

**RAY-RAN**

# POLYTEST

## 5 SERIES

Advanced Melt Flow System



WORLD WIDE

TESTING FOR QUALITY

# RAY-RAN

## 5 Series Advanced Melt Flow System

FEATURE	MODEL	5 MPCA	5 SA	5 MBA
Fully Microprocessor controlled Test Procedure	•			
Semi-Automatic Controlled Test Procedure		•		
Manual Operated Test Procedure	•	•	•	•
RS 232 Serial Output for Computer Link	•			
Ray-Ran <i>RedlinkW</i> Windows Software	•			
Built-in Printer for Hard Copy Test Results	•			
Key Pad Data Entry	•	•		
Digital Temperature Control	•	•	•	•
Variable Distance Piston Travel Measurement (0.01mm Resolution)	•	•		
Density Determination at Test Temperature	•	•		
Multi-Slicing Feature (with Histogram Software)	•			
Viscosity Measurement	•			
Shear Rate Measurement	•			
Shear Stress Measurement	•			
Statistical Analysis Averages Standard Deviation	•			
Standard Test Die	•	•	•	•
Piston Assembly	•	•	•	•
Replaceable Cylinder Liner	•	•	•	•
Cylinder Level Indicator	•	•	•	•
Weight Loader incorporating Hold Back and Purge Facility	•			
Full Complement of Tools for Loading and Cleaning	•	•	•	•
2.160kg Test Load	•	•	•	•
Graduated Polymer Loading Shuttle	•	•	•	•
Traceable Calibration Certificates	•	•	•	•

Piston Travel Sensor via High Resolution Encoder

Replaceable Cylinder Liner in High Carbon Steel

Digital Temperature Control Range 0 - 400°C

4 Line LCD with Auto Prompt Procedure

Data Entry via Membrane Keypad

Simple Yes/No Logic Control

Full Complement Tool kit in Easily Accessable Draw

### Ancillaries

- Test Loads up to 50kg
- Roll Cleaning Swabs
- Hastelloy Anti-Corrosive Cylinder Liner, Piston and Die
- Special Dies to any Length and Bore Size including ASTM 3364 1 inch Conical and Jet 'B' 1mm
- Calibrated Gauges

The Ray-Ran range of Melt Flow Indexers have been designed to conform to the following International Standards:

**ASTM D1238**      **BS 2782**  
**ISO E1133**        **UNI 5640-74**  
**UNE 53098**        **AFNOR TSI-016**  
**ASTM D3364**      **NPT 51-016**  
**DIN 53 735**

Multi-Slicing feature giving 20 MFI's over 35mm or 20 MFI's over 5mm of travel in one sample test. Hard copy print-out of results giving Statistical Analysis, Averages and Standard Deviation with Histograms

Weight Loader with Purge and Hold Back facility for low and high MFI's. Test Loads to cover all International Standards up to 50kg



RS 232

## HA RD COPY RESULTS

M.F.I. Test Results Printout

### Test Parameters

Date Performed : 25/19/96  
 Operator ID No. : 16957  
 Material Reference : 3280  
 Batch Reference No.: 9081  
 Test Temperature : 190.0 °C  
 Material Density : 0.6217 g/cc  
 Test Weight : 02.16 kg  
 Preheat Time : 360 secs  
 Shear Stress : 19663.33 P

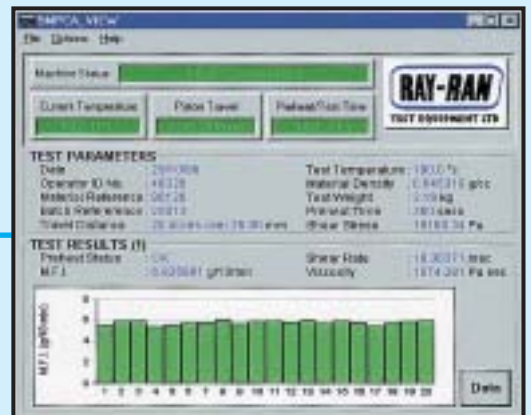
20 Slices Over 35.00 mm

Test Results (Number 1)  
 Preheat Status OK

Slice No. M.F.I. (g/10 min)

1	6.976876
2	6.856263
3	6.484725
4	6.449551
5	6.267255
6	6.374523
7	6.295255
8	6.186357
9	6.225822
10	6.184555
11	6.494864
12	6.522864
13	6.554753
14	6.535447
15	6.556578
16	6.519384
17	6.557257
18	6.675434
19	6.745567
20	6.845777

Average M.F.I. 6.826981 g/10 mins  
 St. Deviation: 1.123512  
 Shear Rate: 18.30371 1/secs  
 Viscosity: 1074.281 P/sec



# RAY-RAN 5 Series Advanced Melt Flow System

- All Ray-Ran products meet the requirements of **CE** legislation and are supplied with appropriate markings and certification.
- The Modular System is designed to allow any of the advanced systems to be added to the basic apparatus at a later date. Model 5MBA (Manual Basic Apparatus), Model 5SA (Semi-Automatic) & Model 5MPCA (Microprocessor Controlled Automatic).

## Calibration

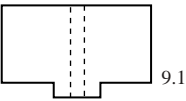
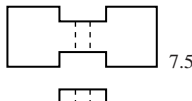
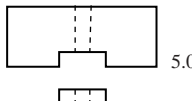
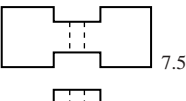
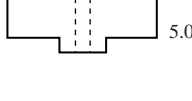
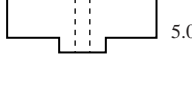
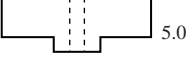


Ray-Ran offers a full calibration service on all MFI's with full traceable certification. A 24 hour turn around service is guaranteed.

## Demonstration

Ray-Ran offers a full demonstration facility for the whole range of it's products. Customers are welcome for a no obligation demonstration on any of our equipment, testing their own materials if required.

## Spares and Ancillaries

All ancillary items, including Glass Thermometers, Test Dies, Pistons, tools etc. for any make of MFI are available ex-stock at very competitive prices. For a price list please contact our sales office. Telephone: (01203) 342002

Load	Actual Weight	21.60kg load	12.50kg load	10.00kg load
0.325kg	Piston Complete			
1.000kg	0.675 + Piston Complete			
1.050kg	0.725 + Piston Complete			
1.200kg	0.875 + Piston Complete			
2.160kg	1.835 + Piston Complete			
3.800kg	3.475 + Piston Complete			
5.000kg	4.675 + Piston Complete			
10.000kg (2pcs)	4.675 + 5.000 + Piston Complete			
12.500kg (2pcs)	4.675 + 7.500 + Piston Complete			
21.600kg (3pcs)	4.675 + 7.500 + 9.100 + Piston Complete			

**NB** The 5kg (4.9) is common to the 10.0 - 12.5 - 21.6kg loads  
The 7.5kg weight is common to the 12.5 and 21.6kg load

## Standard Test Conditions, Temperature, and Load

Condition		Temp °C	Total Load Including Piston. kg	Approximate Pressure	
Obsolete For reference only	Standard Designation			kPa	psi
A	125/0.325	125	0.325	44.8	6.5
B	125/2.16	125	2.16	298.2	43.25
C	150/2.16	150	2.16	298.2	43.25
D	190/0.325	190	0.325	44.8	6.5
E	190/2.16	190	2.16	298.2	43.25
F	190/21.60	190	21.60	2982.2	432.5
G	200/5.0	200	5.0	689.5	100.0
H	230/1.2	230	1.2	165.4	24.0
I	230/3.8	230	3.8	524.0	76.0
J	265/12.5	265	12.5	1723.7	250.0
K	275/0.325	275	0.325	44.8	6.5
L	230/2.16	230	2.16	298.2	43.25
M	190/1.05	190	1.05	144.7	21.0
N	190/10.0	190	10.0	1379.0	200.0
O	300/1.2	300	1.2	165.4	24.0
P	190/5.0	190	5.0	689.5	100.0
Q	235/1.0	235	1.0	138.2	20.5
R	235/2.16	235	2.16	298.2	43.25
S	235/5.0	235	5.0	689.5	100.0
T	250/2.16	250	2.16	298.2	43.25
U	310/12.5	310	12.5	1723.7	250.0
V	210/2.16	210	2.16	298.2	43.25
W	285/2.16	285	2.16	298.2	43.25
X	315/5.0	315	5.0	689.5	100.0

## Procedural Conditions

The following conditions have been found satisfactory for the materials listed

Material	Condition	
Acetals (copolymer and homopolymer)	190/2.16	190/1.05
	230/1.2	230/3.8
	200/5.0	230/3.8
Acrylonitrile-butadiene-styrene	190/0.325	190/2.16
	190/21.60	210/2.16
Cellulose esters	275/0.325	235/1.0
	235/2.16	235/5.0
Nylon	265/12.5	
	310/12.5	
Polychlorotrifluoroethylene	265/12.5	
	310/12.5	
Polyethylene	125/0.325	125/2.16
	190/21.601	190/10
	310/12.5	
Polycarbonate	300/1.2	
	230/2.16	
Polypropylene	200/5.0	230/1.2
	230/3.8	190/5.0
Polystyrene	250/2.16	210/2.16
	285/2.16	
Polyterephthalate	150/2.16	
	315/5.0	
Poly(vinylacetal)		
Poly(phenylene sulfide)		

ELECTRICAL SPECIFICATION	220/240 volts	50 Hz
	110/120 volts	60 Hz