Brabender®

Measuring Mixers

Recommendations Concerning Technical Application

... where quality is measured.

Measuring Mixers - Recommendations Concerning Technical Application

Thermoplastics

Material	Tests	Mixer	Temp. [°C]	Speed [min^{-1}]	Loading chute	Pressure ram	Cover with 2 valves	Remarks, standards
Cellulose acetate CA	Heat and shear stability	W 50 W 50 EHT	150 - 200	30 - 60	•	•	•	possibly preheating and venting
Polyacetals	Heat and shear stability	W 50 W 50 EHT W 30 W 30 EHT	140 - 200	20 - 60	•	•	•	possibly drying, possibly preheating (~100 °C)
Polyamide PA 6 Polyamide PA 6.6 Polyamide PA 11 Polyamide PA 12	Flow behavior as a function of temperature, compounding with fillers	W 50 W 50 EHT W 30 W 30 EHT	200 - 270 260 - 290 (PA 6.6)	30 - 100	•	•		possibly drying, possibly preheating (~100 °C)
Polycarbonate (PC)	Shear stability under oxygen influence, flow behavior as a function of temperature	W 50 EHT W 30 EHT	300 - 350	20 - 90	•	•	•	possibly drying, possibly preheating (~180 °C)
Polyester	Fusion behavior, heat and shear stability	W 30 EHT	270 - 320	30 - 90	•	•		possibly drying, possibly preheating (~180 °C) venting
Polyethylene PE: HDPE LDPE	Flow behavior as a function of temperature and shear, heat and shear stability, oxygen influence	W 50 W 50 EHT	120 - 250 130 - 150 (crosslinking PE)	30 - 100	•	•		pellets need preheating
Polymethylmethacrylate (PMMA)	Flow behavior as a function of temperature	W 50 W 50 EHT W 30 W 30 EHT	180 - 220	20 - 60	•	•		possibly drying, pellets need preheating (~100 °C)
Polypropylene PP	Shear stability under oxygen influence, flow behavior as a function of temperature and shear	W 50 W 50 EHT	120 - 250	30 - 90	•	•		possibly preheating (~120 °C)
Polystyrene PS PS-copolymers ABS, etc.	Compounding with additives, heat and shear stability	W 50 W 50 EHT W 30 W 30 EHT	180 - 200	30 - 60	•	•		possibly drying, possibly preheating
Polysulfone	Flow behavior as a function of temperature	W 30 EHT W 50 EHT	320 - 400	30 - 100		•	•	possibly preheating (~180 °C) and venting
Polyurethane (PUR)	Flow behavior as a function of temperature	W 50 W 50 EHT W 30 W 30 EHT	160 - 220	30 - 60	•	•		possibly drying
Polyvinyl butyral (PVB)	Flow behavior as a function of temperature	W 50 W 30	140 - 200	30 - 60	•	•		possibly drying
Polyvinyl chloride (PVC): • rigid PVC pellets • soft PVC pellets • rigid PVC powder • soft PVC powder	Fusion behavior, heat and shear stability, compounding with additives, flow behavior	W 50 W 50 EHT W 30 W 30 EHT	160 - 200 200 (rigid) 120 - 160 (soft)	30 - 90	•	•		cool down loading chute or pressure ram between the tests ASTM D 2538
Rigid PVC powder	Plasticizer absorption	P 600 S 300 C	88	100	•	•		ASTM D 2396 DIN EN ISO 4612 DIN 54802
PVC pastes	Production of PVC pastes, fusion behavior, heat and shear stability	S 300 C W 50	60 - 90 50 - 120	60 - 120 60 - 120	• •	• •		special loading chute

Thermosets

Material	Tests	Mixer	Temp. [°C]	Speed [min^{-1}]	Loading chute	Pressure ram	Cover with 2 valves	Remarks, standards
Epoxy resins (EP)	Flow and cure behavior	MB 30	120 - 160	30 - 60	•	•		also W 30 / W 30 EHT, DIN 53764
Urea resins (UF)	Flow and cure behavior	MB 30	120 - 160	30 - 60	•	•		also W 30 / W 30 EHT, DIN 53764
Melamines (MF)	Flow and cure behavior	MB 30	120 - 160	30 - 60	•	•		also W 30 / W 30 EHT, DIN 53764
Phenolics (PF)	Flow and cure behavior	MB 30	120 - 160	30 - 60	•	•		also W 30 / W 30 EHT, DIN 53764
Polyester (UP)	Flow and cure behavior	MB 30	120 - 160	30 - 60	•	•		also W 30 / W 30 EHT, DIN 53764

Elastomers

Material	Tests	Mixer	Temp. [°C]	Speed [min^{-1}]	Loading chute	Pressure ram	Cover with 2 valves	Remarks, standards
Natural rubber compounds, ribbons of rolled sheets, pellets, NBR	Flow and cure behavior, compounding with additives (e.g. carbon black, silica), black incorporation time (BIT)	N 50 B 50 N 350 B 350 N 350 S B 350 S	80 - 150	30 - 90	•	•		possibly pressure ram with bore for liquid dosing, possibly process-controlled mixer for recipe development, new ASTM standards
Synthetic rubber compounds, ribbons of rolled sheets, pellets, SBR	Flow and cure behavior, compounding with additives, black incorporation time (BIT)	N 50 B 50 N 350 B 350 N 350 S B 350 S	80 - 150	30 - 90	•	•		possibly pressure ram with bore for liquid dosing, perhaps process-controlled mixer for recipe development, new ASTM standards
Raw caoutchouc	Flow and cure behavior, compounding with additives (e.g. carbon black, silicia), black incorporation time (BIT)	N 50 B 50 N 350 B 350 N 350 S B 350 S	80 - 150	30 - 90	•	•		possibly pressure ram with bore for liquid dosing, new ASTM standards, possibly B 350 for large sample weights

Other materials

Material	Tests	Mixer	Temp. [°C]	Speed [min^{-1}]	Loading chute	Pressure ram	Cover with 2 valves	Remarks, standards
Electrodes	Flow behavior as a function of temperature and shear, absorption with liquids	N 50	20 - 30	60 - 120 (absorpt.) 30 - 40 (pastes)	•	•		possibly pressure ram with bore for liquid dosing
Iron oxide powder	Absorption with liquids	N 50 S 50	20 - 60	20 - 80	•	•		pressure ram with bore for liquid dosing
Hot melt adhesive	Flow behavior as a function of temperature	W 50 W 30	80 - 200	30 - 60	•	•		cleaning with binders
Ceramic molding materials	Flow behavior as a function of temperature and shear, absorption with liquids, compounding with additives	N 50	20 - 30	60 - 120 (absorpt.) 30 - 40 (pastes)	•	•		possibly pressure ram with bore for liquid dosing
Pitch	Flow behavior as a function of temperature	W 50 EHT	250 - 400	10 - 100	•	•	•	possibly venting, possibly gas analysis
Pigments	Absorption with liquids, compounding with additives	N 50	20 - 80	30 - 100	•	•		pressure ram with bore for liquid dosing
Powder coatings	Flow and cure behavior, compounding with additives	W 30 MB 30	80 - 180	20 - 60	•	•		possibly also W 50
Carbon black	Absorption with liquids	N 50	20 - 40	60 - 150	•	•		pressure ram with bore, possibly mixer with other blades, tests can also be run with the Absorptometer
Detergents	Flow behavior as a function of temperature	S 300 C	20 - 50	30 - 100	•	•		

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Standard methods with Brabender measuring mixers

Measuring mixers W 50 / W 50 EHT	ASTM D 2538	Fusion of poly(vinyl chloride) (PVC) compounds
Measuring mixer W 30	ASTM D 3795	Thermal flow, cure, and behavior properties of pourable thermosetting materials
Measuring mixer N 50	ASTM D 3185 ASTM D 3186 ASTM D 3187 ASTM D 3188 ASTM D 3189 ASTM D 3190 ASTM D 3191 ASTM D 3192 ASTM D 3403 ASTM D 3484 ASTM D 3848 ASTM D 3568	Evaluation of SBR (styrene-butadiene rubber) including mixtures with oil Evaluation of SBR (styrene-butadiene rubber) mixed with carbon black or carbon black and oil Evaluation of NBR (acrylonitrile-butadiene rubber) Evaluation of IIR (isobutene-isoprene rubber) Evaluation of solution BR (polybutadiene rubber) Evaluation of chloroprene rubber (CR) Standard test methods for carbon black in SBR (styrene-butadiene rubber) - recipe and evaluation procedures Standard test methods for carbon black evaluation in NR (natural rubber) Evaluation of IR (isoprene rubber) Evaluation of oil-extended solution BR (polybutadiene rubber) Evaluation of NBR (acrylonitrile-butadiene copolymers) mixed with carbon black Evaluation of EPDM (ethylene propylene diene terpolymers) including mixtures with oil
Measuring mixer MB 30	DIN 53764	Test method for flow and cure properties of pourable thermosettings (presently withdrawn)
Planetary mixer P 600	ASTM D 2396 DIN EN ISO 4612 DIN 54802	Standard test methods for powder-mix time of poly(vinyl chloride) (PVC) resins using a torque rheometer Preparation of a paste from PVC paste resins Determination of plasticizer sorption and rate of plasticizer sorption in the heat of vinyl chloride (VC) polymer compounds

Brabender application laboratory

The Brabender support

Our state of the art application laboratory is always made available to our customers.

You can choose to send material to us for testing or schedule a specific Lab Trial with our expert team. In our application laboratory, you will have access to our full product line to help come to a solution for your application.

Plastograph EC Plus with measuring mixer 50

Docking station with measuring mixer 50

Made in Germany since 1923

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Brabender agencies all over the world.

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