



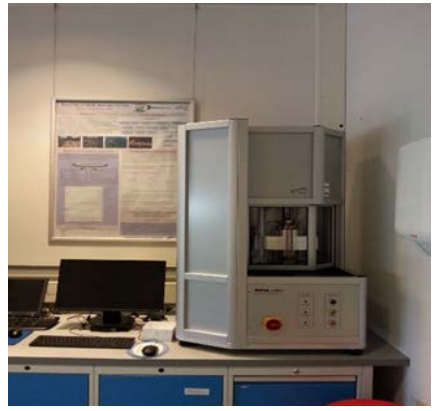



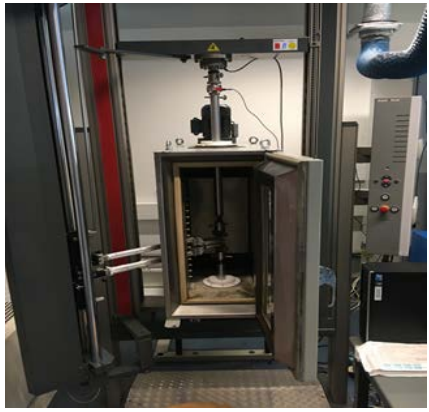
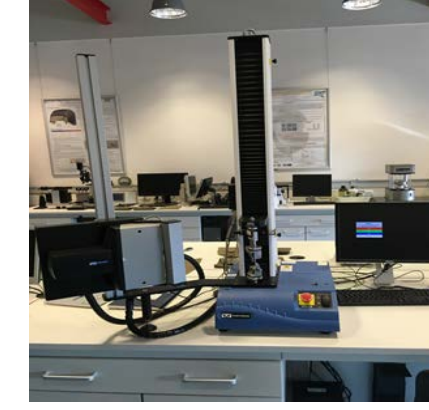


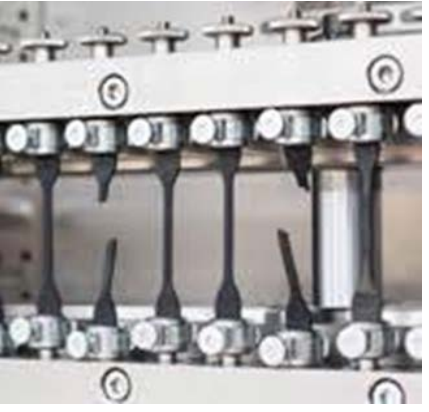


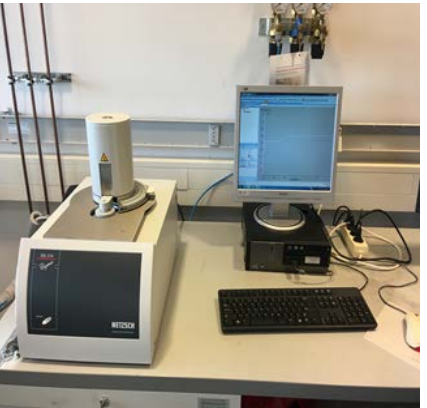
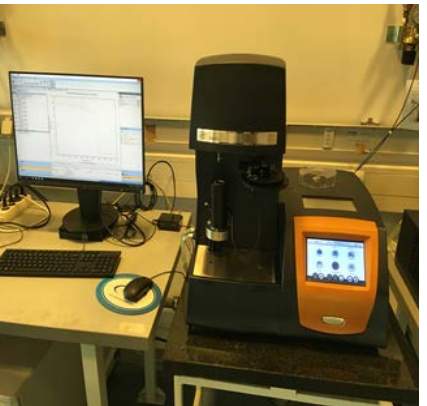


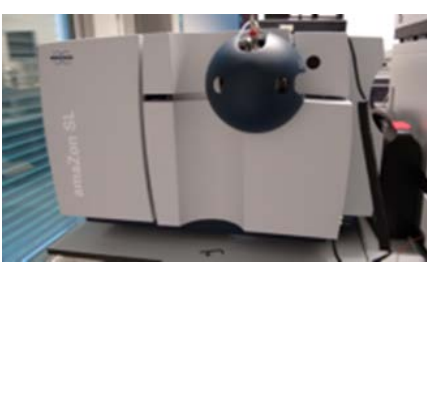
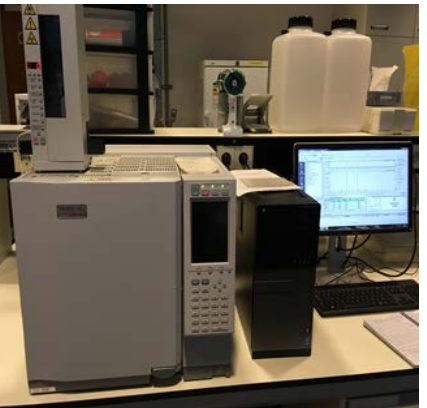



	Type	Properties	Value	Uom	Image
Compounding equipment	Internal mixer Brabender 350S	Effective mixing volume Rotor type Rotor speed Temperature control Maximum torque Rotor friction coefficient	390 Banbury 0 - 150 25-120 400 1.11	CC - RPM °C Nm -	
	Internal mixer Brabender PL2000	Effective mixing volume Rotor type Rotor speed Temperature control Maximum torque Rotor friction coefficient	390 Banbury 0 - 120 25-300 200 1.5	CC - RPM °C Nm -	
	2-roll mill Schwabenthan Polymix 80T	Diameter rolls Widt of rolls Working width Rotational speed Friciton coefficient Nip adjustment Temperature	80 300 215 20 1.11 0-10 25-150	mm mm mm RPM - mm °C	
	Compression molding Wickert Press	Day opening Size [cm] Temp. range Pressure Active cooling Bumping	300 500*500 25-250 50-300 No Yes	mm mm °C Bar - -	
Rheological measurements	Rubber Process Analyzer TA Instruments RPA-Elite	Frequency Amplitude Temperature Torque Sample volume Pressure Sample pressure	0.001 - 50 0.005 - 360 40 - 230 0.0001 - 230 4.5 4.5 Yes	Hz ° °C dNm cm^3 Bar Bar	
	Rubber Process Analyzer Alpha Technologies RPA2000	Frequency Amplitude Temperature Torque Sample volume Pressure Sample pressure	0.016 - 50 0.04 - 90 40 - 230 0.05 - 200 4.5 4.5 No	Hz ° °C dNm cm^3 Bar Bar	
	Mooney Viscosity meter MV2000VS	Temperature range Rotational speed Sample size Rotor types	25-200 0.1-20 25 Large, small	°C RPM cm^3 -	

Mechanical testing equipment	Tensile tester Zwick Z01	Force cell Grip type Extensometer type Maximum travel Maximum Speed Temperature	0.5 Customizable Clip 1450 1800 Ambient	kN - - mm mm -	
	Tensile tester Zwick Z10	Force cell Grip type Extensometer type Maximum travel Maximum Speed Temperature range	0.1, 1, 10 Customizable Clip 1450 2000 -30 - 150	kN - - mm mm/min °C	
	Tensile tester Instron	Force cell Grip type Extensometer type Field of view Maximum travel Maximum Speed Temperature range	0.1, 1 Customizable Optical 200 898 1000 Ambient		
	Lab Abrasion Tester 100 VMI	Disc material Disc grain size [Dry abrasion] Disc grain size [Wet handling] Test speed range Measurement range Slip angle Radial load regulation (Fz) Side force measurement (Fy) Friction force measurement (Fx)	High-grade electro corundum 60 180 0.002 - 100 0.001 - 20 +/- 45 10 - 140 -120 - 120 5 - 100	- - km/h km ° N N N	
	Abrasion tester Karl Frank GMBH	Drum diameter lateral speed specimen Abrasive path / revolution Sandpaper type Downforce on sample Rotational Modes Rotation of Sample during test Temperature range disk Temperature rubber wheel Powder	150 4.2 400 P60 10, 20 80 time / pulse No -20 - 80 Infrared Al2O3 : MgO [2:1]	mm mm mm - N RPM - - °C -	
	Fatigue to failure tester Alpha Technologies	Temperature Frequency Extension ratio Capacity	Ambient 100 1.6 - 2.4 24	- cpm - samples	
	DMA Netsch Eplexor 2000	Temperature range Frequency range Maximum Static amplitude Maximum dynamic Amplitude Atmosphere Coolant Force cells Modes	-150 - 500 0.01 - 100 50 +/- 10 Air / Nitrogen Liquid nitrogen 50 / 500 tensile double shear compression 3 point bending	°C Hz mm mm - - N - - - -	



Dynamical mechanical analysis & thermal analysis	DMA Metravib 150	Temperature range Frequency range Maximum Static amplitude Maximum dynamic Amplitude Atmosphere Coolant Force cells Modes	-150 - 400 1 - 200 50 +/- 3 Air / Nitrogen Liquid nitrogen 150 tensile double shear compression	°C Hz mm mm - - N - - -	
	DSC Netzsch 214 Polyma	Cooling Protective gass Purge gasses Temperature range Heating rates DSC measuring range Autosampler positions	Liquid nitrogen Nitrogen Nitrogen / oxygen / air -170 - 600 0.001 - 500 +/- 750 18	- - - °C K/min mW	
	TGA Thermal Instruments Q550	Temperature range Temperature accuracy Heating Rate Furnace cooling (1000 to 50°C) Sample weight capacity Volume sample pan Autosampler positions	Ambient - 1000 1 0.1 - 100 < 12 1000 200 25	°C °C °C min mg microliter -	
Spectroscopy	UV/Vis Spectroscopy Agilent Cary 100	Scannin range Temperature range Temperature accuracy	200 - 850nm 25 -100 0.2	nm °C °C	
	Infrared Spectroscopy Perkin Elmer Spectrum 100 series	Scannin range Temperature Method	370 - 7800 Ambient ATR-crystal	cm <sup>-1</sup> -	
Chromatography & MS spectroscopy	LC-MS Ultramate 3000 Thermo scientific Bruker Amazon SL	Maximum flow rate Maximum pressure Column temperature range Solvent channels Autosampler positions Detector Injection to mass spectrometer Mass Scanning Mode Mass range Scan speed MS methods	10 620 30 - 50 4 200 UV/VIS & MS Micro syringe / LC system Positive / negative 50 - 2200 8100 - 32000 Electrospray Ionization Atmospheric Pressure Chemical	ml / min bar °C - - - m/z sec <sup>-1</sup> - - -	
	GC Shimadzu GC-2010 Plus	Carrier gass Purge gass Detector Oven temperature range Column inner diameter Column length Column film thickness	He Nitrogen FID / TCD (simultaneously) 30 - 450 0,32 15 0.25	- - - °C mm m micrometer	

	HPLC Agilent Prostar	Maximum flow rate Maximum pressure Autosampling postions Column temperature Detector	10 200 86 30-90°C UV/VIS	ml / min - bar °C -	
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