

# LABO PLASTOMILL $\mu$

For evaluating kneading and extrusion characteristics of very small quantity of materials. (Patent pending)

Research is being conducted in thermoplastic resins, thermosetting resins, elastomers, etc. to develop composite materials by various composition techniques such as blending, alloying or filling of different polymer materials and intensive research is going on to develop high function and high performance compound materials.

Recently in fillers, miniaturization is progressing, materials of nano order are being used and through uniform dispersion instead of cohesion of these materials, composite materials are heading towards noncomposition in order to achieve rapid improvement of characteristics that could not be realized until now and we are entering into nanotechnology age.

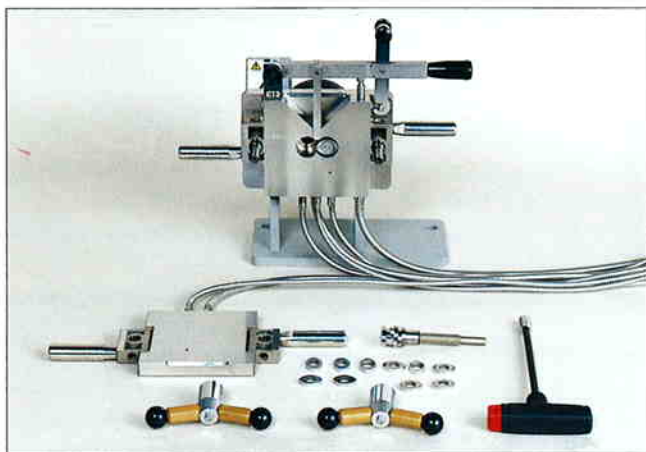
Labo Plastomill Micro is a testing machine manufactured to respond to the needs of the time. It is a desktop type tester designed to evaluate kneading and extrusion characteristics of very small quantities of materials produced these days by composition at laboratory level, special high cost materials or, for example, materials that can be obtained only in very small quantities in application and research, etc. of compound materials (silk, shell, tooth, bone, etc. ... known as intelligence materials) of nature being marked as compound materials of next generation.



Labo Plastomill  $\mu$  main unit  
(with mixer model KF6, compact printer)

- Torque (calculated from current), resin temperature and pressure can be measured. (Pressure sensor is option)
- Test can be conducted by recalling registered conditions by means of LCD color touch panel.
- Data curve is displayed on LCD screen.
- Data curve can be output to compact printer. (Option)
- Compact table type. (W40 x D60 x H63 cm)
- Plenty of safety measures - torque, pressure and temperature limiters and mixer disassembly safety circuit, etc.
- Data can be transferred in Excel format through RS232C interface. (Option)

## ● Compact Segment Mixer, Model KF6



Mixer model KF6

- Kneading evaluation test can be conducted using a small quantity of sample (5cc).  
(Dispersion, wetting, reaction, disintegration, absorption, etc.)
- Permits heavy kneading test by means of intermeshing type co-rotary blades using the principle of biaxial extruder.
- Permits arbitrary adjustment of heavy/light kneading according to sample by changing disk phase composition of blades. Also allows vacuum (degassing), N<sub>2</sub> purge (deterioration by oxidation) tests (option).

## ● Compact Biaxial Segment Extruder, Model 2D15W



Biaxial segment extruder

- Compact type of 15mm diameter, but allows heavy kneading because it employs intermeshing co-rotating biaxial extruder.
- Permits heavy/light kneading in desired zone by changing screw segment composition. Also permits degassing.
- Small quantity of compound can be extracted :based on information obtained from mixer. (Cylinder's internal capacity : Approx. 31cm<sup>3</sup>)
- Data of pressure, resin temperature and torque can be detected and information of kneading conditions can be obtained. (Pressure sensor is option.)
- Fixed quantity of sample can be supplied by means of compact fixed-quantity feeder.



Segment screw

## ● Compact Uniaxial Extruder Cylinder, Model D1220B



Uniaxial extruder cylinder

- Uniaxial extruder test of 12mm diameter can be conducted at low cost by replacing the cylinder of biaxial extruder.
- Allows simulation by small quantity of sample and extraction of small molded products by installing various dies. (Cylinder's internal capacity : Approx. 11cm<sup>3</sup>)
- Data of pressure, resin temperature and torque can be detected and information of molding conditions can be obtained. (Pressure sensor is option.)



Labo Plastomill Micro equipped with biaxial extruder

## SPECIFICATIONS

### ● Labo Plastomill $\mu$

Revolutions	0~100 rpm, load fluctuation $\pm 0.1\%$ /full
Torque meas. range	Max. 40N.m (calculated from current)
Temp. meas. range	0~400°C
Pressure meas. range	0~20 MPa (sensor ... option)
Motor	AC servo motor 400W
Touch panel	Color LCD W115mm x H86 mm
Safety devices	Torque & temperature limiter, emergency stop switch, mixer disassembly safety circuit
Electric power source	AC 100V 5A 50/60Hz
Dimensions and weight (Option)	W40 x D60 x H63 cm, approx. 50kg
Compact printer	Thermal dot matrix type, 80mm wide roll paper ... model MPR, test window data output (data curve)
RS232C	Allows transfer of data in Excel format ... model M232C

### ● Compact Segment Mixer, Model KF6

Kneading system	Intermeshing co-rotating system
Chamber capacity	6cc (filling approx. 5cc)
Shape of blade	2 lobe disk, combination of 5 disks Phase semifixed ... 1 set, Phase arbitrary combination ... 1 set
Temp. control range	RT + 10~350°C, compressed air cooling
Heating zone	3 zone cartridge heater, with resin temperature sensor
Material	Standard SUS440C, hardness HRC60
Electric power source	AC 100V 13A 50/60Hz

### ● Table

For main unit + mixer	Model MMT Dimensions approx. W60 x D90 x H81 cm, with casters
For main unit + extruder	Model MET Dimensions approx. W150 x D60 x H81 cm, with casters

### ● Compact Biaxial Segment Extruder, Model 2D15W

System	Intermeshed, co-rotation system
Cylinder	D=15mm, L/D=17, pressure sensor hole at 1 place (with plug), standard material SACM645
Screw	Segment combination system 2 lobe (forward, reverse lead), disk (forward/reverse arbitrary combination)
Cylinder internal capacity	Approx. 31cm <sup>3</sup> (volume of space after screw assembly)
Revolutions	Triple speed (3 times of motor revolutions ... max. 300rpm with $\mu$ type main unit)
Control temp. range	RT + 10~350°C
Heating, cooling zone	Cylinder (2 zones) band heater, compressed air cooling, die (1 zone) band heater
Constant quantity feeder	Auger screw, with digital tachometer, hopper approx. 1 liter
Standard supplied die	Strand die 3mm, 1 die, with resin temp. sensor
Electric power source (Option)	AC 100V 15A 50/60Hz
Pressure sensor	Tip dia. 6mm ... model MPS

### ● Compact Uniaxial Extruder Cylinder, Model D1220B

Assembly system	Biaxial extruder with gear box
Cylinder	D=12mm, L/D=20, pressure sensor hole at 1 place (with plug), standard material SACM645
Screw	Fullflight screw
Cylinder internal capacity	Approx. 11cm <sup>3</sup> (volume of space after screw assembly)
Revolutions	Max. 100rpm with $\mu$ type main unit
Control temp. range	RT + 10~350°C
Heating, cooling zone	Cylinder (2 zones) band heater, compressed air cooling
Hopper capacity	Approx. 0.6 liter
Standard supplied die	Biaxial extruder strand die combined type
Electric power source	AC 100V 12A 50/60Hz

