Torque Rheometer

Picture just for reference

Application

Torque rheometer is used to study the flow and deformation, plasticization, thermal shear stability, dynamic rheological properties and plasticization behavior of polymer materials and express the results in the form of charts using torque-time and torque-temperature. The ideal equipment can be widely used in scientific research and production, as well as the mixing of multi-component materials, the cross-linking and curing of thermosetting resins, the vulcanization of elastomers, the dynamic stability of materials and the impact of screw speed on system processing performance. The mixing and extrusion processes in production are simulated in the laboratory, and a series of data are obtained to guide the research and production of formulas in reality. The rheology of materials can be measured continuously, accurately and reliably under conditions similar to actual processing.

2. Product functions

It has modular design and ready-to-use functions: the host computer is the control center and has the function of driving and controlling the measuring unit; the controlled auxiliary machines (such as mixing unit and extrusion unit) are intelligent measuring units for specific applications, which can The measurement data are

transmitted to the host computer via the bus system. It can be equipped with various auxiliary machines to complete laboratory simulation experiments for different purposes.

3. Application fields

3.1. UPVC processing performance research and material development

3.2. Development and processing performance research of thermoplastic materials

3.3. Research on the curing properties of cross-linked and thermosetting resins

3.4. Teaching and research applications

4. Performance parameters

4.1. Host

4.1.1. Motor power (Panasonic motor, controller): 3.0kW

4.1.2. Motor speed 2000r/min

4.1.3. Reduction ratio (Hubei Kefeng reducer): 15:1

4.1.4. Speed range: 0.1~120 rpm

4.1.5. Speed control accuracy: ±0.2%F.S..

4.1.6. Torque measurement range: 0 ~ 200Nm (rated torque 300Nm)

4.1.7. Torque measurement accuracy: ±0.3%F.S.

4.1.8. Melt pressure measurement range: 0.1~100Mpa (can be customized according to user requirements, price negotiable)

4.1.9. Pressure measurement accuracy: +0.3 %F.S.

4.1.10. Temperature control range (five-way temperature control): room temperature ~350℃

4.1.11. Temperature control accuracy: +0.5℃

4.1.12. Graphic display: speed, torque, temperature, pressure

4.1.13. Voltage: AC380V 7.5kw

Measurement and control software:

4.1.14. Data collection rate: 50/S times. It can record more subtle changes in torque, temperature and rotational speed.

4.1.15. High-speed acquisition allows the temperature and torque data curve to be enlarged and real-time turning changes can be observed.

4.1.16 Polymer melt viscosity measurement data processing software

4.1.17. Extruder data processing software

4.1.18. Mixer data processing software

4.2. Movable mixer (60ml)

4.2.1. Mixer capacity: 60ml

4.2.2. Material: 4Cr13

4.2.3. Rotor type: Roller, standard (Banbury, Cam, Delta, etc. optional, 3,000 yuan per rotor)

4.2.4. Speed ratio: 3:2

4.2.5. Maximum temperature: 350℃

4.2.6. Maximum torque: 200Nm

4.2.7. Heating method: Electric heating

4.2.8. Temperature sensor: Class K thermocouple

4.2.9. Heating area: 3-way (4-way temperature measurement)

4.2.10. Heating power of each piece: 700W*3=2100W

4.2.11. Reduction ratio: 15:1

4.2.12. Machine volume (length × width × height): 1600 × 450 × 1300 (mm)

4.3. Movable mixer (200ml) (optional)

4.3.1. Mixer capacity: 200ml

4.3.2. Material: 4Cr13

4.3.3. Speed ratio: 3:2

4.3.4. Maximum temperature: 350℃

4.3.5. Maximum torque: 250Nm

4.3.6. Heating method: Electric heating

4.3.7. Temperature sensor: K type thermocouple

4.3.8. Heating area: 3-way (4-way temperature measurement)

4.3.9. Heating power of each piece: 1000W

4.3.10. Reduction ratio: 20:1

4.3.11. Rotor type: Roller, standard (Banbury, Cam, Delta, etc. optional, 4,000 yuan per rotor)

4.4. Plastic single screw extruder (material 38CrMOALA)

4.4.1, L:D: 25:1

4.4.2. Screw diameter: φ20mm

4.4.3. Screw compression ratio: 2.5:1

4.4.4. Maximum temperature: 350℃

4.4.5. Heating method: Electric heating

4.4.6. Heating zone: 5 channels

4.4.7. Total heating power: 4200W

4.4.8. Temperature sensor: Class K thermocouple

4.4.9. Machine volume (length × width × height): 1600 × 450 × 1300 (mm)

4.4.10. Capillary mold: φ1.27, one mold core each with aspect ratio 20:1, 30:1, 40:1

(φ1, φ2 and other specifications are optional, prices are negotiable)

Cylindrical die (optional): inner diameter: Φ5, outer diameter: Φ10

4.5. Parallel counter-rotating twin-screw extruder (optional, price negotiable)

4.5.1. Screw type: parallel counter-rotating twin screws

4.5.2. Screw diameter: 42 mm

4.5.3. Effective length of screw: 276mm

4.5.4. Effective length of screw barrel: 276mm

4.5.5. Temperature range: room temperature~350℃

4.5.6. Temperature control accuracy: ±0.5%F.S

4.5.7. Temperature sensor: K-type thermocouple

4.5.8. Total heating power: 2500W

4.5.9 Die opening specifications: 60×1.5mm