



Baerlocher Additives for PVC
Cables and Wires



we add character to plastics

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The Baerlocher Group of Companies is one of the world's leading suppliers of additives for the plastics industry with a strong focus on PVC.

Baerlocher has extensive technology and market know-how drawn from more than 190 years of company history.

Additives play a crucial role in determining processing properties as well as product quality and character. Baerlocher offers a broad range of additives for polymers suitable for various industries.

Baerlocher is your global partner for Ca-based solutions and metal soaps.

By developing and supplying innovative additives, Baerlocher enables the plastics industry worldwide to manufacture high-quality and sustainable products.

www.baerlocher.com



Global presence and more than 1200 employees worldwide make sure that we are always close to the customer. Future-oriented, we are continuously investing in research and development. Our innovative power results from the creativity of our in-house scientists and technical experts. Baerlocher has R&D facilities in Germany (Munich-Unterschleissheim), France (Marseille), Italy (Lodi), the United States (Dover, Cincinnati) and India (Dewas).

Environmentally sound production processes as well as the safety and protection of people and environment are key corporate goals. As a globally active group of companies we are aware of our responsibility, regardless of time or place. We are committed to the principles of "Responsible Care": Our quality management is certified to ISO 9001 and our environmental management system to ISO 14001, encouraging our employees to work together in a responsible way. This policy will not least benefit our customers.

Baerlocher products

BAEROPAN	BAEROCID
BAEROSTAB	BAEROCIN
BAEROPOL	CEASIT
BAEROLUB	ZINCUM
BAEROPHOB	

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Additives for the Extrusion of PVC Cables and Wires

Plasticized PVC has been used to produce cable and wire insulation and sheathing for more than 50 years. It is still enjoying a healthy worldwide market share of the electrical insulation materials currently in use. Development and use of stabilizer systems are determined by a number of factors, including technical, ecological and political interests and, not least, emotional forces. During a transitional period of time three different systems are currently used at the same time: Lead, Barium/Zinc, Calcium/Zinc. They compete with each other in terms of stabilising costs, performance and processing properties. In addition, ecological considerations and statutory requirements on national and European levels become increasingly important.

Baerlocher PVC additives allow cables and wires of high quality to be made efficiently, imparting to the finished products specific performance characteristics, such as good heat stability. Baerlocher develops tailor-made products to suit the needs of each individual customer and manufacture them at one of the worldwide production sites. Special emphasis is always placed on customer focus and consistent quality. We offer a full range of stabilizers, from proven Lead stabilizers to the meanwhile generally accepted Calcium/Zinc stabilizers. All stabilizer types are available in various supply forms ranging from powders to one-packs in granule form.



Baerlocher PVC Additives

- **high-performance**
- **tailor-made**
- **quality-controlled**
- **future-orientated**
- **cost-efficient**

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Application 70 °C

Calcium/Zinc

Baeropan MC or R-KA 81/5

Baeropan MC or R-KA 83/5

These are Baerlocher's standard Calcium/Zinc one-packs for cable sheathing. They match the heat stability of one-packs based on lead sulfate like Baeropan E 292 KA when used at the same dosage. Baeropan MC or R KA-83/5, for example, is a product modification giving significantly improved early colour in white or light-pigmented cables.

Baeropan MC or R 8703 KA/5

Baeropan MC or R 8850 KA/5

Both products have been developed for use in standard insulation compounds. They ensure very low water absorption of the finished cable.

Water absorption

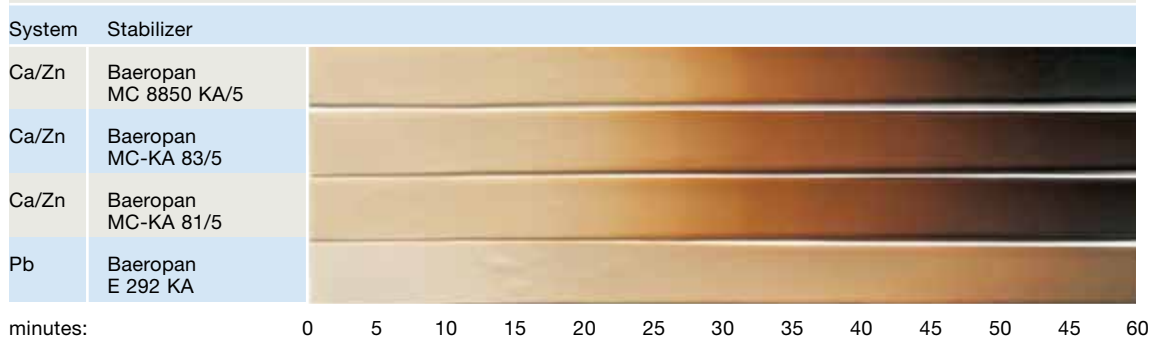
Baeropan R-KA 81/5	Baeropan R 8703 KA/5
2.05 wt.-%	0.65 wt.-%

According to IEC 811-1-3, 9.2 (70 °C, 14 days)

Comparison of Calcium/Zinc and Lead (service temperature max. 70 °C)

Mathis oven test at 200 °C

Standard formulation [phr]: 100.0 PVC, k-value 70
 50.0 DIDP (0.5 % Bisphenol A prestabilized)
 50.0 Filler
 4.0 Pb- or Ca/Zn-stabiliser



Application 90 °C

Calcium/Zinc

Baeropan MC or R 8656 KA-ST

Baeropan MC or R 8823 KA

Baeropan MC or R 8937 KA

These Calcium/Zinc stabilizers ensure excellent electrical properties, very good colour hold, outstanding heat stability and good heat ageing properties of the finished products. They are mainly used in cable insulation. All properties, including very low water absorption, are equivalent to those of known standard Lead stabilizers like Baeropan TX 770 KA.

Baeropan MC or R 8656 KA-ST is also very well suited for use in flame retardant compounds.

Comparison of Calcium/Zinc and Lead (service temperature max. 90 °C)

Mathis oven test at 200 °C

Standard formulation [phr]: 100.0 PVC, k-value 70
50.0 DIDP (0.5 % Bisphenol A prestabilized)
50.0 Filler
4.0 Pb- or Ca/Zn-stabiliser

System	Stabilizer	
Ca/Zn	Baeropan MC 8937 KA	
Ca/Zn	Baeropan R 8656 KA-ST	
Ca/Zn	Baeropan R 8823 KA	
Pb	Baeropan TX 770 KA	

minutes: 0 10 20 30 40 50 60 70 80 90 100 110 120

Application 105 °C/125 °C

Calcium/Zinc

Baeropan MC or R 8553 KA-ST/3 (105 °C)

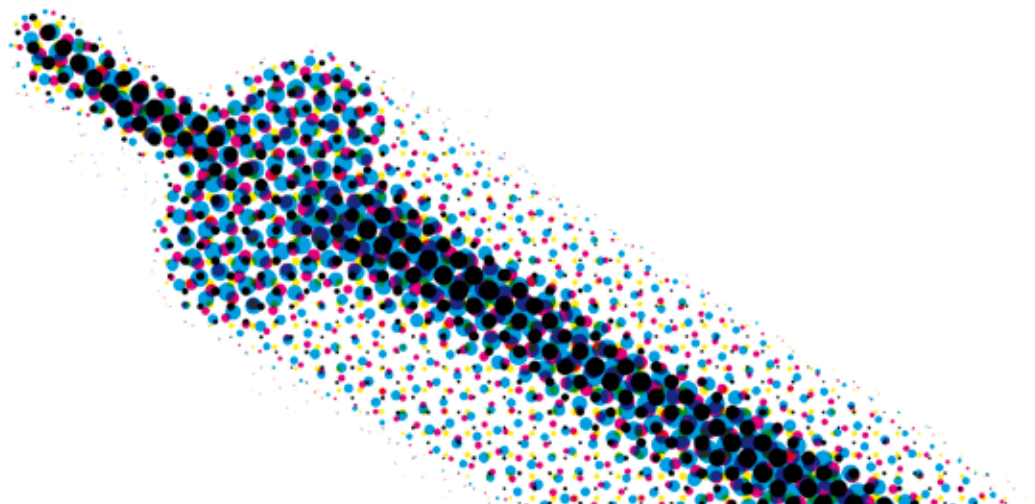
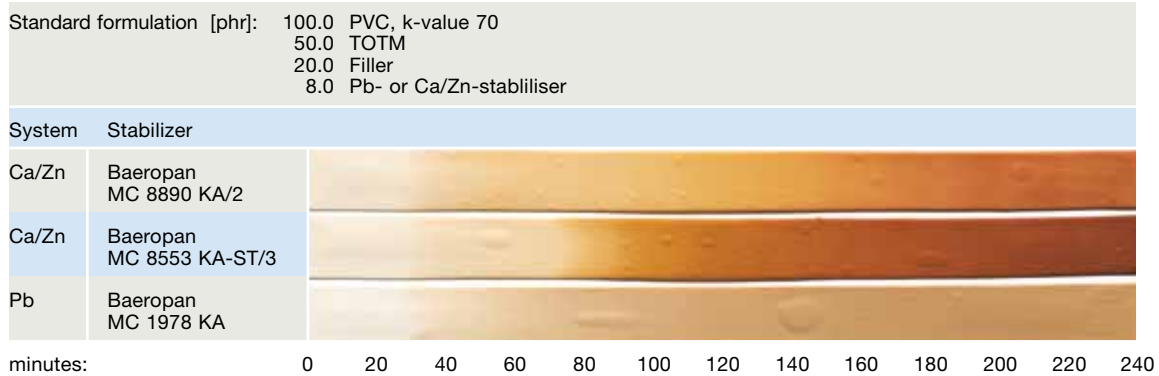
Baeropan MC or R 8890 KA/2 (125 °C)

These Calcium/Zinc stabilizers are used in high-temperature cables. They are similar to lead phthalate one-packs like Baeropan MC 1978 KA in terms of water absorption and, consequently, electrical properties. Baeropan MC or R 8890 KA/2 was specially developed for a dosage above 12 phr and meets the stringent requirements of 125 °C applications. It covers automotive applications according to ISO/DIS 6722 class C.

Although these products already contain lubricants, it may be necessary to improve their rheological performance to meet specific customer requirements. This can be done with various lubricant systems, for example with products from the Baerolub range.

Comparison of Calcium/Zinc and Lead (service temperature max. 105 °C)

Mathis oven test at 200 °C

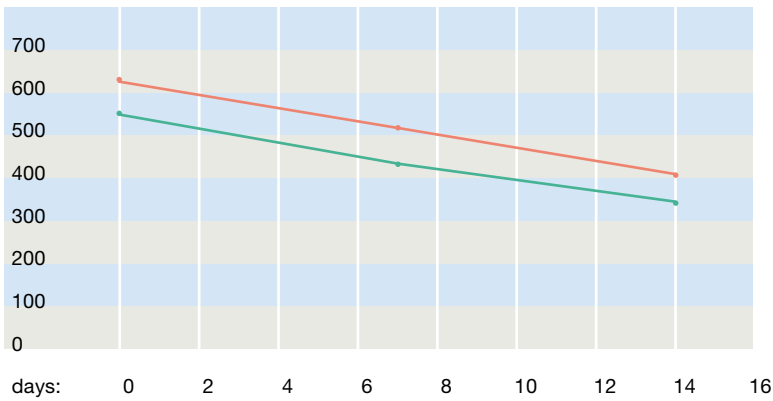


Example

Components	[phr]
PVC	100,0
TOTM	40,0
Filler	20,0
Stabilizer	12,0

Heat ageing at 125 °C

Congo red stability [min]

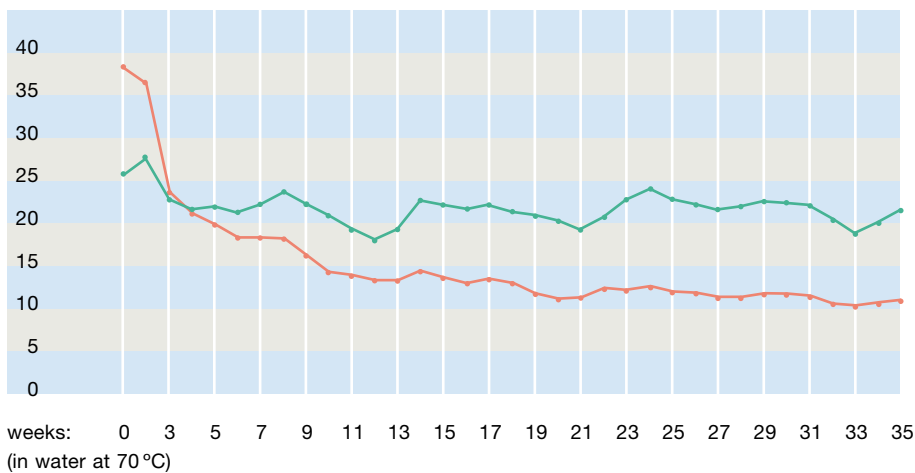


Congo red stability of high temperature cable stabilized with Baerlocher products remains at high levels even during long-term heat ageing.

● Ca/Zn: Baeropan MC 8890 KA/2
● Pb: Baeropan MC 1978 KA

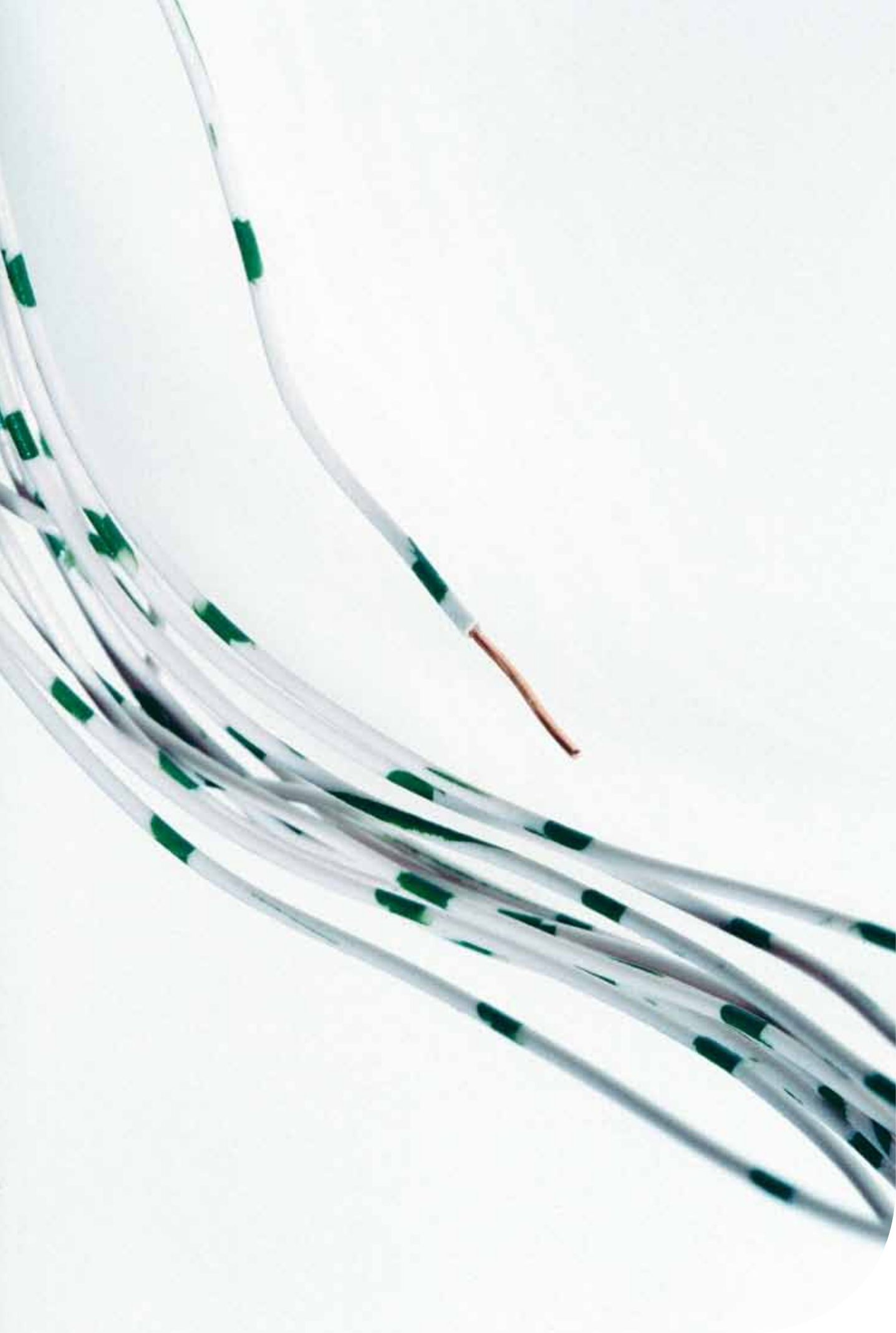
Electrical resistance during water storage

k-value [MΩ·km]



This figure proves the high performance of our Calcium/ Zinc stabilizers during water storage. The k-value is nearly unchanged even after 35 weeks and is therefore comparable with Lead-based systems.

● Ca/Zn: Baeropan MC 8890 KA/2
● Pb: Baeropan MC 1978 KA



Transparent Cables

Calcium/Zinc

Baerostab MC 8763/1 CP is a very efficient Calcium/Zinc stabilizer in powder form. It is particularly suited for odour-sensitive applications.



Baerlocher stabilizers ensure reliable service of cables and wires even in demanding applications. They are equally suitable for pigmented and transparent PVC formulations. Low dusting supply forms facilitate safe handling.

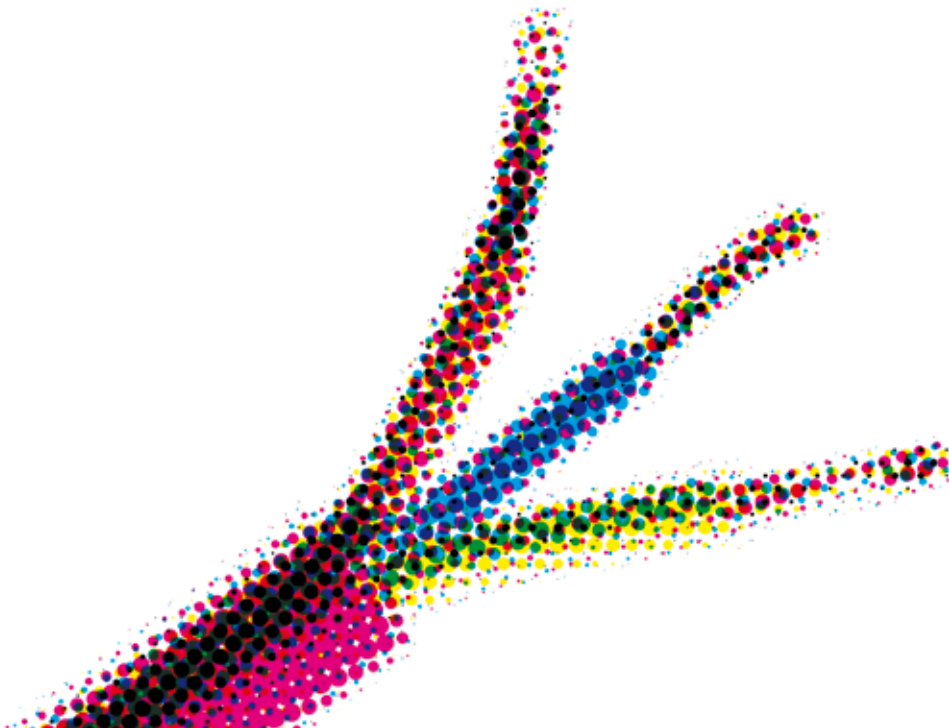


Overview

PVC recipes

Maximum service temperature	70 °C	80 °C	90 °C	105 °C/125 °C
PVC, k-value 70	100	100	100	100
Plasticizer	52 phr DEHP	55 phr DIDP	55 phr DIDP	50 phr TOTM
Filler	70 – 80 phr	60 – 80 phr	60 – 80 phr	15 – 20 phr
Pb-stabilizer	3.0 – 3.5 phr	4.5 – 5.5 phr	4,5 – 5,5 phr	8.0 – 12.0 phr
Baeropan	E 292 KA	E or TX 296 KA TX 3600 KA	TX 3600 KA	MC 1978 KA
Ca/Zn-stabilizer	3.0 – 3.5 phr	4.0 – 5.5 phr	4.0 – 5.5 phr	8 – 12 phr
Baeropan	MC or R KA 81/5 MC or R 8703 KA/5	MC or R 8703 KA/5 MC or R 8850 KA/5	MC or R 8823 KA MC or R 8656 KA-ST MC or R 8937 KA	MC or R 8553 KA-ST/3 MC 8890 KA/2 (125 °C; 12 – 15 phr)

MC = powder; E, R = granules; TX = pellets

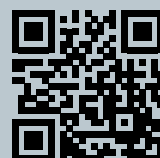




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Baerlocher Additives for PVC

- Extrusion and Injection Moulding
- Calendered Films and Sheets
- Lead Stabilizers
- Lubricants
- Organotin Stabilizers
- Plastisol
- Sheets and Foamed Profiles

Baerlocher Special Additives

- Metallic Stearates

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