



CLAYS IN RUBBER FOOTWARE

The footwear sector of the rubber industry is unique in that carbon black is not used in large quantities due to adverse scuff marking properties - especially on light-coloured soling. As a result, most footwear compounds are formulated with non-black fillers with carbon black being used for pigmentation purposes only.

Semi-reinforcing and moderate reinforcing clays are used as the major fillers, usually in combination with hydrated silicas which are used primarily to improve hot tear strength and abrasion resistance. Clays offer a good balance of reinforcement, compound stiffness and low cost in this application. **Hexafil™** is most commonly used because of its semi-reinforcing character. Where improved colour is required in combination with semi-reinforcing properties, **Speswhite™** clay may be used. If a low-cost extender

is required, **Polwhite™ E** clay may be most suitable, since these clays may be used at higher loadings than the finer products.

One of the unique qualities that English clays possess is a lack of titanium-based impurities that have a significant effect on translucency. The refractive index of clay is very similar to that of rubber and therefore certain grades of clay may be used in semi-translucent compounds.

SBR SOLE

Formulation	phr
Oil-extended SBR	137,5
Ultrasil VN3	20
Hexafil™ clay	100
Pale coumarone resin	10
Zinc oxide	5
Stearic acid	2
Diethylene glycol	3
Permanax CNS	1
MBTS	1,75
DPG	0,75
Sulphur	3
Properties	
Tensile strength	15,9 MPa
Modulus at 300%	3,9 MPa
Elongation at break	760%
Hardness	65 IRHD
Tear Strength	61 N

RESIN RUBBER SOLE

Formulation	phr
SBR 1502	70
SS 260	30
Ultrasil VN3	40
Hexafil™ clay	80
Stearic acid	1
Zinc oxide	5
Pale coumarone resin	8
TMTD	0,6
DPG	1,5
CBS	2,0
Sulphur	3,5
Properties	
Tensile strength	16,1 MPa
Modulus at 300%	15,7 MPa
Elongation at break	360%
Hardness	98 IRHD
Tear Strength	143 N

SEMI-TRANSLUCENT SHOE SOLE

Formulation	phr
SMR 5	100
Zinc stearate	3
Permanax CNS	1
PoleStar™ 501 calcined clay	52
Sulphur	2,5
CBS	0,7
TMTD	0,2
Properties	
Tensile strength	23,0 MPa
Modulus at 300%	3,8 MPa
Elongation at break	630%
Hardness	43 IRHD



IMERYS PERFORMANCE & FILTRATION MINERALS

Par Moor Centre, Par Moor Road, Par, Cornwall, UK PL24 2SQ
 t: +44 (0)1726 818000 f: +44 (0)1726 811200
 e: perfmins@imerys.com
 www.imerys-perfmins.com

154 rue de l'Université, 75007 Paris - France
 t: +33 1 49 55 66 37 f: +33 1 49 55 66 57
 e: info.europe@worldminerals.com
 www.worldminerals.com