

# DART DROP IMPACT/TOTAL ENERGY SYSTEM DDI/TE

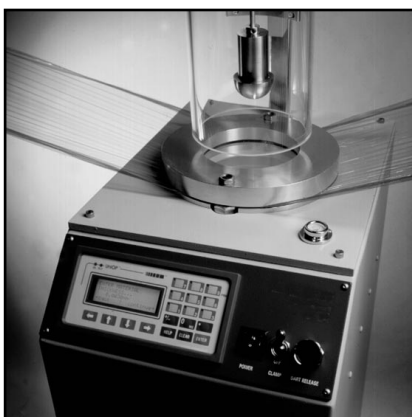


**SERIES  
DDI/TE**

The Total Energy System option for the DDI Dart Drop Impact Tester is a comprehensive laboratory tool used to measure the impact toughness of plastic films and sheeting.

Designed to meet ASTM D4272, the Total Energy System determines the total energy impact of plastic films by measuring the kinetic energy lost by a free-falling dart that passes through the specimen. The TE system evaluates the impact toughness of materials in applications such as the manufacturing of plastic films, packaging and construction materials. ASTM D1709 may continue to be performed when used with the appropriate weighted darts.

The Total Energy System option features a simple, easy-to-use keyboard and multi-line LCD display. The operator is prompted



through setup, allowing input of test parameters such as drop height, dart mass and test operation. This step-by-step system also allows annotation of sample and test information such

as material type, thickness, dart size, type of failure and free-fall time. The kinetic energy required to penetrate the film is calculated and displayed in SI (J) or English (ft/lb) units. For replicate samples, test results are averaged and the standard deviation is calculated. An optional serial printer can be connected to the DDI/TE for complete hard copy reports.



## PROCEDURE

A weighted free falling dart passes through a plastic film specimen. The velocity of the dart is measured by the photoelectronic system within the instrument. The loss of

kinetic energy caused by the penetration of the film specimen is calculated. This loss of energy represents the impact toughness of the specimen.

## TECHNICAL FEATURES

- Designed to meet ASTM D4272
- Easy-to-read multi-line LCD display
- Complete annotation of test parameters
- Test and specimen data available in
- SI or English units
- Optional serial printer available for hard copy output of test results
- Field retrofittable to existing DDI instruments

ENTER MATERIAL  
THICKNESS...  
0.0030mm  
sback continue

*Front panel LCD allows for specimen annotation of materials.*

AVERAGE IMPACT  
ENERGY 0.4194J  
STD DEV 0.0283J  
done

*For replicate samples, the DDI/TE calculates standard deviation.*

## SPECIFICATIONS

### DIMENSIONS:

Size (For DDI Instrument)  
34 W x 51 D x 323 H cm  
13.25 x 20.25 x 127 in

### ELECTRICAL REQUIREMENTS:

100V, 50 Hz, 1 ph  
120V, 60 Hz, 1 ph  
220V, 50/60 Hz, 1 ph

### AIR SUPPLY:

Compressed air  
Clean, dry  
Pressure  
4.8 bars (70 psi)  
Flow rate  
2.8 litres/minute (0.1 cfm)  
4.8 bars (70 psi)  
Flow rate  
2.8 litres/minute (0.1 cfm)

### OPTIONS:

Serial printer  
Darts and weights for:  
ASTM D1709  
ISO 7765-1

### DART SPECIFICATIONS:

(For ASTM D4272)  
Mass 1.59 kg (3.5 lbs)  
Hemispherical head 38.1 mm (1.5 in) diameter

### ADD-ON WEIGHTS:

(For ASTM D4272)  
Quantity 5 included  
Mass (each) 227 g (0.5 lb)  
Diameter 31.8 mm (1.25 in)

### REFERENCE SPECIFICATIONS:

ASTM D4272

DDI TOTAL ENERGY SYSTEM VERSION 1.0			
TEST REPORT			
TEST DATE:	08-AUG-97		
TEST METHOD:	ASTM D4272		
TEST ID:	000000000002		
MATERIAL ID:	000000000001		
MATERIAL ID:	POLYETHYLENE		
DROP HEIGHT:	0.66 m		
DART MASS:	0.454 kg		
DART DIAMETER:	38.1 mm		
FREE-FALL TIME:	0.031070 s		
SPECIMEN #	BREAK TYPE	DROP TIME	IMPACT ENERGY
1	HOLE	0.045266 s	2.8825 J
2	SHATTER	0.045276 s	2.8837 J
3	TEAR	0.045258 s	2.8816 J
4	STRETCH	0.045260 s	2.8819 J
5	HOLE	0.045282 s	2.8843 J
6	OTHER	0.045278 s	2.8839 J
7	SHATTER	0.045276 s	2.8837 J
8	HOLE	0.045274 s	2.8834 J
9	TEAR	0.045262 s	2.8821 J
10	HOLE	0.045280 s	2.8841 J
		AVERAGE IMPACT ENERGY:	2.8831 J
		STANDARD DEVIATION:	0.0010 J

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