K R I T I L E N® masterbatches

BLACK MASTERBATCHES

TECHNICAL INFORMATION

KRITILEN® BLACK masterbatches are concentrates of carbon-black in a polymer carrier. They offer a convenient way of incorporating carbon-black in thermoplastic products, to provide black color and improve UV-resistance, without contamination by dust and with good dispersion which is essential for maximum opacity and good UV-stabilization.

There are 2 main classes of KRITILEN® BLACK masterbatches:

a) General purpose black masterbatches, based on SRF or HAF carbon-black in LDPE, LLDPE, PP or PS carrier. They are mainly used for coloring, while at the same time they increase the UV-resistance of plastic products.

b) Black masterbatches for demanding applications, based on P and RCF carbon-black, often in combination with various additives such as antioxidants and processing aids in LDPE, LLDPE, PP, PS or PVC carrier. Due to the small particle-size of the carbon-black (20-30 nm) and to its perfect dispersion in the masterbatch, these types offer to plastic products higher opacity and maximum UV-resistance.

TYPICAL CARBON-BLACK SPECIFICATIONS :

Property	P	RCF	SRF
Average particle size, nm	20-25	< 25	60-70
DBP Surface Area, ml/100 gr	98	114	65
Iodine Absorption, mg/gr	118	121	30
Tinting Strength, IRB#3	107	115	57
CTAB, m2/gr	99	110	33
Ash, %	< 0,2	< 0,75	< 0,75
Sulfur content, %	0,1		
Toluene extract, %	0,03		

- P is the purest type of carbon-black, with broad approval for food contact and potable water applications. It imparts maximum UV-resistance and excellent covering power.
- RCF also impart excellent UV-resistance and covering power.
- SRF is an economic carbon-black, suitable for coloring plastic products and imparting moderate UV-resistance.

KRITILEN BLACK MASTERBATCHES
PRODUCT RANGE

KRITILEN BLACK	Carrier Resin	Carbon-black %	Carbon-black type	Filler	Antioxidants	Processing Aid	Inj. / Blow-moulding	Films / Sheets	Thin films	Pipes	Pipes (pot. water)	Geomembranes	Tapes / geotextiles	Fibers
320	PE	20	SRF	♦			•	o						
325	PE	25	SRF	♦			•	o						
331	PE	30	SRF	♦			•	o						
335	PE	35	SRF	♦			•	•					o	
340	PE	40	SRF	♦			•	•					o	
349	PE	50	SRF	♦			•	•	•	•			o	
3491	PE	50	SRF	♦			•	•	•	•			o	
350	PE	50	SRF				o	•	•	•			o	
351	PE	50	SRF			♦	o	•	•	•				
354	PE	50	SRF			♦	o	•	•	•				
A354	PE	50	SRF		♦	♦	o	•	•	•				
360	PE	60	SRF				o	•	•	•				
3601	PE	60	SRF			♦	o	•	•	•				
515	PE	15	RCF	♦			•	o						
520	PE	20	RCF	♦			•	o						
525	PE	25	RCF	♦			•	•						
530	PE	30	RCF	♦			o	•		•				
438	PE	40	RCF				o	•	•	•		o		
A441	PE	40	RCF		♦		o	•	•	•		o		
A445	PE	40	RCF		♦	♦	o	•	•	•		o		
440P	PE	40	P				o	•	•	•	•	o	o	
4401P	PE	40	P				o	•	•	•	•	o	•	•
4410P	PE	40	P				o	•	•	•	•	o	•	•
A442P	PE	40	P		♦		o	•	•	•	•	•	o	
A446P	PE	40	P		♦	♦	o	•	•	•	•	•	o	
A448P	PE	40	P		♦	♦	o	•	•	•	•	o	o	
PP940	PPH	40	SRF				o	•						
PP942P	PPH	40	P				o	•			•		•	
PPA932P	PPH	30	P		♦		o	•			•		•	
PPFA934P	PPH	30	P		♦		o	•					•	•
PPFA9421P	PPH	40	P		♦		o	•					•	•
PPA9453P	PPH	40	P		♦		o	•					•	
PS740	PSGP	40	SRF				o	•						
PS758	PSGP	50	SRF				o	•						
PS725P	PSGP	25	P				o	•						
PS7405P	PSGP	40	P				o	•						
PV89005	p-PVC	20	P	♦										
PV89006	p-PVC	30	HAF	♦										

♦ : yes • : recommended o : can be used

Modified versions of the above products can be produced upon request, e.g. with another base resin, carbon-black type/content or containing different types/levels of additives.

SELECTION GUIDE

a) Injection & blow-molding

BLACK 320, 325 & 331 as well as BLACK 515,520,525 & 530 are general purpose economic products. They contain a relatively high amount of filler, which increases the rigidity of the final products and ensures faster mould cooling, i.e. increased output. BLACK 515,520,525 & 530, due to the small particle size of the carbon-black they contain, offer good coloring strength at lower addition levels. For PP products it is advisable to use PP940, while for PS products PS740 or PS758.

When food approval is required, it must be checked whether SRF and/or RCF type carbon-black is approved in the specific country, otherwise 440P must be selected for PE, PP942P for PP and PS725P for PS products.

b) Films

For relatively thick films (> 40 mic.), BLACK 335, 340, 349, 3491,350,525 or 530 are the most popular and economic options.

For thin films (20-25 mic.) with relatively short-lifetime BLACK 350 & BLACK 360 is the recommended choice, while for longer lifetime BLACK 525, 530 and 438 are more suitable as they ensure better UV-resistance due to the small particle size of the carbon-black.

For very thin films (15-20 mic.) BLACK 440P, BLACK 4401P and BLACK 4410P have proven to offer the best results, due to their perfect dispersion and the high UV-resistance they impart. For long outdoor exposure in areas with strong sun radiation and high temperature (long-life mulch films, stretch silage) BLACK A442P which contains a special package of antioxidants, offers additional protection from surface oxidation. For better processing of LLDPE & HDPE at high output rates, BLACK A446P, which contains PPA is an even better alternative.

c) Geomembranes, pond liners

BLACK A442P at an addition of 6-7 % offers outmost UV-resistance. Its antioxidant package protects the surface from thermal oxidation. For a smoother surface, BLACK A446P which contains PPA should be evaluated. Both products have wide approval for potable water. For less critical applications, BLACK A441 or A445 could be used.

d) Stretched tapes, geotextiles,

BLACK 4401P, BLACK PPFA934P and BLACK PPF9421P (for PP tapes) are particularly suited for this application. Both ensure excellent UV-resistance, trouble-free processing and deep coloration. BLACK 438 can also be used for less demanding applications. For applications not requiring high UV-resistance, BLACK 340, 349, 3491, 350 and 360 are economic and reliable solutions.

e) PE & PP extruded nettings

The most recommended products for this application are BLACK 440P and PPA932P, which ensure very high UV-resistance for long outdoor exposure.

f) Polyethylene Pipes

For low-pressure LDPE pipes BLACK 340 (at 6 %), 349, 3491 & 350 (at 5 %) & 360 (at 4 %) offer a cost effective solution with adequate UV-protection for 5-8 years. BLACK 351 and BLACK 354 which contain PPA and BLACK A354 which contains both antioxidants and PPA are advanced solutions for even better performance. For longer lifetime requirements, A441 at an addition of 6 % ensures very high UV and heat resistance. An even better choice is BLACK A445, which contains a polymer processing aid (PPA) to help improve productivity and appearance of the pipe by eliminating surface defects, melt-fracture and die build-up and permitting processing at lower temperatures or with lower energy consumption.

For HDPE pipes for cable protection BLACK 340, 349, 3491, 350 & 360 are effective and economic products.

For high pressure HDPE pipes, BLACK A442P at 6 % addition ensures outmost UV and heat resistance as well as wide approval for potable water. BLACK A446P & A448P are the same as A442P but contain a selected PPA in differently levels, which ensures easier processing and better appearance of the pipe. More economic solutions for pressure pipes are A441 & A445. These grades offer excellent protection from UV light and heat, while their approval for potable water depends on the country (please consult us).

g) PP pipe fittings

For potable-water applications involving long outdoor exposure, the most widely used products are BLACK PPA932P at 7-8 % addition and PPA9453P at 5,5-6 %. They contain an efficient combination of heat and processing stabilizers to protect the polymer during processing and end use.

h) PP fibers

BLACK 4401P, BLACK4410P and BLACK PPF9421P are grades, specially developed for PP fibers. They have perfect dispersion and flow properties, ensuring long, trouble-free production runs. PPFA934P is a more economic grade.

i) PVC cables

BLACK PV89005 and PVC 89006 are products specifically designed for colouring PVC cables and other plasticised PVC products.

The information and suggestions contained herein are the result of our experience, knowledge and research. They are believed to be reliable and are given in good faith. However, no warranty is provided, as the conditions under which our products are used are beyond our control.