 25°C)	Density (at 25°C)	Phosphorus content	Chlorine content
		EN ISO 12058	EN ISO 2811	based on composition (GC-MS analysis)	based on composition (GC-MS analysis)
		mPa·s	g/cm³	% (w/w)	% (w/w)
Halogen-free FRs based on phosphate esters					
Roflam B7	tert-butylated triaryl phosphate	72	1.18	8.5	–
Roflam B7V		70	1.18	8.5	–
Roflam B7L		310	1.12	7.4	–
Roflam F5	isopropylated triaryl phosphate	53	1.17	8.5	–
Roflam F6		69	1.16	8.3	–
Roflam R	tetraphenyl resocinol diphosphate	600	1.30	11.0	–
Oligomeric phosphorus FRs					
Roflam OA2O*	oligomeric aliphatic phosphate	2000	1.25	18	–
Reactive halogen-free FR based on phosphorus					
Roflam 6*	N,N-bis-(2-hydroxyethyl) aminomethane phosphonic acid diethyl ester	200	1.16	12.2	–
Highly efficient chlorine-containing FRs					
Roflam P	tris(2-chloro-1-methylethyl) phosphate	66	1.28	9.5	32.5
Roflam P LO		66	1.28	9.5	32.5

* available upon request

Solutions for PU rigid foams

Product performance

Product name	Activity type	FR type	FR efficiency	Viscosity reduction	Process ability	System stability
Roflam P	additive	chlorine-containing	•••	•••	•••	•••
Roflam B7	additive	HALOGEN FREE	••	•••	•••	•••
Roflam B7L	additive		••	••	•••	•••
Roflam 6*	reactive		•••	••	••	•

* available upon request

• good results •• very good results ••• excellent results

Roflam B7 / Roflam B7L

HALOGEN FREE

- safe to human health,
- easy for processing

Roflam 6*

HALOGEN FREE HIGH EFFICIENCY

- safe to human health
- high FR efficiency
- reactive type

Roflam P

HIGH EFFICIENCY

- easy for processing
- high FR efficiency

PUR block foams

Form. 1		Form. 2		Form. 3	
Roflam P	25 php	Roflam P TEP	15 php 15 php	Roflam 6 TEP	15 php 15 php

Foam properties	Form. 1	Form. 2	Form. 3
Fire test DIN 4102, class B2 / EN 13501-1, class E	pass	pass	pass
Core density	40 kg/m^3	38 kg/m^3	41 kg/m^3
Compressive strength (at 10% relative deformations)	125 kPa	114 kPa	148 kPa
Cream time	45 sec.	44 sec.	46 sec.
Gel time	190 sec.	245 sec.	220 sec.
Tack-free time	210 sec.	340 sec.	325 sec.
Rise temperature	130°C	114°C	120°C

Components	php
Polyols	100
Water	3.0
Surfactants	1.8
Catalysts	1.2
Blowing agents	14
Flame retardants*	25-30
pMDI index	120

* depending on flammability requirements

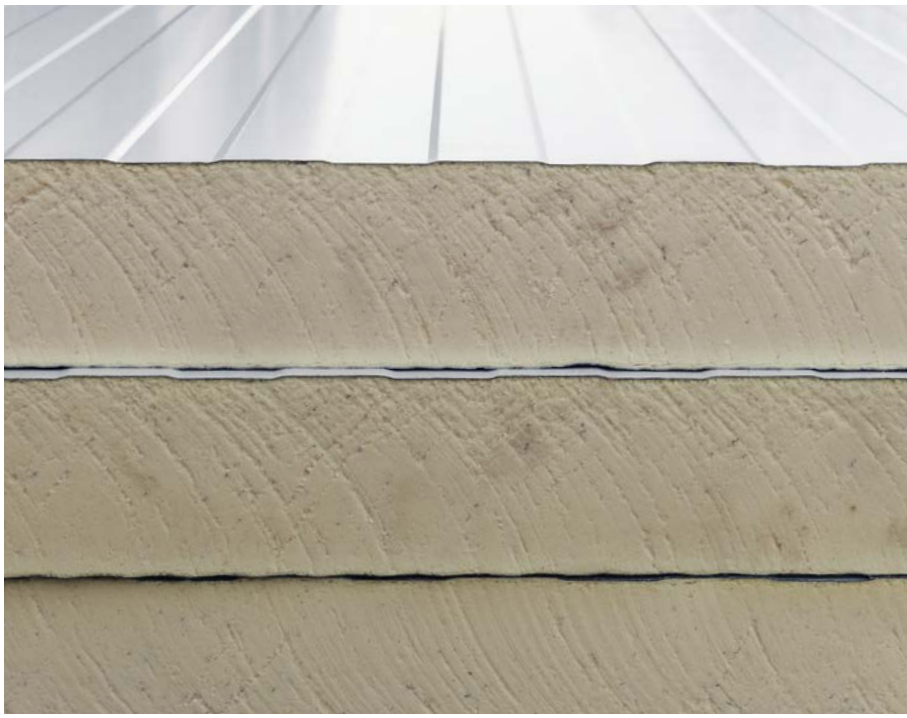
PIR metal-faced sandwich panels

Form. 1		Form. 2		Form. 3		Form. 4	
Roflam P	18 php	Roflam 6	18 php	Roflam B7	28 php	Roflam B7 TEP	15 php 8 php

Foam properties	Form. 1	Form. 2	Form. 3	Form. 4
Fire test DIN 4102, class B2 / EN 13501-1, class E	pass	pass	pass	pass
Core density	30 kg/m³	30 kg/m³	30 kg/m³	30 kg/m³
Closed cells	> 90%	> 90%	> 90%	> 90%
Dimensional stability change	< 5%	< 5%	< 5%	< 5%
Compressive strength (at 10% relative deformations)	200 kPa	253 kPa	245 kPa	242 kPa

Components	php
Polyols	100
Water	0.5-1.0
Surfactants	2.0-2.5
Catalyst 1	3.0-4.0
Catalyst 2	0.5-1.5
Pentanes	15-20
Flame retardants*	18-28
pMDI index	300

* depending on flammability requirements



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www.products.pcc.eu

September 2025