

# FROM

viscometers –

rheometers –

texture analyzer –

temperature control –

measuring system –

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– **LAMYRHEOLOGY**  
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LAMY RHEOLOGY is pleased to show his 2013 range of measure instruments and accessories.

Specialized in viscometers, rheometers and texture analyzers, we develop and manufacture, in France, innovative technical solutions, easy to use and very reliable.

Our experiment of more than 50 years in the rheological world enables us to provide to all of your measure with personal answer.

Our worldwide position increase regularly with a link of quality dealers.

**LAMY RHEOLOGY**  
ENJOY QUALITY

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## INNOVATION

### EVA CELLS temperature control



Quality and performance for this new generation of thermostating units. They're working by Peltier Effect and doesn't use any circulating fluid, for a standard range of temperature. EVA enables the thermostatisation of samples during a simple viscosity measurement. EVA is ideal for studies in function of temperature, due to a very quick heat/cool regulation.

The range is composed by:

- > EVA-DIN, for MS-DIN coaxial measuring system, from 15 to 65°C.
- > EVA MS-R, for MS-R 2-5 anchor type geometries; it has 9 holes for MB-2 and MB-3 cups and 2 viscometers could work on one unit in the same time, in order to optimize the work space, from 17 to 45°C.
- > EVA-100, from ambient to 100°C, with MS-DIN and Chocolate geometry; ideal to keep one sample to 40°C.

### TEX'AN 200 texture analyzer



The TEX'AN 200, created by LAMY RHEOLOGY, combines all advantages of high tech texture analyzer. The major assets of TEX'AN 200 for your control measurements are its simplicity of use and its robustness. It could become a real tool of Research and Development with its remote software.

The TEX'AN 200 is adapting to your needs with:

- > The choice of probes: cones, plate, hemisphere, needles, tension grip, Ottawa cell, Kramer cell...
- > The variety of material: stainless steel, plastic, aluminum, PEEK, DELRIN...
- > The variety of possible tests: compression, Bloom test, TPA cycle, relaxation, tension test...
- > The large range of measurement of the proposed sensors: 50 N and 200 N.

Please, send to us your sample to test it.

# BLACK ONE

viscometer  
with measuring system  
ASTM 2 to 7

The BLACK ONE is designed for viscosity measurements in accordance with the ASTM/ISO 2555 standard. His modern springless technology and sturdy design ensures undeniable reliability. It is delivered with a laboratory stand and a set of ASTM 2 to 7 spindles.



# V I S C O M E T E R





## BLACK ONE SPECIFICATIONS

<b>Measuring principle</b>	Rotating viscometer with ASTM spindles
<b>Rotation speeds</b>	21 speeds in rpm: 0.3 / 0.5 / 0.6 / 1 / 1.5 / 2 / 2.5 / 3 4 / 5 / 6 / 10 / 12 / 20 / 30 / 40 / 50 60 / 100 / 200 / 250.
<b>Torque range</b>	0.05 to 10 mNm
<b>Accuracy</b>	+/-1% of the full scale
<b>Repeatability</b>	+/- 0.2%
<b>Digital display</b>	Speed - Torque - MS - Viscosity - Time
<b>Viscosity range</b>	20-180 000 000 mPa.s
<b>Supply voltage</b>	90-240 VAC 50/60 Hz
<b>Other detail</b>	The BLACK ONE enables to fix time of measurement for thixotropic samples.
<b>Dimensions (WxLxH) and weight</b>	122 x 130 x 660 mm - 6 kg



viscometer

## APPLICATIONS

Food industry		Chemical industry		Teaching	
Cosmetics/Pharmaceuticals		Cars industry			
Paint/Ink		Building industry			

## INCLUDING ACCESSORIES



# FIRST RM

viscometer

The First RM is dedicated for measuring dynamic viscosities.

It is delivered with a laboratory stand, one PT100 sensor and a carrying case.

His modern technology without spring, and his robust design makes it essential for simple measurements.



# V I S C O M E T E R








## FIRST RM SPECIFICATIONS

<b>Measuring principle</b>	Rotating viscometer
<b>Rotation speeds</b>	21 speeds in rpm: 0.3 / 0.5 / 0.6 / 1 / 1.5 / 2 / 2.5 / 3 4 / 5 / 6 / 10 / 12 / 20 / 30 / 40 / 50 60 / 100 / 200 / 250.
<b>Torque range</b>	0.05 to 10 mNm
<b>Temperature</b>	By PT100 sensor, from -20 to 120 °C
<b>Accuracy</b>	+/-1% of the full scale
<b>Repeatability</b>	+/- 0.2%
<b>Digital display</b>	T°C - Speed or shear rate - Torque - MS - Viscosity - Time
<b>Viscosity range</b>	20 - 180 000 000 mPa.s
<b>Supply voltage</b>	90-240 VAC 50/60 Hz
<b>PC connexion</b>	Serial and USB ports
<b>Printer connexion</b>	Centronics parallel port
<b>Other detail</b>	First RM enables to fix time of measurement for thixotropic samples. A printer interval could be added.
<b>Dimensions (WxLxH) and weight</b>	122 x 135 x 660 mm - 6 kg



viscometer

## APPLICATIONS

Food industry		Chemical industry		Teaching	
Cosmetics/Pharmaceuticals		Cars industry			
Paint/Ink		Building industry			

## AVAILABLE ACCESSORIES

- MS-ASTM/ISO 2555 2-7.
- MK ASTM N°1.
- MK-KU 1-10.
- MK 75 Y.
- MS-DIN 11-22-33.
- MS-BV 1 to 1000.
- Visco RM software.

# RM 100

## RM 100

viscometer

Universal rotating viscometer without any spring or torsion rod, integrated calculator, serial and USB ports. RM 100 works with ASTM/ISO 2555, DIN/ISO 3219 or MS-R standards and it measures the sample's temperature.



# V I S C O M E T E R








## RM 100 SPECIFICATIONS

<b>Measuring principle</b>	Rotating viscometer
<b>Rotation speeds</b>	34 speeds in rpm: 0.3 / 0.5 / 0.6 / 1 / 1.5 / 2 / 2.5 / 3 / 4 / 5 / 6 / 10 / 12 / 20 / 30 / 40 / 50 / 60 / 100 / 200 / 250 / 300 / 400 / 500 / 600 / 700 / 800 / 900 / 1000 / 1100 / 1200 / 1300 / 1400 / 1500.
<b>Torque range</b>	0.05 to 30 mNm
<b>Temperature</b>	By PT100 sensor, from -20 to 120 °C
<b>Accuracy</b>	+/-1% of the full scale
<b>Repeatability</b>	+/- 0.2%
<b>Digital display</b>	T°C - Speed or shear rate - Couple - MS - Viscosity - Time
<b>Viscosity range</b>	1 to 540 000 000 mPa.s
<b>Supply voltage</b>	90-240 VAC 50/60 Hz
<b>PC connexion</b>	Serial or USB port
<b>Printer connexion</b>	Parallel port
<b>Other detail</b>	The Visco RM software allows automatic measurements on computer.
<b>Dimensions (WxLxH) and weight</b>	122 x 145 x 660 mm - 6 kg



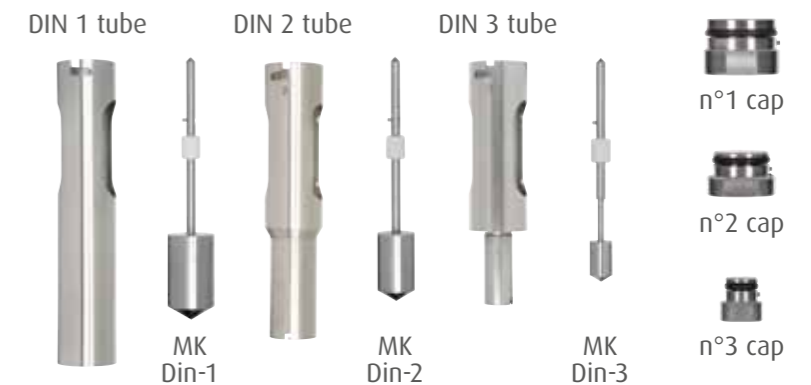
viscometer

## APPLICATIONS

Food industry 	Chemical industry 	Teaching 
Cosmetics/Pharmaceuticals 	Cars industry 	
Paint/Ink 	Building industry 	

## AVAILABLE ACCESSORIES

- MS-DIN 11-22-33.
- MS-R 1 to 5 supplied in a case.
- MS-ASTM/ISO 2555 2-7.
- MK ASTM N°1.
- MS-BV 1 to 1000.
- EVA MS-DIN.
- EVA MS-R.
- CP100, CP1 Peltier cone-plate stand.
- Visco RM software.



# RM 100P

portable viscometer

Portable rotating viscometer, without spring neither torsion wire, with integrated calculator and USB output. Working with ASTM/ISO 2555, DIN/ISO 3219, or MS-R standards and measure temperature of sample.



# V I S C O M E T E R

## RM 100P SPECIFICATIONS

<b>Measuring principle</b>	Rotating portable viscometer	
<b>Rotation speeds</b>	34 speeds in rpm: 0.3 / 0.5 / 0.6 / 1 / 1.5 / 2 / 2.5 / 3 4 / 5 / 6 / 10 / 12 / 20 / 30 / 40 / 50 60 / 100 / 200 / 250 / 300 / 400 / 500 600 / 700 / 800 / 900 / 1000 / 1100 1200 / 1300 / 1400 / 1500.	
<b>Torque range</b>	0.1 to 30 mNm	
<b>Temperature</b>	By PT100 sensor, from -20 to 120 °C.	
<b>Accuracy</b>	+/-1% of the full scale	
<b>Repeatability</b>	+/- 0.2%	
<b>Digital display</b>	T°C - Speed or shear rate - Torque - Viscosity - MS - Time	
<b>Viscosity range</b>	1 to 540 000 000 mPa.s	
<b>Supply voltage</b>	90-240 VAC 50/60 Hz	
<b>PC connexion</b>	USB port	
<b>Other detail</b>	The Visco RM Software allows automatic measurements on computer. Measurement Autonomy: 1 hour.	
<b>Dimensions (WxLxH) and weight</b>	Electronic box: 140 x 245 x 62 mm	2 kg
	Head: Ø 75 mm x h 310 mm	



## APPLICATIONS

Food industry		Chemical industry		Teaching	
Cosmetics/Pharmaceuticals		Cars industry			
Paint/Ink		Building industry			

## AVAILABLE ACCESSORIES

MS-DIN 11-22-33.  
MS-R 1 to 5 supplied in a case.  
MS-ASTM/ISO 2555 2-7.  
MS-BV 1 to 1000.  
Visco RM software.



# RM 100i

## RM 100i industrial viscometer

The RM 100i has 34 rotation speeds, 4-20 mA output signal and RS232 serial port.  
RM 100i works in a constant level tank.  
Real time acquisition of viscosity.



# V I S C O M E T E R






## RM 100i SPECIFICATIONS

<b>Measuring principle</b>	Rotating viscometer for immersion	
<b>Rotation speeds</b>	34 speeds in rpm: 0.3 / 0.5 / 0.6 / 1 / 1.5 / 2 / 2.5 / 3 4 / 5 / 6 / 10 / 12 / 20 / 30 / 40 / 50 60 / 100 / 200 / 250 / 300 / 400 / 500 600 / 700 / 800 / 900 / 1000 / 1100 1200 / 1300 / 1400 / 1500.	
<b>Torque range</b>	0.05 to 30 mNm	
<b>Temperature</b>	-20 to 120 °C (PT100 sensor in option)	
<b>Accuracy</b>	+/-1% of the full scale	
<b>Repeatability</b>	+/- 0.2%	
<b>Digital display</b>	Temperature - Speed - Torque - Viscosity - MS - Time	
<b>Viscosity range</b>	1 to 540 000 000 mPa.s	
<b>Supply voltage</b>	90-240 VAC 50/60 Hz	
<b>PC connexion</b>	RS232 serial port	
<b>Analog output</b>	4-20 mA for the torque	
<b>Other detail</b>	The Visco RM software allows automatic measurements on computer.	
<b>Dimensions (WxLxH) and weight</b>	Electronic box: 105 x 175 x 261 mm Head: Ø 70 mm x h 180 mm	3 kg



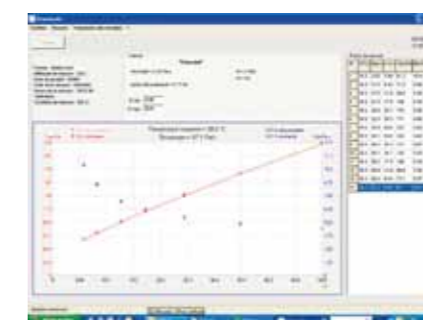
viscometer

## APPLICATIONS

Food industry 	Paint/Ink 	Petroleum industry 
Cosmetics/Pharmaceuticals 	Chemical industry 	Building industry 

## AVAILABLE ACCESSORIES

- MK ASTM N°1.
- MS-ASTM/ISO 2555 2-7.
- MS-BV 1 to 1000.
- MS-R 1 to 5 supplied in a case.
- MS-DIN 11-22-33.
- MS FANN R1B1.
- Visco RM software.



# RM 100L

online viscometer

The RM 100L has 19 rotation speeds from 5 to 600 rpm, a 4-20 mA output signal and RS232 serial port.

RM 100L works directly online on a pipe for high flow rates or in a bend for low flow rates, and uses a magnetic coupling providing perfect leaktightness. Real time acquisition of the viscosity.



# V I S C O M E T E R

## RM 100L SPECIFICATIONS

<b>Measuring principle</b>	On line rotating viscometer	
<b>Rotation speeds</b>	19 speeds in rpm: 5 / 6 / 10 / 12 / 20 / 30 / 40 / 50 60 / 70 / 80 / 90 / 100 / 200 / 250 300 / 400 / 500 / 600.	
<b>Torque range</b>	0.1 to 20 mNm	
<b>Temperature</b>	-20 to 80 °C (PT100 sensor in option)	
<b>Accuracy</b>	+/-1% of the full scale	
<b>Repeatability</b>	+/- 0.2%	
<b>Digital display</b>	Temperature - Speed - Torque - Viscosity - MS - Time	
<b>Viscosity range</b>	1 to 500 000 mPa.s	
<b>Supply voltage</b>	90-240 VAC 50/60 Hz	
<b>PC connexion</b>	RS232 serial port	
<b>Analog output</b>	4-20 mA for the torque	
<b>Other detail</b>	The Visco RM software allows automatic measurements on computer.	
<b>Dimensions (WxLxH) and weight</b>	Electronic box: 105 x 175 x 261 mm	4 kg
	Head: Ø 92 mm x h 312 mm	



viscometer

## APPLICATIONS

Food industry



Cosmetics/Pharmaceuticals



Chocolate



Chemical industry



## AVAILABLE ACCESSORIES

CD75, LD75, CD50, LD100, CD25 measuring cell.  
Visco RM software.





# RM 200

rheometer

Shear-rate imposed rheometer, with a wide range of variable speeds from 0.3 to 1500 rpm. Including serial and USB ports. The RM 200 generates and modelises flow curves without using a computer.



# RHEOMETER









## RM 200 SPECIFICATIONS

<b>Measuring principle</b>	Rotating shear rate imposed rheometer
<b>Rotation speeds</b>	0.3 to 1500 rpm
<b>Torque range</b>	0.05 to 30 mNm
<b>Temperature</b>	By integrated PT100 sensor, from -20 to 120 °C.
<b>Accuracy</b>	+/-1% of the full scale
<b>Repeatability</b>	+/- 0.2%
<b>Digital display</b>	T°C - Shear rate - Torque - Viscosity - MS - YV - Time
<b>Viscosity range</b>	1 to 540 000 000 mPa.s
<b>Supply voltage</b>	90-240 VAC 50/60 Hz
<b>PC connexion</b>	Serial or USB port
<b>Printer connexion</b>	Parallel port
<b>Other detail</b>	Rheomatic-T software enables to transfer data from RM 200 to computer. Rheomatic-P software drives the RM 200 from a computer.
<b>Dimensions (WxLxH) and weight</b>	122 x 145 x 660 mm - 6 kg







rheometer

## APPLICATIONS

Food industry 	Paint/Ink 	Cars industry 
Chocolate 	Chemical industry 	Teaching 
Cosmetics/Pharmaceuticals 	Building industry 	

## AVAILABLE ACCESSORIES

- MS-ASTM/ISO 2555 2-7.
- MS-DIN 11-22-33.
- MS-R 1 to 5 supplied in a case.
- EVA MS-DIN.
- EVA MS-R.
- CP100-CP1 Peltier cone-plate stand.
- Rheomatic-P software.

Fluids chocolates		Visquous chocolates	
C tube with integrated insert		C insert	
			
Delrin cap	MK-C RM 200	Delrin cap	DIN 1 tube

# RM 300

rheometer

Shear rate imposed rheometer for measurements from 0.2 to 150 000 s<sup>-1</sup>, depending on the geometry used. The RM 300 can replace the RM 115 or RM 260, operates on the ST-100 Peltier stand, the RT-300 oven or the CP100 cone-plate stand.



# RHEOMETER


## RM 300 SPECIFICATIONS

<b>Measuring principle</b>	Rotating shear rate imposed rheometer
<b>Rotation speeds</b>	0.1 to 1500 rpm
<b>Torque range</b>	0.05 to 50 mNm
<b>Temperature</b>	-20 to 300 °C (in function of application)
<b>Accuracy</b>	+/-1% of the full scale
<b>Repeatability</b>	+/- 0.2%
<b>Digital display</b>	T°C - Shear rate - Torque - Viscosity - MS - YV - Time
<b>Viscosity range</b>	1 to 250 000 000 mPa.s
<b>Supply voltage</b>	90-240 VAC 50/60 Hz
<b>PC connexion</b>	Serial or USB port
<b>Printer connexion</b>	Parallel port
<b>Other detail</b>	Driven from a computer by Rheomatic-P software. Many accessories for measurement or thermostating.
<b>Dimensions (WxLxH) and weight</b>	122 x 135 x 220 mm - 2 kg



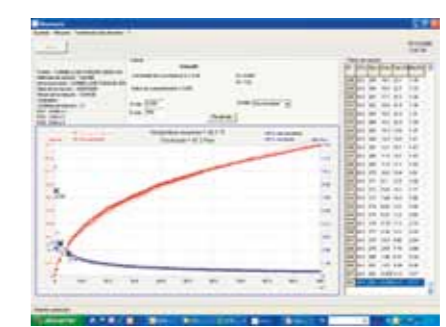
rheometer

## APPLICATIONS

Food industry 	Chemical industry 	Teaching 
Cosmetics/Pharmaceuticals 	Building industry 	
Paint/Ink 	Cars industry 	

## AVAILABLE ACCESSORIES

- Paddle system.
- MS-DIN RM 300 measuring system.
- Measuring system for Plasticsols.
- RT-300 oven.
- CP100 Peltier cone-plate stand.
- ST-100 Peltier.
- Rheomatic-P software.



# RM 300i

industrial rheometer

Shear rate imposed industrial rheometer with separate measuring head in stainless steel and rack 19 inch electronic box. Ideal for measurement at very high temperature like melt glass.



# R H E O M E T E R

## RM 300i SPECIFICATIONS

<b>Measuring principle</b>	Rotating shear rate imposed rheometer	
<b>Rotation speeds</b>	0.1 to 1500 rpm	
<b>Torque range</b>	0.05 to 50 mNm	
<b>Temperature</b>	-20 to 300 °C (in function of application)	
<b>Accuracy</b>	+/-1% of the full scale	
<b>Repeatability</b>	+/- 0.2%	
<b>Digital display</b>	T°C - Shear rate - Torque - Viscosity - MS - YV - Time	
<b>Viscosity range</b>	1 to 250 000 000 mPa.s	
<b>Supply voltage</b>	90-240 VAC 50/60 Hz	
<b>PC connexion</b>	RS232 serial port	
<b>Other detail</b>	Driven from a computer by Rheomatic-P software. Many accessories for measurement or thermostating.	
<b>Dimensions (WxLxH) and weight</b>	Electronic box: 483 x 292 x 133 mm	3 kg
	Head: Ø 70 mm x h 180 mm	



rheometer

## APPLICATIONS

Food industry



Chemical industry



Melt glass



Paint/Ink

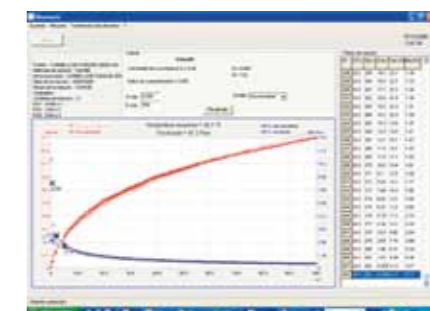


Building industry



## AVAILABLE ACCESSORIES

- Paddle system.
- MS-DIN RM 300 measuring system.
- Measuring system for Plasticsols.
- RT-300 oven.
- CP100 Peltier cone-plate stand.
- ST-100 Peltier.
- Rheomatic-P software.



# LOW SHEAR LS 400 rheometer



The Low Shear 400 is the successor to Low Shear 30 and Low Shear 40. This is a rheometer with imposed speeds following Couette principle.

This rheometer is measuring low viscosities at low shear rate.

The measuring systems associated to LS 400 needs very small quantity of samples: 1 ml for the 2T2T system and 0.5 ml for the 11 system.

LS 400 is using the same measuring systems than the LS 30. For installation, it is preferable to put the measuring head of the LS 400 on a stable stand.

## Main measuring systems

### MS-LS 11 STAINLESS STEEL

Ri	Ra	L	Fill volume	Viscosity range	Range rate range
5.5 mm	6 mm	8 mm	0.5 ml	from 0.004 to 19000 mPas	from 0.12 to 120 s <sup>-1</sup>

### MS-LS 2T2T TITANIUM

Ri	Ra	L	Fill volume	Viscosity range	Range rate range
5.5 mm	6 mm	20 mm	1 ml	from 0.0018 to 8300 mPas	from 0.13 to 131 s <sup>-1</sup>

## Description of the system

- The LS 400 have two separate parts: the measuring head and the electronic box for remote the measuring head.
- The measuring head included an electric up and down, the motor for the rotating speeds and the torque measuring system.
- The measuring becher can be thermostated by connecting a thermostatic bath.
- The electronic box is used for remote the measuring head, or eventually connecting to a computer, or a printer.

# RHEOMETER

## LS 400 SPECIFICATIONS

<b>Measuring principle</b>	Rotating rheometer following Couette principle with coaxial measuring systems	
<b>Rotation speeds</b>	Range: from 0.1 to 100 rpm Precision: ± 1% of the value	
<b>Torque range</b>	0 to 0.006 mNm Range 1: 0 to 0.000096 mNm Range 2: 0 to 0.000048 mNm Range 3: 0 to 0.00024 mNm Range 4: 0 to 0.0012 mNm Range 5: 0 to 0.006 mNm Precision: +/- 2% of the value	
<b>Temperature</b>	Thermostating by fluid circulation Sensor type: PT100 Range from 10 to 60 °C Resolution: 0.1 °C Precision: +/- 0.2 °C Maximum surrounding temperature from +10 to +40 °C	
<b>Supply voltage</b>	90 to 240 Vac 50/60 Hz	
<b>PC connexion</b>	Serial port (RS232)	
<b>Dimensions (WxLxH) and weight</b>	Small box: 255 x 265 x 205 mm Large box: 563 x 435 x 738 mm	30 kg



rheometer

## APPLICATIONS

Food industry



Blood / Water / Solvent /  
Polymers / Petroleum industry

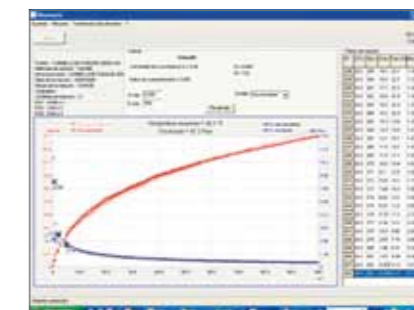


Chemical industry



## AVAILABLE ACCESSORIES

- Rheomatic LS 400 software.
- Personalized measuring systems.
- DIN measuring systems + thermostating bath.



# TEX'AN 200

texture analyzer

For a quick and complete texture analysis of the consistency, elasticity and adhesivity of your samples.

The new TEX'AN 200 texture analysis owns performances and flexibility of a R&D instrument and his limited price answer to the quality control laboratories.



## TEXTURE ANALYZER





### TEX'AN 200 SPECIFICATIONS

<b>Force sensor</b>	200 N, resolution 0.06 N 50 N, resolution 0.015 N (option)
<b>Temperature acquisition</b>	-20 to 120 °C
<b>Motion stand</b>	- Speed: 0.1 – 10 mm/s + 0.2% - Motion resolution: 0,05 mm - Motion unit height: 200 mm - Working table size: 100 x 200 mm - Inserts to fix traction cells - Electronic and mechanical high and low stop position
<b>TEX'AN200 back-light display</b>	- Fmax., Fmin, F at a predefined time, current value - Choice of Force unit: N, g, kg - Memorisation of 20 last calculated values - RS232 output to dial with computer, via TEX'AN-DRIVE software
<b>Drive and data treatment software TEX'AN-DRIVE (on option)</b>	- Works on all Windows 98, XP, Win7.0 - Definition of Test parameters, (speed, distance...) - Definition of display parameters - Definition of desired calculation (surface, slope, ratio...) - Definition of completely configurated experiments - Lockage of procedures
<b>Electric characteristics</b>	Supply voltage: 90-240 VAC 50/60 Hz
<b>Dimensions (WxLxH) and weight</b>	297 x 490 x 628 mm - 21 kg

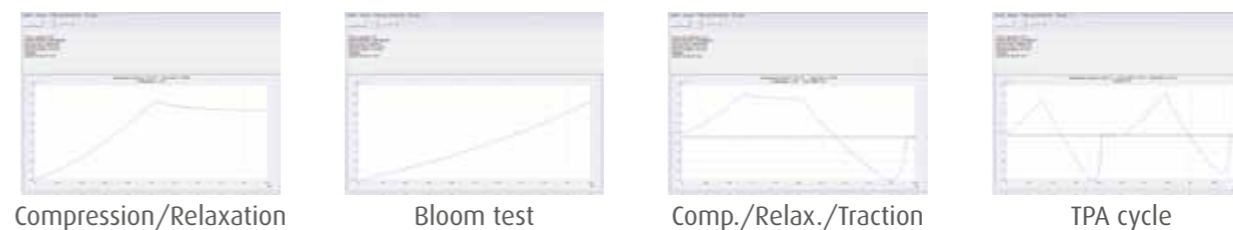


texture analyzer

### APPLICATIONS

Food industry		Building industry	
Cosmetics/Pharmaceuticals		Teaching	

### MAJOR OPERATING MODES



All Compression, Traction, Relaxation, TPA modes could be chained to a single experiment.

# EVA MS-DIN

temperature control system

Thermostated unit by Peltier Effect for coaxial systems without circulating fluid. Ideal for rheological measurement that needs fast temperature changes.










## TEMPERATURE CONTROL

### EVA MS-DIN SPECIFICATIONS

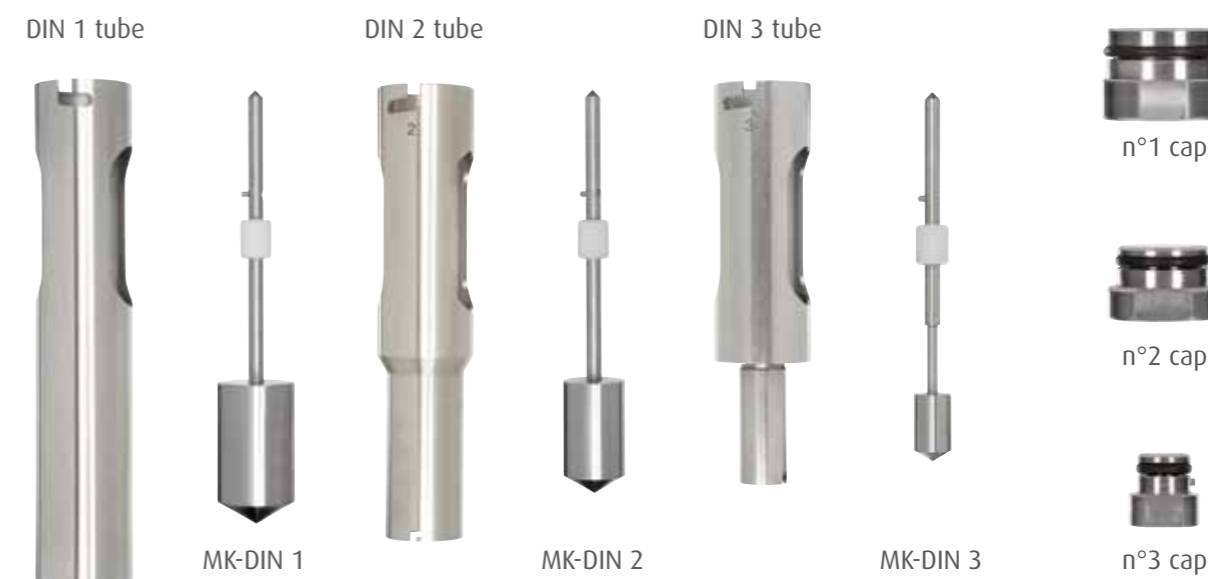
<b>Measuring principle</b>	Thermostating unit by Peltier Effect for MS-DIN/ISO 3219
<b>Temperature</b>	15 to 65 °C +/- 0.2 °C
<b>Digital display</b>	Setup and effective temperature of the unit
<b>Supply voltage</b>	90-240 VAC 50/60 Hz
<b>Other detail</b>	EVA MS-DIN could be associated to First RM, RM 100 and RM 200.
<b>Dimensions (WxLxH) and weight</b>	297 x 490 x 571 mm - 16 kg



### APPLICATIONS

Food industry 	Paint/Ink 	Teaching 
Chocolate 	Chemical industry 	
Cosmetics/Pharmaceuticals 	Cars industry 	

### AVAILABLE ACCESSORIES



temperature control

# EVA MS-R

temperature control system

Thermostated unit by Peltier Effect without circulating fluid for anchor type systems. Ideal for viscosity measurement that needs fast temperature changes.



## TEMPERATURE CONTROL

### EVA MS-R SPECIFICATIONS

<b>Measuring principle</b>	Thermostating plate by Peltier Effect with 9 places for cups MB-2 and MB-3
<b>Temperature</b>	17 to 45 °C +/- 0.2 °C
<b>Digital display</b>	Setup and effective temperature of the plate
<b>Supply voltage</b>	90-240 VAC 50/60 Hz
<b>Other detail</b>	EVA MS-R could be associated to RM 100 and RM 200.
<b>Dimensions (WxLxH) and weight</b>	297 x 490 x 571 mm - 15 kg



### APPLICATIONS

Food industry



Paint/Ink



Building industry



Cosmetics/Pharmaceuticals



Chemical industry



Cars industry



### AVAILABLE ACCESSORIES



Measuring system no included

temperature control

# CP100-CP1

Peltier cone-plate stand

Those stands, thermostated by Peltier Effect without circulating fluid are useful for rheological measurement that needs quick variations of temperature or small sample volumes.



## APPLICATIONS

Food industry



Paint/Ink



Building industry



Cosmetics/Pharmaceuticals



Chemical industry



Teaching










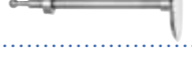


## TEMPERATURE CONTROL

### CP100 - CP1 SPECIFICATIONS

<b>Measuring principle</b>	Aluminium plate thermostated by Peltier Effect (stainless steel possible)	
<b>Temperature</b>	CP100: 5 to 80 °C +/- 0.2 °C CP1: 5 to 60 °C +/- 0.2 °C PELTIER LIQUID OPTION: -20 to 120 °C according associated bath temperature (not include)	
<b>Digital display</b>	Regulation set-up and real plate temperature	
<b>Supply voltage</b>	90-240 VAC 50/60 Hz	
<b>Other detail</b>	CP1 and CP100 could be associated to all viscometers and rheometers of our range, except BLACK ONE	
<b>Dimensions (WxLxH) and weight</b>	<b>CP1</b>	16 kg
	Electronic box: 255 x 265 x 205 mm Stand: 237 x 285 x 650 mm	
	<b>CP100</b>	22 kg
	297 x 490 x 628 mm	



CP100 + RM 300

	Name	Reference	Dimensions	Volume	Viscosity range
<b>Cones for RM 100 / RM 200</b>					
	<b>MK-CP 4020</b>	424020	Ø 40 mm α 2°	0.60 ml	15 - 1 000 000 mPa.s
	<b>MK-CP 2445</b>	422445	Ø 24 mm α 0.45°	0.030 ml	20 - 2 000 000 mPa.s
	<b>MK-CP 2020</b>	422020	Ø 20 mm α 2°	0.075 ml	100 - 8 000 000 mPa.s
	<b>MK-CP 4005</b>	424005	Ø 40 mm α 0.5°	0.150 ml	5 - 300 000 mPa.s
	<b>MK-CP 2005</b>	422005	Ø 20 mm α 0.5°	0.018 ml	40 - 2 000 000 mPa.s
<b>Cones for RM 300</b>					
	<b>MK-CP 2020</b>	432020	Ø 20 mm α 2°	0.075 ml	100 - 13 000 000 mPa.s
	<b>MK-CP 4020</b>	434020	Ø 40 mm α 2°	0.60 ml	15 - 1 500 000 mPa.s
	<b>MK-CP 5020</b>	435020	Ø 50 mm α 2°	1.15 ml	10 - 1 000 000 mPa.s
	<b>MK-CP 2005</b>	432005	Ø 20 mm α 0.5°	0.018 ml	40 - 3 000 000 mPa.s
	<b>MK-CP 5005</b>	435005	Ø 50 mm α 0.5°	0.30 ml	3 - 250 000 mPa.s

temperature control



# ST-100

Peltier stand

Peltier ST-100 stand is made for measurement with coaxial cylinders measuring systems of RM 300. It is thermostated by Peltier effect, that enables a quick thermal exchange in warming or refreshing phase. It works either with ambient air without cooling fluid between 10 to 65°C, either related to an external cooling bath (non including), that give to it measurement between -10 to 100°C.



## APPLICATIONS

Food industry



Chemical industry



Teaching



Cosmetics/Pharmaceuticals



Building industry



Paint/Ink



Cars industry



# TEMPERATURE CONTROL

## ST-100 SPECIFICATIONS

<b>Measuring principle</b>	Stand for coaxial measuring systems thermostated by Peltier effect.
<b>Temperature</b>	With ambient air: 10 – 65°C +/- 0.2°C With cryostat bath (not include): -10 – 100°C +/- 0.2°C
<b>Digital display</b>	Regulation set-up and actual temperature of cell
<b>Supply voltage</b>	90-240 VAC 50/60 Hz
<b>Other detail</b>	ST-100 could be associated to all coaxial geometries of RM 300
<b>Dimensions (WxLxH) and weight</b>	Electronic box: 257 x 267 x 200 mm Stand: 197 x 280 x 485 mm

15 kg



	Name	Reference	Dimensions	Volume	Viscosity range
	<b>MK-DIN 145</b>	112504	Ø 45 mm	–	3 - 900 000 mPa.s
	<b>MK-DIN 125</b>	112503	Ø 25 mm	–	5 - 5 000 000 mPa.s
	<b>MK-DIN 114</b>	112502	Ø 14 mm	–	15 - 30 000 000 mPa.s
	<b>MK-DIN 108</b>	112501	Ø 8 mm	–	80 - 150 000 000 mPa.s
	<b>MB-DIN 145T cup</b>	112512	Ø 48.5 mm	100 ml	–
	<b>MB-DIN 125T cup</b>	112511	Ø 27.5 mm	20 ml	–
	<b>MB-DIN 114T cup</b>	112510	Ø 15 mm	5 ml	–
	<b>MB-DIN 108T cup</b>	112509	Ø 8.5 mm	2 ml	–
	<b>MK-MS0</b>	112702	Ø 46.5 mm	–	1 - 28 000 mPa.s
	<b>MS-0 cup</b>	112701	Ø 50 mm	20 ml	–
	<b>MK-C</b>	112525	Ø 13.6 mm	–	50 mPa.s - 50 000 000 mPa.s
	<b>MK-C2</b>	112550	Ø 17.6 mm	–	20 mPa.s - 20 000 000 mPa.s
	<b>MK-C4</b>	112552	Ø 19 mm	–	2 - 900 000 mPa.s
	<b>MB-C cup</b>	112524	Ø 20 mm	20 ml	–

temperature control

# RT-300-RT-3

high temperature stand

Electrical oven with manual (RT-3) or electric (RT-300) up and down for RM 100, RM 200 or RM 300.

They're using aluminum disposable cups, MB-B, C or D and cone-plate geometries.



## TEMPERATURE CONTROL

### RT-300 - RT-3 SPECIFICATIONS

<b>Measuring principle</b>	Electrical oven	
<b>Temperature</b>	T° amb. to 300 °C (RT-300) T° amb. to 200 °C (RT-3)	
<b>Supply voltage</b>	90-240 VAC 50/60 Hz	
<b>Other detail</b>	Possibility to use a ramp temperature controller to realise ramps or successive steps of T°C	
<b>Dimensions (WxLxH) and weight</b>	<b>RT-3</b>	
	Electronic box: 255 x 265 x 205 mm	20 kg
	Stand: 240 x 284 x 655 mm	
	<b>RT-300</b>	
	297 x 490 x 628 mm	20 kg



RT-300 + RM 100

### APPLICATIONS

Petroleum industry















Chemical industry



Paint/Ink



	Name	Reference	Dimensions	Volume	Viscosity range
Coaxial measuring system	 <b>MK-RT II B</b>	112570	Ø 30 mm	–	10 - 5 500 000 mPa.s
	 <b>MK-RT II C</b>	112572	Ø 13.6 mm	–	50 - 27 500 000 mPa.s
	 <b>MK-RT II D</b>	112573	Ø 7.5 mm	–	2000 - 500 000 000 mPa.s
	 <b>MB-B alu cup</b>	114318	Lot of 100	70 ml	–
	 <b>MB-C alu cup</b>	114306	Lot of 100	20 ml	–
	 <b>MB-D alu cup</b>	114319	Lot of 100	8 ml	–
	 <b>B ring</b>	112611	–	–	–
	 <b>C insert</b>	112612	–	–	–
	 <b>D insert</b>	112614	–	–	–
Cone-plate measuring systems	 <b>KP insert RT 300</b>	112613	–	–	–
	 <b>KP cone RT 2020</b>	312020	Ø 20 mm α 2°	0.075 ml	100 - 8 000 000 mPa.s
	 <b>KP cone RT 5020</b>	315020	Ø 50 mm α 2°	1.14 ml	10 - 1 000 000 mPa.s

# MS-DIN ISO 3219

measuring system

Coaxial cylinder measuring system according to the DIN/ISO 3219 standard.  
Each component: bob, tube and cap can be bought and used separately, depending on using or product requirements.

	Name	Reference	Dimensions	Volume	Viscosity range
	<b>MK-DIN 1</b>	112820	Ø 30 mm	–	3 - 1 000 000 mPa.s
	<b>MK-DIN 2</b>	112821	Ø 24 mm	–	10 - 5 400 000 mPa.s
	<b>MK-DIN 3</b>	112822	Ø 14 mm	–	50 - 42 000 000 mPa.s
	<b>MK-DIN 9</b>	111875	Ø 31.5 mm	–	1 - 350 000 mPa.s
	<b>DIN 1 tube</b>	112932	Ø 32.5 mm	15-25 ml	–
	<b>DIN 2 tube</b>	112937	Ø 26 mm	12-18 ml	–
	<b>DIN 3 tube</b>	112938	Ø 15 mm	5-10 ml	–
	<b>DIN 1 cap</b>	112872	–	–	–
	<b>DIN 2 cap</b>	112877	–	–	–
	<b>DIN 3 cap</b>	112878	–	–	–
	<b>DIN 1S tube</b>	112933	Ø 32.5 mm	15-25 ml	–
	<b>ST-R centring device</b>	114436	To centring DIN-1S tube	–	–
	<b>DIN-1 tube alu disposable cup</b>	111931	Lot of 100	15-25 ml	–
	<b>DIN-1R tube</b>	112934	For recirculation	–	–
	<b>EVA MS-DIN ISO 3219</b>	950000	–	–	Thermostatisation cell by Peltier Effect of DIN cups 1, 2, 3
	<b>CT MS-DIN ISO 3219</b>	111914	Bath no include	–	Thermostating cell for MB-DIN cups 1, 2, 3
	<b>n°2 alu insert</b>	111910	–	–	MB-DIN 2 adaptation for thermostating cell
	<b>n°3 alu insert</b>	111911	–	–	MB-DIN 3 adaptation for thermostating cell

## MEASURING SYSTEM

### MS-DIN/ISO 3219 SPECIFICATIONS

#### Measuring principle Other detail

Coaxial cylinders

MS-DIN measuring systems could be thermostated with thermostatisation cell DIN/ISO 3219 or EVA MS-DIN.



### APPLICATIONS

Food industry



Paint/Ink



Teaching



Chocolate



Chemical industry



Cosmetics/Pharmaceuticals



Cars industry



DIN 1 tube



DIN 2 tube



DIN 3 tube



MK-DIN 1



MK-DIN 2



MK-DIN 3



n°1 cap



n°2 cap



n°3 cap

# MS-R 1 to 5

measuring system  
in complete box

Paddle measuring system. It was already fitted to the TV EPPRECHT type viscometers, and has been recognised as the standard for numerous viscosity measurements in the cosmetic and paint industries.

It is also perfectly suited for measuring the viscosity of heterogeneous products, or fluids containing lumps, for example, in the food and beverage or mineral chemistry industries.



## MEASURING SYSTEM

	Name	Reference	Dimensions	Volume	Viscosity range
	<b>MK-R1</b>	114425	l. 93 mm	–	1 - 40 mPa.s
	<b>MK-R2</b>	114426	l. 46 mm	–	40 - 700 mPa.s
	<b>MK-R3</b>	114427	l. 23 mm	–	300 - 4 000 000 mPa.s
	<b>MK-R4</b>	114428	l. 20 mm	–	2500 - 24 000 000 mPa.s
	<b>MK-R5</b>	114429	Ø 5 mm	–	10 000 - 510 000 000 mPa.s
	<b>MB-1 cup</b>	114308	Ø 98 mm	320 ml	–
	<b>MB-2 cup</b>	114311	Ø 54 mm	60 ml	–
	<b>MB-3 cup</b>	114314	Ø 36 mm	25 ml	–
	<b>ST-R centring device</b>	114436	To centring MB-1, 2, 3 cups	–	–
	<b>n° 1 disc</b>	114437	To centring MB-1 cups	–	–
	<b>EVA MS-R</b>	950200	–	–	–
	<b>MS-R 1-5</b>	111949	Complete systeme	–	1 - 510 000 000 mPa.s
	<b>MB-2, MB-3 cup-hold plate</b>	130024 130050	For stainless steel tank bath For plexi tank bath	–	–
	<b>CT MB-2, MB-3</b>	111916	Bath no include	–	Thermostating cell for MB-2, MB-3 cups

## APPLICATIONS

Food industry



Paint/Ink



Building industry



Cosmetics/Pharmaceuticals



Chemical industry



Cars industry

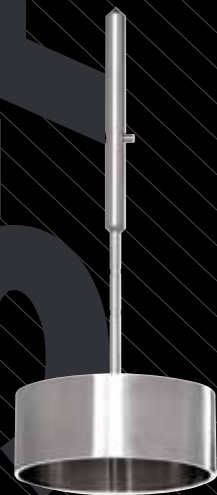


# MS-ASTM ISO 2555

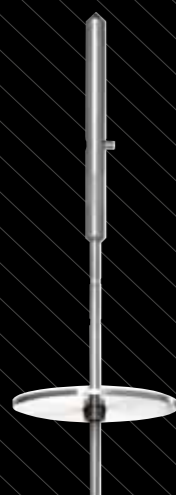
measuring system

Stainless steel discs measuring system for relative viscosity measurements in a 600-ml beaker. This system is used for measurements in accordance with the ASTM/ ISO 2555 standard.

It is supplied as standard on the Black One (MS 2 to 7) and can also be used with the Rheomat First RM, RM 100 and RM 200.



MK-ASTM n°1



MK-ASTM n°2



ASTM disc n°3



ASTM disc n°5



ASTM disc n°4



ASTM disc n°6



MK-ASTM n°7

## MEASURING SYSTEM






	Name	Reference	Dimensions	Volume	Viscosity range
	ASTM n° 1 axis + disc	111000 + 111001	Ø 56.26 mm	600 ml	3 - 450 000 mPa.s
	ASTM n° 2 axis + disc	111000 + 111002	Ø 46.93 mm	600 ml	15- 1 750 000 mPa.s
	ASTM disc n° 3	111003	Ø 34.69 mm	600 ml	30 - 4 400 000 mPa.s
	ASTM disc n° 4	111004	Ø 27.3 mm	600 ml	60 - 8 800 000 mPa.s
	ASTM disc n° 5	111005	Ø 21.14 mm	600 ml	120 - 17 600 000 mPa.s
	ASTM disc n° 6	111006	Ø 14.62 mm	600 ml	260 - 42 600 000 mPa.s
	ASTM axis n° 7	111007	Ø 3.2 mm	600 ml	1000 - 156 000 000 mPa.s
	ASTM 2555 adaptation axis	111008	Threated axis	-	-
<b>"VANE" measuring bob</b>					
	MK-Double paddle	111101	l. 20 mm	100 ml	25 - 5 400 000 mPa.s
	MK 6 paddles	111105	l. 22 mm	50 ml	100 - 20 000 000 mPa.s
<b>"KREBBS" measuring bob</b>					
	MK-KU 1-10	111100	l. 53.98 mm	250 ml	20 - 5000 mPa.s 40 - 140 KU
<b>"PASTE" measuring bob</b>					
	MK-75Y	111103	l. 42.88 mm	250 ml	100 - 50 000mPa.s
<b>"FANN R1B1" measuring bob</b>					
	MK-FANN R1B1	119001	Ø 34.49 mm	-	2 - 800 000 mPa.s
	MB-FANN R1B1	119002	Ø 36.8 mm	20 ml	-

## APPLICATIONS

Food industry		Paint/Ink		Building industry	
Cosmetics/Pharmaceuticals		Chemical industry		Cars industry	

# MS-BV 1-1000 measuring system

Stainless steel discs measuring system for viscosity measurements in a 150-ml beaker. This system allows rapid and economical measurements. This system could be used by First RM and can also be used with the Rheomat RM 100, RM 200.

	Name	Reference	Dimensions	Volume	Viscosity range
	BV 1-100 axis	117102	—	—	—
	BV centring device	117202	—	—	—
	BV disc n°1	117001	Ø 45 mm	120 ml	2 - 500 000 mPa.s
	BV disc n°10	117010	Ø 40 mm	120 ml	20 - 5 000 000 mPa.s
	BV disc n°100	117100	Ø 20 mm	120 ml	200 - 45 000 000 mPa.s
	BV 1000 axis	117101	Ø 4 mm	120 ml	2000 - 510 000 000 mPa.s
	150-ml beaker	117150	Ø 50-52 mm	150 ml	—
	MS TI tube	118001	Ø 50 mm	150 ml	—

## APPLICATIONS

Food industry



Paint/Ink



Cosmetics/Pharmaceuticals




Chemical industry



# MEASURING SYSTEM MS-C CHOCOLATE

This coaxial cylindrical measuring system was one of the first to be granted IOCCC certification in 1970 to check chocolate rheology using the Casson method. It continues to be the most universal measuring system for very fluid couverture chocolate to more viscous “block” type products and fillings.

	Name	Reference	Dimensions	Volume	Viscosity range
	MK-C	116002	Ø 13.6 mm	—	50 - 17 000 000 mPa.s
	C tube with insert	116001	Ø 20 mm	20 ml	Fluids chocolates
	DIN 1 tube	112932	Ø 32.5 mm	—	Viscous chocolates
	C insert	116004	Ø 20 mm	20 ml	—
	Delrin cap	116005	—	—	—
	EVA 100	950100	—	—	Thermostatisation cell by Peltier Effect for C cup
	Thermostating cell	111914	Bath no include	—	Thermostating cell for C cup

## APPLICATIONS

Food industry



Chocolate



# CALIBRATION OILS



# SOFTWARE










Name	Reference	Volume	Viscosities
Oil 5 mPa.s	260005	100 ml	5 mPa.s to 23 °C
Oil 50 mPa.s	260050	100 ml	50 mPa.s to 23 °C
Oil 100 mPa.s	260100	100 ml	100 mPa.s to 23 °C
Oil 500 mPa.s	260500	100 ml	500 mPa.s to 23 °C
Oil 750 mPa.s	260750	100 ml	750 mPa.s to 23 °C
Oil 1000 mPa.s	261000	100 ml	1000 mPa.s to 23 °C
Oil 5000 mPa.s	265000	100 ml	5000 mPa.s to 23 °C
Oil 50 mPa.s	250050	250 ml	50 mPa.s to 23 °C
Oil 100 mPa.s	250100	250 ml	100 mPa.s to 23 °C
Oil 500 mPa.s	250500	250 ml	500 mPa.s to 23 °C
Oil 1000 mPa.s	251000	250 ml	1000 mPa.s to 23 °C
Oil 3500 mPa.s	253500	250 ml	3500 mPa.s to 40 °C
Oil 5000 mPa.s	255000	250 ml	5000 mPa.s to 23 °C
Oil Chocolate	250750	250 ml	750 mPa.s to 40 °C
Oil 50 mPa.s	500050	500 ml	50 mPa.s to 23 °C
Oil 100 mPa.s	500100	500 ml	100 mPa.s to 23 °C
Oil 500 mPa.s	500500	500 ml	500 mPa.s to 23 °C
Oil 1000 mPa.s	501000	500 ml	1000 mPa.s to 23 °C
Oil 5000 mPa.s	505000	500 ml	5000 mPa.s to 23 °C

Name	Function	Reference	Accessories for
 <b>Rheomatic-T</b>	Transfer and rheological data treatment	311001	First RM RM 100 RM 200
 <b>Visco RM</b>	Drive and viscosity measurement	311003	First RM RM 100 RM 100i RM 100L RM 100P
 <b>Rheomatic-P</b>	Drive and rheological data treatment	311002	RM 200, RM 300, RM 300i
 <b>Rheomatic-LS400</b>	Drive speed and sensitivity, and data treatment	311800	LS400
 <b>Tex'an Drive</b>	Drive and data treatment of texture analysis	311005	Tex'an 200








What is your activity?

# Which instrument for your: QUALITY CONTROL?

<b>Food industry</b> 	<b>First RM</b> + ASTM 2-7 According ISO 2555 With temperature sensor and outputs	<b>RM 100</b> + MS-DIN11 + MK-DIN2 + MK-VANE or MK-R4 For samples with parts	<b>RM 200</b> + MS-DIN 11, 22, 33 Rheological controls	<b>TEX'AN 200</b> + 1/2 sphere, cone or plate Penetrometry Compression TPA Cycle
<b>Chocolate</b> 	<b>RM 100</b> + MS-C + EVA-DIN + VISCO-RM IOCCC Standard	<b>RM 200</b> + MS-C + EVA-DIN IOCCC Standard without computer		
<b>Cosmetics/Parmaeceuticals</b> 	<b>First RM</b> + ASTM 2-7 According ISO 2555 With temperature sensor and outputs	<b>RM 100</b> + MS-R 1 to 5 For cosmetics: control at 200 rpm in UD	<b>RM 100/RM 200</b> + MS-DIN11, 22, 33 + CP-1 + MK-CP402 ISO 3219 and European Pharmacopeia	<b>TEX'AN 200</b> + Plexiglass cylinder for BLOOM test + 1/2 sphere, plate or cone Compression, Traction, Relaxation or TPA cycle
<b>Paint/Coating/Ink</b> 	<b>First RM</b> + ASTM 2-7 + KU 1-10 According ISO 2555 With temperature sensor and outputs	<b>RM 100</b> + MS-DIN 11 + EVA-DIN For water-based cars paints according ISO 3219	<b>RM 100</b> + ASTM 2-7 (ISO 2555) + KU 1-10 + MS-DIN11 (ISO 3219) + CP-1 (ISO 2884) All standards in 1	<b>RM 200</b> + MS-DIN 11, 22, 33 Rheological controls
<b>Chemical/Petroleum industry</b> 	<b>First RM</b> + ASTM 2-7 According ISO 2555 With temperature sensor and outputs	<b>RM 100</b> + MS-FANN R1B1 Measure of Visco and YV on drilling fluids	<b>RM 100-AC115</b> + RT-3 + CP2002 + MS-B, C, D with disposable cups For paste and resin until 250°C; Bitumen	<b>RM 100 + CP1</b> + CP402 Peltier cone-plate for quick measurements on small volumes from 5 to 80°C
<b>Building industry</b> 	<b>First RM</b> + ASTM 2-7 According ISO 2555 With temperature sensor and outputs	<b>RM 100</b> + MK-R3 et R4 Mastics, Rendering, Mortar	<b>RM 100</b> + MK-VANE Concrete, Cement, Mortar	<b>TEX'AN 200</b> + plate or 1/2 sphere Compression/Relaxation TPA cycle
<b>Cars industry</b> 	<b>First RM</b> + ASTM 2-7 According ISO 2555 With temperature sensor and outputs	<b>RM 100</b> + MK-R4 For Mastics according "SEEVERS" hardness	<b>RM 100/RM 200</b> + MS-DIN 11 + EVA-DIN For water-based cars paints according ISO 3219	

What is your activity?








# Which instrument for your: RESEARCH AND DEVELOPMENT?

<b>Food industry</b> 	<b>RM 200 + EVA-DIN</b> + MS-DIN 11, 22, 33 + Rheomatic-P Visco= f(time/T°C) Rheograms with fitting	<b>TEX'AN 200</b> + 1/2 sphere, cone or plate +TEX'AN-DRIVE Compression/Relaxation, Traction, TPA Cycle	<b>RM 300 + CP100</b> + CP402 + Rheomatic-P Peltier cone-plate rheological analysis	<b>LOW SHEAR LS 400</b> + MS-LS11 + Rheomatic-P Rheological studies on alginate and carrageenan
<b>Chocolate</b> 	<b>RM 200</b> + MS-C + EVA-DIN + Rheomatic-P IOCCC Standard and rheological studies in function of temperature and speed.			
<b>Cosmetics/Parmaeceuticals</b> 	<b>RM 200 + EVA-DIN</b> + MS-DIN 11, 22, 33 + Rheomatic-P Visco= f(time/T°C) Rheograms with fitting	<b>TEX'AN 200</b> + 1/2 sphere inox or cylindre plexiglass + TEX'AN-DRIVE Compression/Relaxation, Traction, TPA Cycle	<b>RM 300 + ST-100 or RM 300 + CP100</b> Peltier coaxial or cone-plate for complete rheological analysis	<b>LOW SHEAR LS 400</b> + MS-LS 2T2T + Rheomatic-P Rheological studies on blood or fluid lotions
<b>Paint/Coating/Ink</b> 	<b>RM 200 + EVA-DIN</b> + MS-DIN 11, 22, 33 + Rheomatic-P Visco= f(time/T°C) Rheograms with fitting	<b>RM 300 + ST-100</b> + MS-DIN + MS-HS + Rheomatic-P Low and high shear rates ->20000 s-1 rheological analysis	<b>LOW SHEAR LS 400</b> + MS-LS 2T2T + Rheomatic-P Rheological studies on inks and paints to evaluate thixotropic recovery	
<b>Chemical/Petroleum industry</b> 	<b>RM 200 + EVA-DIN</b> + MS-DIN 11, 22, 33 + Rheomatic-P Visco= f(time/T°C) Rheograms with fitting	<b>RM 300 + Rheomatic-P</b> To replace RM115 or RM260; measure on tightness PVC + Peltier ST-100 + MS-DIN 125T or MS-DIN 114T For rheological analysis from 5 to 80°C	<b>RM 300 + RT-300</b> + MS-B, C, D + Disposable cups or + CP 2002 Paste and resins until 300°C rheological analysis with Rheomatic-P	
<b>Building industry</b> 	<b>RM 200 + EVA-DIN</b> + MS-DIN 11, 22, 33 + Rheomatic-P Visco= f(time/T°C) Rheograms with fitting	<b>RM 300 + ST-100</b> + MS-DIN 125T + MS-VANE + MS-HS Low and High shear rates ->20000 s-1 rheological analysis	<b>RM 300 + CP100</b> + PP 25 Peltier Plate-plate for complete charged samples rheological analysis	
<b>Cars industry</b> 	<b>RM 200 + EVA-DIN</b> + MS-DIN 11, 22, 33 + Rheomatic-P Visco= f(time/T°C) Rheograms with fitting	<b>RM 300 + Rheomatic-P</b> To replace RM115 or RM260; measure on tightness PVC + Peltier ST-100 + MS-DIN 125T or MS-DIN 114T For rheological analysis from 5 to 80°C	<b>RM 300 + Rheomatic-P</b> + MS-C4, C2 + ST-100 Peltier Paste and resins Tightness PVC Complete rheological analysis	



What is your activity?

# Which instrument for your: INDUSTRIAL CONTROL?

<b>Food industry</b> 	<b>BLACK ONE</b> + MS-ASTM 2-7 For measurements according ISO 2555	<b>RM 100P</b> + MS-DIN 11 + MK-DIN2 + MK-VANE or MK-R4 Portative instrument for discontinuous measurement in batch	<b>RM 100i</b> + MK-BV or MK-ASTM + MK-DIN or MK-R Continuous direct measure in constant level batch	<b>RM 100L</b> + Circulating cell CD or LD Continuous on-line viscosity measurement
<b>Chocolate</b> 	<b>RM 100L</b> + Thermostating cell + Visco RM SOFT Fully automated on-line measurement according IOCCC standard			
<b>Cosmetics/ Pharmaceuticals</b> 	<b>BLACK ONE</b> + MS-ASTM 2-7 For measurements according ISO 2555	<b>RM 100P</b> + MS-DIN 11 + MK-DIN2 + MK-VANE or MK-R4 Portative instrument for discontinuous measurement in batch	<b>RM 100i</b> + MK-BV 1-1000 or MK-ASTM 2-7 + MK-DIN or MK-R Continuous direct measure in constant level batch	
<b>Paint/Coating/Ink</b> 	<b>BLACK ONE</b> + MS-ASTM 2-7 For measurements according ISO 2555	<b>RM 100P</b> + MS-DIN 11 Portative instrument for discontinuous measurement of water-based cars paints according ISO 3219 std	<b>RM 100i</b> + MS-TI 1-1000 + MS-ASTM 2-7 or MS-DIN Continuous direct measure in constant level batch	
<b>Chemical/ Petroleum industry</b> 	<b>BLACK ONE</b> + MS-ASTM 2-7 For measurements according ISO 2555	<b>RM 100P</b> + MS-FANN R1B1 Portative instrument for discontinuous measurement of VISCO and YV on drilling fluids	<b>RM 100i</b> + MS-FANN R1B1 + MS-ASTM 2-7 or MS-DIN Continuous direct measure in constant level batch	
<b>Building industry</b> 	<b>BLACK ONE</b> + MS-ASTM 2-7 For measurements according ISO 2555	<b>RM 100P</b> + MK-R4 + MK-VANE Portative instrument for discontinuous measurement of concrete or mortar in batch of production	<b>RM 100i</b> + MK-BV 1-1000 or MK-ASTM 2-7 + MK-DIN or MK-R Continuous direct measure in constant level batch	
<b>Cars industry</b> 	<b>BLACK ONE</b> + MS-ASTM 2-7 For measurements according ISO 2555	<b>RM 100P</b> + MK-R4 Portative instrument for discontinuous measurement of mastics according "SEEVERS" HARDNESS	<b>RM 100i</b> + MK-ASTM 2-7 + MK-DIN11 or MK-R4 Continuous direct measure in constant level batch	

## TRAINING

You desire:

- Well use your viscometer or rheometer.
- Increase analysis of data in relationship with your APPLICATIONS.
- You want to well-know Rheology.

With his experiment in all activity range and at all using levels (from R&D to production), LAMY RHEOLOGY propose training seminars in Applied Rheology at your office or in our lab.

Moreover our engineers propose to you regular visit free of charges, to help you in the using of materials and software.

Because the knowing of each of our customers enables to us to best answer to the expectations of all!



## AFTER SALE SERVICE

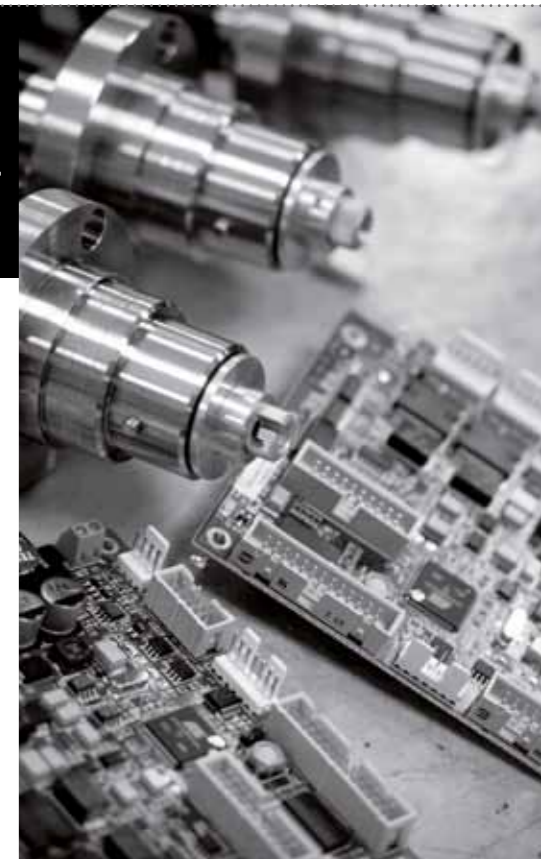
To give you the benefit of our experiment and of the availability of our technicians which ensure maintenance of your instruments:

- Calibration and standard with certificate and validation files.
- Annual Maintenance contract on your site.
- Verification oil providing.
- Tests according your using conditions.

All our instruments have a warranty of 2 years.

Give to our technician team your instrument to repair:

- Examination of your instrument.
- Free quotation under 48 hours.
- And also calibration of instruments from CONTRAVES, METTLER and RHEOMETRIC SCIENTIFIC.



# RHEOLOGY KNOWLEDGE

## > DYNAMIC VISCOSITY $\eta$ (ETA):

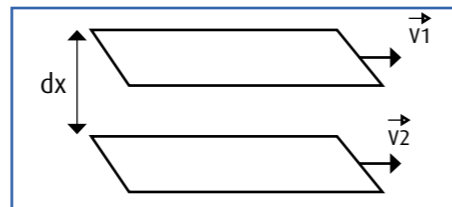
It is defined by the NEWTON equation:  
And quantify measurement of internal friction of fluid.  
His determination needs apply the fluid a Shear rate ( $D$ ),  
and measure the resistant Shear stress ( $\tau$ ).

$$\tau = \eta \cdot D \text{ in Pa.s}$$

For memory:  
**1 Pa.s = 10 Poises** or  
**1 mPa.s = 1 cPoises**

## > SHEAR RATE: $D$ ( $\dot{\gamma}$ )

is the shearing which subjected by the product in the application. It is known for measuring geometries with small gap. It is not the speed of rotation of the bob (in rpm!).



Either a sheared fluid, by a laminar move ( $dV$ ), between two parallel plates with a surface ( $S$ ) and separate by a distance  $dx$ .

$$D = dV / dx \text{ in } s^{-1}$$

## > SHEAR STRESS: $\tau$ (TAU)

There is the shearing force  $F$ , with which the sample answers to the shear rate  $D$ , divided by the contact surface  $S$ .

$$\tau = F / S \text{ in Pa (N / m}^2\text{)}$$

## > RHEOLOGY:

There is the "science" of "flow".  
Associated physical measurements, realised with the hand of **Rheometers**, enables the visualisation of the behaviour of the product in various flow, temperature and time conditions.

## > RHEOGRAMS:

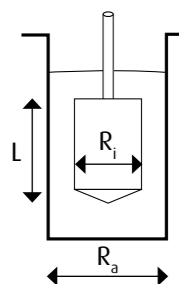
Displayed curves of the flow behaviour of a fluid.  
The curves  $\tau = f(D)$  enables, by adapted fitting, the access to direct related parameters with the application.

## > ROTATING VISCOMETER:

### a - With coaxial cylinders

The fluid is sheared between two coaxial cylinders, with radius  $R_i$  and  $R_a$  and a length  $L$ , by a laminar move which are breaking down in multi-layer with different angular speed from  $\omega$  (for the layer in contact with the fixed cylinder) to  $\omega_0$  (for the layer in contact with the rotating bob). The relative move of layers towards others give, a shear rate  $D$  and one Shear stress  $\tau$ .

By imposing  $\omega_0$  and measuring  $M$ , the resisting torque to this rotation, we calculate  $D$  and  $\tau$  according:



$$\delta = Ra / Ri \quad Ri / Ra \geq 0.92$$

Shear stress:  
 $T_{rep} = (1 + \delta^2 / 2) \cdot (M / 2\pi L Ri^2)$

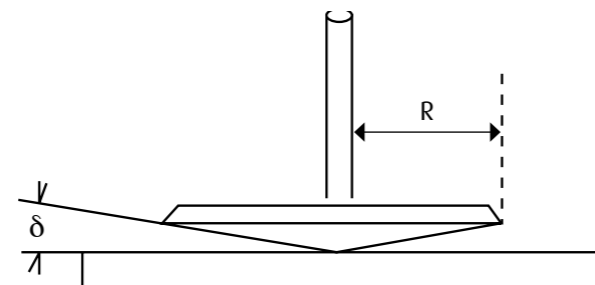
Shear rate:  
 $D_{rep} = \omega \cdot (1 + \delta^2) / (\delta^2 - 1)$

Rq: The determination of  $D$  is possible only if the gap is small. (i.e. DIN/ISO 3219 Standard).

### b - With Cone-Plate:

The fluid is placed between a Plate and a Cone with angle  $\delta$  ( $< 3^\circ$ ).

The cone, maintained to a constant speed induce a laminar shearing move. In those conditions,  $\tau$  and  $D$  are constant in the gap, according:



Shear stress	/	Shear rate
$T = 3M / 2\pi R^3$	/	$D = \omega / \text{arc } \delta$

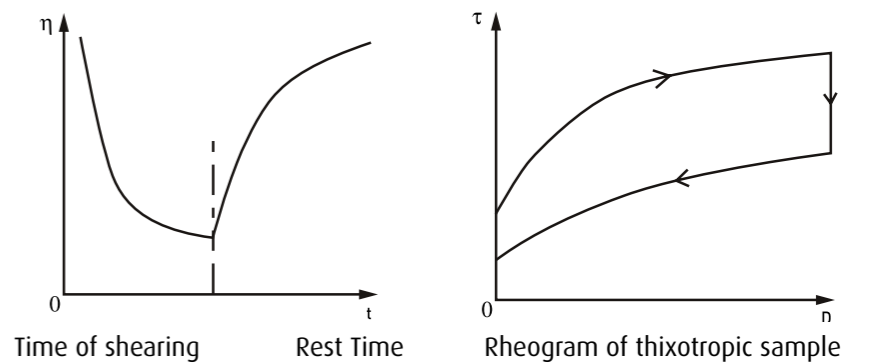
Rq: Be vigilant on the sample volume included in the gap, because of the great influence of the radius  $R$  on the  $\tau$  value!

## > STUDY OF DIFFERENT RHEOLOGICAL BEHAVIOURS

Type	Newtonian	Pseudo-plastic	Plastic	
Description	A sample is named newtonian when his viscosity stay constant, whatever the shear rate is. It is not necessary to define exactly the shear rate for the measurement. Just the temperature is important.	One pseudo-plastic sample has a viscosity which decrease when the shear rate increase: this flow behaviour is due to the molecules form and to their internal structure.	One sample presents a plastic behaviour, when his viscosity decrease when the shear rate increase, but from one original shear stress upper than 0, called <b>YIELD VALUE</b> ( $\tau_0$ ), shear stress under which the product doesn't flow. It behave like a solid body.	
Rheogram				
Viscosity				
Examples	Water: 1 mPa.s to 20° C Oils: 150 to 400 mPa.s (motor) 300 to 800 mPa.s (gears) Mercury: 1.5 mPa.s Gas: 0.01 to 0.02 mPa.s	- Coating, - Varnish, - Cosmetics, - Mineral suspensions...	- Toothpaste, - Ointment, - Grease, - All very concentrated suspensions...	

## > THE THIXOTROPY

One thixotropic product is a sample which the variation of viscosity in function of shear rate is associated to a variation trough the time.  
Owe talk about Thixotropy or Rheopexy, with the condition of REVERSIBLE Transformations: frozen or solidification.



Causes of thixotropy:

- Molecular structure
- "Château de cartes" with layers
- Particules mixing
- Ball loose Package...

# DEALERS

- Australia
- Brazil
- Bulgaria
- Canada
- China
- Croatia
- Egypt
- Germany
- Greece
- Hungary
- India
- Indonesia
- Iran
- Ireland
- Israel
- Italy
- Japan
- Malaysia
- Netherlands
- New Zealand
- Pakistan
- Philippines
- Poland
- Russia
- Singapore
- South Korea
- Spain
- Taiwan
- Tunisia
- Turkey
- Ukraine
- United Arab Emirates
- United Kingdom
- United States
- Vietnam



More details on  
[www.lamyreology.com](http://www.lamyreology.com)

