



Accessories for CEAST Impact Systems







## CEAST Impact Systems Accessories

Second Edition



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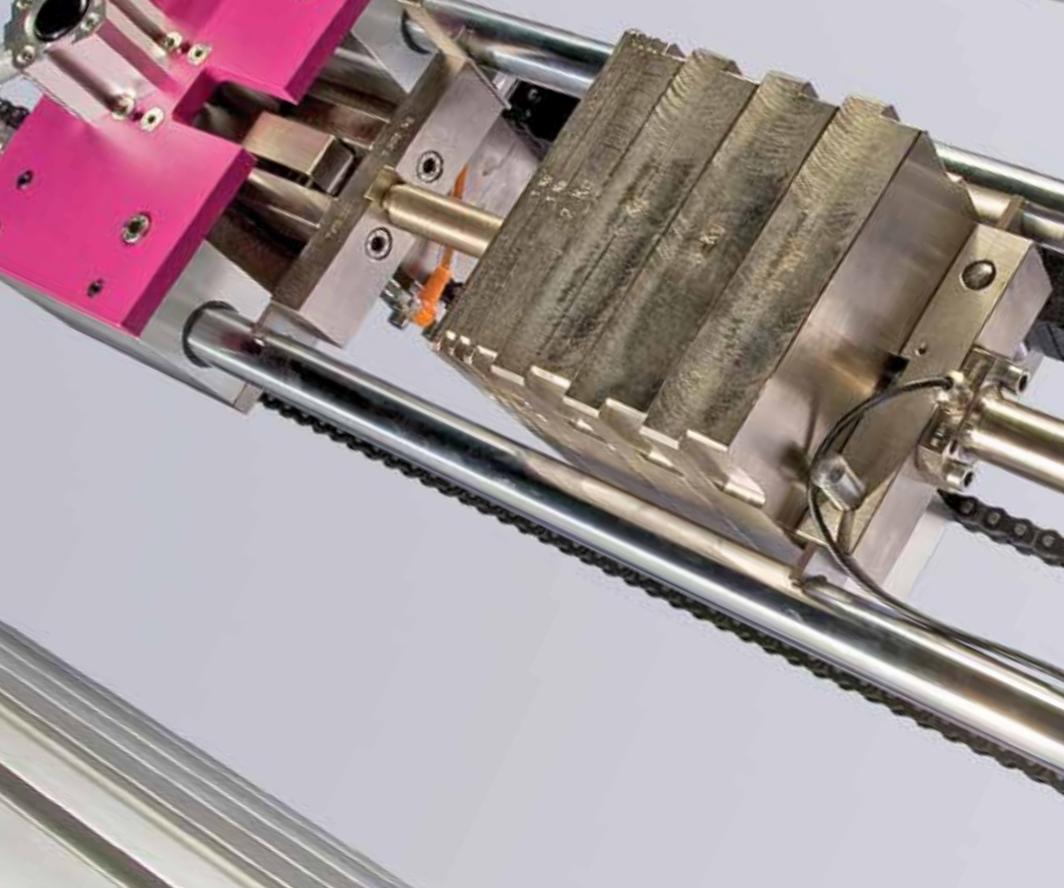
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## Drop Tower Accessories

The CEAST 9300 Series Drop Tower Impact Systems share the same state-of-the-art technology: reliability, safety, high-end technical specifications, and modularity. All models are designed to accomplish different testing needs whether the testing is performed on components or in accordance with a standard. The CEAST 9300 Series drop towers consist of the tabletop CEAST 9310, and the floor-standing CEAST 9340 and 9350. Frame options are available for retrofitting, including an anti-rebound system, environmental chambers, and loading systems. Various sizes and capacities of the tups and inserts can be fitted and changed. These accessories are available for many applications including puncture, compression after impact (CAI), tensile impact, and wedge peel testing.



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Description	9310	9340	9350
<b>1</b> Anti-Rebound System	•	•	•
<b>2</b> Environmental Chamber		•	•
Additional Height		•	•
<b>3</b> Additional Energy System			•
<b>4</b> Pivoting Specimen Loader			•
<b>5</b> Automatic Specimen Feeding System			•

# Optional Frame Features

## Anti-Rebound System

The absorbed kinetic energy of the falling crosshead can cause a rebound during drop events. The anti-rebound system prevents secondary impacts on the sample and can catch even the heaviest crosshead.

## Environmental Chamber

Many components and materials are subjected to conditions above or below ambient temperatures. To simulate impact performance under these environmental conditions, the CEAST 9300 Series can be fitted with an environmental chamber, which cools specimens to  $-70^{\circ}\text{C}$  ( $-94^{\circ}\text{F}$ ) or heats them up to  $150^{\circ}\text{C}$  ( $302^{\circ}\text{F}$ ). Air is circulated throughout the chamber, providing uniform temperature distribution to eliminate hot or cool spots.

## Additional Height

We offer a steel base that lifts the drop tower by 300 mm (12 in). This extra height allows easier access to the test space.

## Additional Energy System

This option increases the maximum energy of the CEAST 9350 system from 755 to 1800 Joules (1327.6 ft-lb). The spring-assisted velocity system accelerates the crosshead to increase the maximum impact energy with speeds up to 24 m/s (78.7 ft/s) with a 2 kg (4.4 lb) mass and 7 m/s (23 ft/s) with a 70 kg (154 lb) mass.

## Pivoting Specimen Loader

The pivoting specimen loader can test up to 10 specimens in rapid sequence within the environmental chamber.

## Automatic Specimen Feeding System \*

The specimen feeding system performs tests in an automatic cycle within the environmental chamber and tests up to 120 samples per hour. This system is designed to meet the demand for automation where intensive, high-volume testing is required.

\*Must be added with initial purchase. It cannot be added in the field.

## Top Holders

A range of top holders and additional weight sets are available for the CEAST 9300 Series Drop Towers. Used to tailor the energy requirements to meet your needs, they reduce the minimum energy or add to the maximum energy available.

CEAST 9350

Catalog Number	Description	Weight Range		Energy Range		Maximum Energy*		Velocity Range	
		kg	lbs	J	ft-lbs	J	ft-lbs	m/s	ft/s
1 7520.022	Lightweight Top Holder	2.0 to 5.0	4.4 to 11.0	0.59 to 54.0	0.44 to 39.8	833	614	0.77 to 4.65	2.53 to 15.3
2 7520.021	Standard Weight Top Holder	5.0 to 30.0	11.0 to 66.0	1.47 to 329	1.08 to 243	1327	979	0.77 to 4.65	2.53 to 15.3
7520.026	Additional Weight Set for Standard and Reinforced Top Holders	Up to 70.0	154	Up to 757	558	1800	1330	0.77 to 4.65	2.53 to 15.3
7520.935	Reinforced Top Holder for 222 kN (50,000 lb) Top	6.0 to 31.0	13.0 to 68.0	1.77 to 334	1.30 to 246	1327	979	0.77 to 4.65	2.53 to 15.3

Note: The weight range includes an average top and insert weight of 0.7 kg (1.54 lbs)

\* With High-Energy System

CEAST 9340

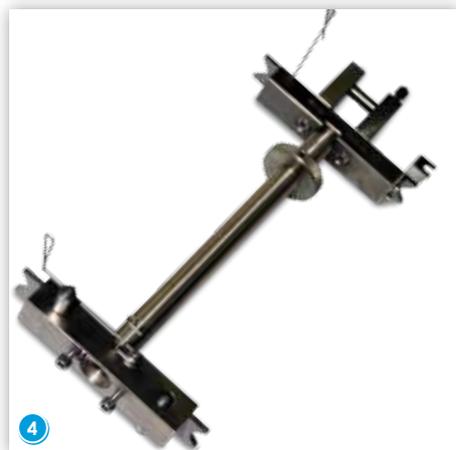
Catalog Number	Description	Weight Range		Energy Range		Velocity Range	
		kg	lbs	J	ft-lbs	m/s	ft/s
3 7510.022	Lightweight Top Holder	1.0 to 3.5	1.20 to 7.72	0.30 to 37.8	0.21 to 27.9	0.77 to 4.65	2.53 to 15.3
4 7510.021	Standard Weight Top Holder	3.0 to 22.5	6.61 to 49.6	0.88 to 243	0.65 to 179	0.77 to 4.65	2.53 to 15.3
7510.026	Additional Weight Set for Standard Weight Top Holder	37.5	82.7	405	299	0.77 to 4.65	2.53 to 15.3

Note: The weight range includes an average top and insert weight of 0.5 kg (1.10 lbs)

CEAST 9310

Catalog Number	Description	Weight Range		Energy Range		Velocity Range	
		kg	lbs	J	ft-lbs	m/s	ft/s
5 n/a	Standard Top Holder	0.5 to 3.00	1.10 to 6.83	0.15 to 21	0.11 to 15.49	0.77 to 3.7	2.53 to 12.14

Note: The weight range includes an average top and insert weight of 0.2 kg (1.10 lbs)





## Tups and Inserts

The tup is the heart of the drop tower; it's the piece that impacts the sample or component. This mechanical component comes in diverse shapes, sizes, and weights. Most tups can be purchased with sensors to perform instrumented impact tests, as well as interchangeable inserts (the head of the tup). The required capacity is dependent on the application and based on the expected maximum load, not the machine's energy capacity.

### Instrumented Tups

Instrumented tups are designed with either a strain gauge or piezoelectric sensor embedded in the tup insert. These devices capture the impact and transform it into an electric signal, which is collected by a data acquisition system so the user can see a picture of the impact.

Instrumented tups are available in a range of shapes and sensors to comply with various testing standards.

### Un-Instrumented Tups

Un-instrumented tups are used for tests where "break" or "no break" type results are required. These devices have a geometrical shape that is defined by a test standard. In cases where un-instrumented tups are designed to work with tensile-impact and adhesive-impact fixtures, the force sensor is installed in the application-specific fixture.

### Strain Gauge Sensor

As the more robust tup inserts, strain gauge sensors are recommended for impact testing of materials that are made from composites, fail in a ductile mode, and are anticipated to have load values more than 5 kN (1124 lbs).

### Piezoelectric Sensor

These higher-frequency tup inserts are ideal when testing fairly brittle or light-load materials, such as thin films.

# Strain Gauge Tups and Inserts

CEAST 9350 Strain Gauge (Type 1) Tups

Catalog Number	Capacity		Minimum Insert Diameter (For Puncturing Test)	
	kN	lbs	mm	in
7529.301	22	5,000	10	0.394
7529.302	45	10,000	20	0.787
7529.303	90	20,000	20	0.787
7529.304	222	50,000	20	0.787

CEAST 9340 Strain Gauge (Type 1) Tups

Catalog Number	Capacity		Minimum Insert Diameter (For Puncturing Test)	
	kN	lbs	mm	in
7519.301	22	5,000	10	0.394
7519.302	45	10,000	20	0.787
7519.303	90	20,000	20	0.787

Tup Inserts for Strain Gauge (Type 1) Tups

Catalog Number	Description	Testing Standards	Tup Compatibility
7529.310	10 mm (0.394 in) Ø Hemispherical	ISO 6603-1,-2, ISO 7765-1,-2	7529.301
7519.310			7519.301
7529.311	12.7 mm (1/2 in) Ø Hemispherical	ASTM D3763, ASTM D7192, ASTM D5628 Method FD	7529.301
7519.311			7519.301
7529.313	20 mm (0.787 in) Ø Hemispherical	ISO 6603-1,-2, ISO 7765-1,-2 ASTM D5628 Method FE	All Strain Gauge (Type 1) Tups
7529.320	10 mm (0.394 in) Ø Hemispherical (For Non-Puncturing Test)	ISO 6603-1,-2, ISO 7765-1,-2	
7529.321	12.7 mm (1/2 in) Ø Hemispherical (For Non-Puncturing Test)	ASTM D3763, ASTM D7192, ASTM D5628 Method FD	
7529.322	16 mm (5/8 in) Ø Hemispherical (For Non-Puncturing Test)	ASTM D7136/7136M, Airbus AITM 1.0010, PR-EN 6038, ISO 18352, Boeing BSS 7260, SACMA 2R-94	
7529.324	25.4 mm (1 in) Ø Hemispherical	-	
7529.325	38.1 mm (1 1/2 in) Ø Hemispherical	ASTM D5628 Method FC	
7529.329	6.35 mm (1/4 in) Radius Conical, 25.4 mm Ø (1 in) Base	ASTM D5628 Method FB	
7529.330	Plastics Charpy Insert	ISO 179-2	
7529.331	Plastics Charpy Insert	ASTM D6110	
7529.332	Plastics Charpy Insert	ISO 180, ASTM D256	
7529.335	Metals Charpy Insert, 8 mm Tip Radius	ASTM E23, ISO 148	
7529.336	Metals Charpy Insert, 2 mm Tip Radius	ISO 148, DIN 50115, EN 10045	
7529.337	Metals IZOD Insert	ASTM E23	
7529.340	Metals DWTT Insert	ASTM E208	
7529.350	50 mm Ø Flat Faced	-	
7529.360	12.7 mm (1/2 in) Radius Conical, 50.8 mm Ø (2 in) Base	ASTM D2444 - Type A	
7529.361	50.8 mm (2 in) Radius Conical, 50.8 mm Ø (2 in) Base	ASTM D2444 - Type B	
7529.362	12.7 mm (1/4 in) Radius Conical, 50.8 mm Ø (2 in) Base	ASTM D2444 - Type C	

# Piezo Tups and Inserts

CEAST 9350 Piezo  
(Type 2) Tups

Catalog Number	Capacity		Minimum Insert Diameter	
	kN	lbs	mm	in
	7529.694	4.5	1,000	12.7
7529.696	22	5,000	12.7	0.50
7529.601	0.45	100	20	0.787
7529.604	4.5	1,000	20	0.787
7529.606	22	5,000	20	0.787

CEAST 9340 Piezo  
(Type 2) Tups

Catalog Number	Capacity		Minimum Insert Diameter	
	kN	lbs	mm	in
	7519.694	4.5	1,000	12.7
7519.696	22	5,000	12.7	0.50
7519.601	0.45	100	20	0.787
7519.604	4.5	1,000	20	0.787
7519.606	22	5,000	20	0.787

Tup Inserts for Piezo  
(Type 2) Tups

Catalog Number	Tup Adapter	Description	Standards	Tup Compatibility
7529.801	-	12.7 mm (1/2 in) Ø Hemispherical	ASTM D3763, ASTM D7192, ASTM D5628 Method FD	7529.694 7519.694
7529.802	-	12.7 mm (1/2 in) Ø Hemispherical	ASTM D3763, ASTM D7192, ASTM D5628 Method FD	7529.696 7519.696
7529.803	-	15.875 mm (5/8 in) Ø Hemispherical	ASTM D35628 Method FA	7529.694 7519.694 7529.696 7519.696
7529.825	-	16 mm (5/8 in) Ø Hemispherical	ASTM D7136/7136M, Airbus AITM 1.0010, PR-EN 6038, ISO 18352, Boeing BSS 7260, SACMA 2R-94	7529.694 7519.694 7529.696 7519.696
7529.826	7529.894	16 mm (5/8 in) Ø Hemispherical (For non-puncturing test)	ISO 6603-1,-2, ISO 7765-1,-2, ASTM D5628 Method FE	All Piezo (Type 2) Tups
7529.804		20 mm (0.787 in) Ø Hemispherical		
7529.830	50mm Ø Flat Faced	-		
7529.806	25.4 mm (1 in) Ø Hemispherical	-		
7529.840	7529.896	6.35 mm (1/4 in) Radius Conical, 25.4 mm Ø (1 in) Ø Base	ASTM D5628 Method FB	
7529.807		38.1 mm (1/2 in) Ø Hemispherical	ASTM D5628 Method FC	
7529.812	7529.894	Plastic Charpy Insert	ISO 179-2	
7529.811		Plastic Charpy Insert	ASTM D6110	
7529.810		Plastics IZOD Insert	ISO 180, ASTM D256	



1



2

Test fixtures, a key component of the CEAST 9300 Series Drop Towers, are designed to test to a wide range of standards, components, and products. The fixture set includes a stand, where the specimen rests, and clamping mechanisms that push the specimen against the stand and hold it securely in place during an impact test.

### 1 Fixed-Height Stand - 7520.031

The fixed-height stand positions each sample so that a tup strikes it during an impact test. The design accommodates specimens with a thickness up to 25 mm (1 in), making it an ideal solution for testing films and plates. It can also be used for Charpy and Izod tests.

### 2 Adjustable Height Stand - 7520.035

This stand is equipped with a flexible base that can travel 100 mm (3.9 in) through simple, screw-action adjustments. This adjustable design accommodates specimens with a thickness up to 195 mm (7.67 in), making it an ideal solution for films, plates, tubes, and components. It can also be used for both Charpy and Izod tests in combination with adapter 7520.039.

## Puncture Testing

Clamping plates for the CEAST 9350 and CEAST 9340 use a pneumatic system to push the sample against the test stand, holding it securely in place during the impact test. For the CEAST 9310, clamps are manually operated. Customized plates are available upon request.



Clamping Plates for Rigid Plastics on CEAST 9350 and CEAST 9340

3

Catalog Number	Clamping Diameter		Testing Standards	Compatible Stands
	mm	in		
7520.041	38.10	1.50	ASTM D5628 Geometry FB	7520.031 or 7520.035 and 7520.039
7520.042	40.00	1.57	ISO 6603-1, ISO 6603-2 and ASTM D5628 Geometry FE	
7520.043	76.00	3.00	ASTM D3763, ASTM D5628 Geometry FA and FD	
7520.044	100.00	3.94	ISO 6603-1 and ISO 6603-2	
7520.046	127.00	5.00	ASTM D5628 Geometry FC	
7520.056	32.00 (internal)	1.26	Montell Method MA 17238	
	39.00 (external)	1.54		

Clamping Plates for Films on CEAST 9350 and CEAST 9340

Catalog Number	Clamping Diameter		Testing Standards	Compatible Stands	Clamping Surface
	mm	in			
7520.050	40.00	1.57	ISO 7765-2	7520.031 or 7520.035 and 7520.039	Undulated
7520.054	40.00	1.57	ISO 7765-2		Rubber
7520.051	76.00	3.00	ASTM D3763		Rubber
7520.052	125.00	4.92	ISO 7765-1		Rubber
7520.053	127.00	5.00	ASTM D1709		Rubber
7520.055	100.00	3.94	-		Rubber

Clamping Plates for Rigid Plastics and Film on CEAST 9310

Catalog Number	Clamping Diameter		Testing Standards
	mm	in	
6887.050	40.00	1.57	ISO 7765-2
6887.051	76.00	3.00	ASTM D3763
6887.052	127.00	5.00	ASTM D1709

# CAI Testing

Compression After Impact (CAI) testing is common for composite materials and standards including Boeing BMS-7260, SACMA 2R-94, ASTM D7136/M, and Airbus AITM 1.0010. The fixture and insert varies for each test, and the crosshead weight is very important. The anti-rebound system is required for all standards, while a tup and insert are required to complete the configuration and must be chosen based on the expected maximum load.

CAI Testing Fixtures for CEAST 9350 and CEAST 9340

Catalog Number	Description	Window Size		Specimen Size		Testing Standards
		mm	in	mm	in	
7520.350	CAI Impact Fixture, Metric (Aluminum Top Plate)	75.0 × 125.0	2.95 × 4.92	100.0 × 150.0	3.94 × 5.91	ASTM D7136M
7520.351	CAI Impact Fixture, Imperial (Aluminum Top Plate)	76.2 × 127.0	3.00 × 5.00	101.6 × 152.4	4.00 × 6.00	ASTM D7136 SACMA 2R-94
7520.352	CAI Impact Fixture, Metric (Steel Top Plate)	75.0 × 125.0	2.95 × 4.92	100.0 × 150.0	3.94 × 5.91	ASTM D7136M, Airbus AITM 1.0010, PR-EN 6038, ISO 18352
7520.353	CAI Impact Fixture, Imperial (Steel Top Plate)	76.2 × 127.0	3.00 × 5.00	101.6 × 152.4	4.00 × 6.00	ASTM D7136, Boeing BSS 7260 Class II



# Pipe Testing

Our pipe testing fixtures feature a V-grooved design to hold cylindrical specimens up to 160 mm (6.30 in) and it complies with ASTM D2444. A tup and insert are required to complete the configuration and must be chosen based on the expected maximum load.

Pipe Testing Fixtures for CEAST 9350 and CEAST 9340

Catalog Number	Specimen Size		Testing Standards	Compatible Stands
	mm	in		
1 7520.210	25.0 to 65.0	0.98 to 2.56	ASTM D2444	7520.035
2 7520.212	80.0 to 160.0	3.15 to 6.30	ASTM D2444	7520.035
3 7520.215	Small Pipes and Fittings		ASTM D2444 Type B	7520.035 and 7520.039



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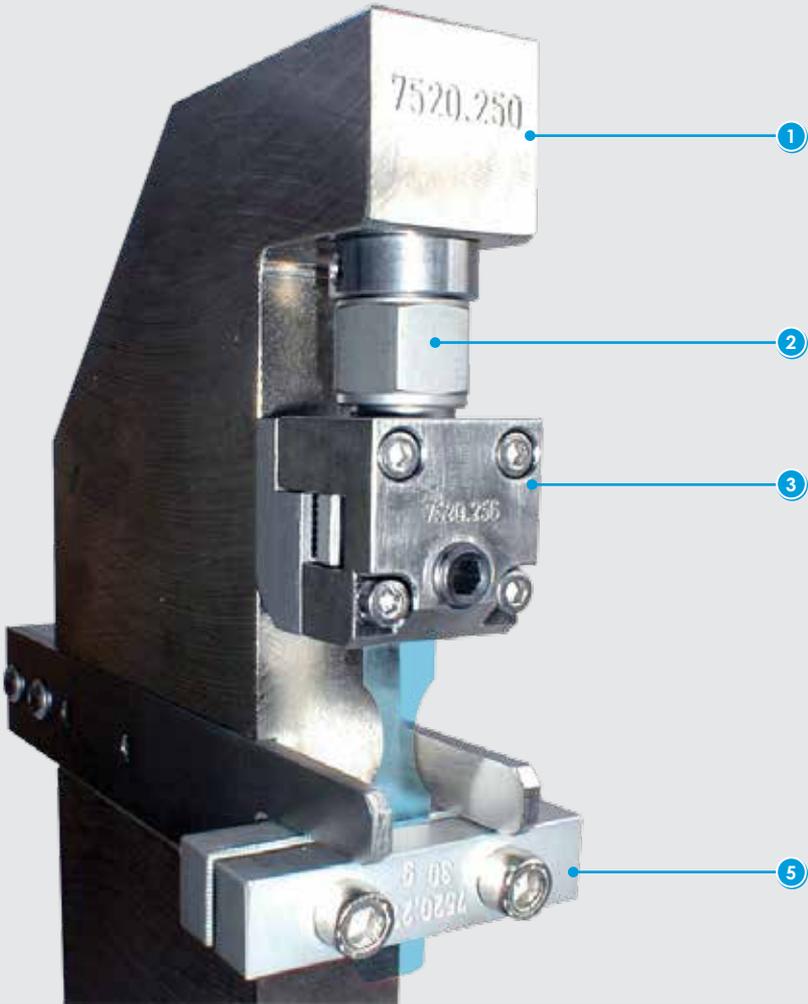
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## Tensile Impact Testing

This instrumented vice is designed to meet ISO 8256 A for tensile impact tests. The fixture is suitable for specimen types 1-2-3-4-5 and equivalents, and includes fixed-height vice supports. The complete fixture requires the selection of a piezoelectric force sensor, a clamping device, and a vice.

Tensile Impact Accessories for CEAST 9350 and CEAST 9340

Catalog Number	Description	Testing Standard
1 7520.250	Instrumented Vice for ISO 8256 A Tensile Impact Tests	ISO 8256 A
2 7520.251	Piezoelectric Force Sensor 2.2 kN	ISO 8256 A
2 7520.252	Piezoelectric Force Sensor 0.45 kN	ISO 8256 A
7520.255	Clamping for Rigid and Film Specimens Types 1 and 3	ISO 8256 A
3 7520.256	Clamping for Rigid and Film Specimens Types 2 and 4	ISO 8256 A
7520.257	Clamping for Rigid Specimens Type 5	ISO 8256 A
4 7520.260	Striker for ISO 8256 A Tensile Impact Test (CEAST 9350)	ISO 8256 A
4 7510.260	Striker for ISO 8256 A Tensile Impact Test (CEAST 9340)	ISO 8256 A
5 7520.271	Tensile Grips - 30 g for Rigid Specimen Types 1, 2, 3 and 4	ISO 8256 A
7520.272	Tensile Grips - 60 g for Rigid Specimen Types 1, 2, 3 and 4	ISO 8256 A
7520.273	Tensile Grips - 120 g for Rigid Specimen Types 1, 2, 3 and 4	ISO 8256 A
7520.276	Tensile Grips - 30 g for Rigid Specimen Type 5	ISO 8256 A
7520.277	Tensile Grips - 60 g for Rigid Specimen Type 5	ISO 8256 A
7520.278	Tensile Grips - 120 g for Rigid Specimen Type 5	ISO 8256 A
7520.281	Tensile Grips - 30 g for Film Specimens Type 1, 2, 3 and 4	ISO 8256 A
7520.282	Tensile Grips - 60 g for Film Specimens Type 1, 2, 3 and 4	ISO 8256 A
7520.283	Tensile Grips - 120 g for Film Specimens Type 1, 2, 3 and 4	ISO 8256 A



# Wedge Peel Testing

The impact wedge peel test is an ISO test method used to measure the resistance of structural adhesives to cleavage fracture at various temperatures and test speeds of 2 and 3 m/s. This common test is used in both the development of new adhesives and the quality control of product batches.



Wedge Peel Accessories for CEAST 9350 and CEAST 9340

	Catalog Number	Description	Testing Standard
1	7520.304	Support Stand, Clamp and 15 kN Strain Gauge Sensor for ISO 11343	ISO 11343
	7520.305	Symmetric Wedge	ISO 11343
2	7520.306	Asymmetric Wedge	ISO 11343
3	7520.310	Striker for ISO 11343 Testing (CEAST 9350)	ISO 11343
3	7510.310	Striker for ISO 11343 Testing (CEAST 9340)	ISO 11343

# Component Testing

Fixtures can be custom designed to test a wide variety of uniquely sized parts and components. Please ask about options for your application if a standard product is not available.



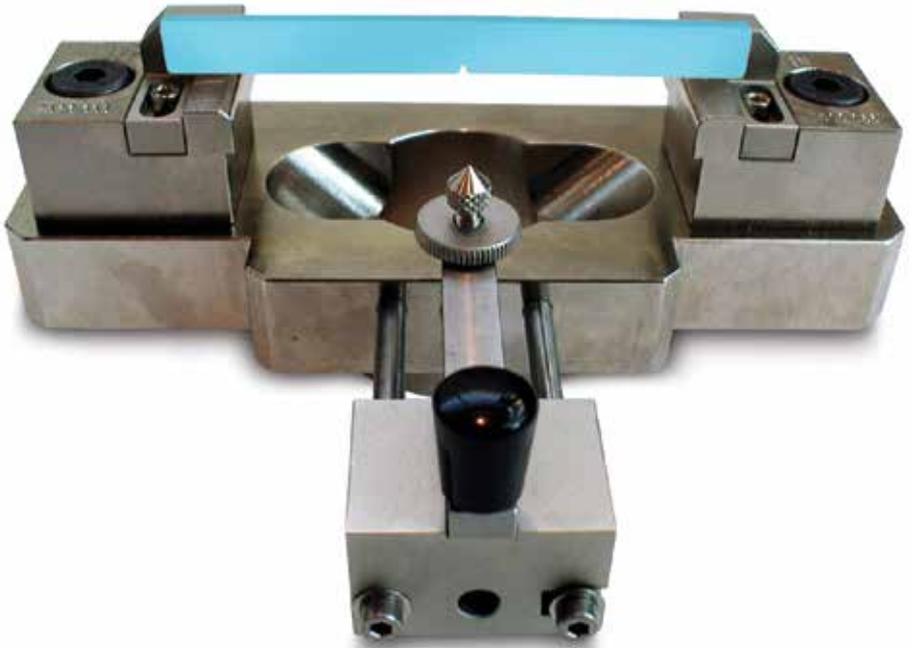
Catalog Number	Description	Size		Compatible Stands
		mm	in	
4 7520.037	General Purpose Plate Stand Mounted	275 × 275	10.83 × 10.83	7520.035
7520.020	General Purpose T-Slot Plate Stand Mounted	370 × 450	14.57 × 17.72	
5 7520.040	General Purpose T-Slot Plate Base Mounted			Mounted on Base

# Charpy Testing

Fixtures are available for testing to ASTM D6110 (formerly ASTM D256), ISO 179, and ASTM E23 Charpy standards. The tup chosen is based on the maximum load expected and is not related to the energy absorbed by the sample.

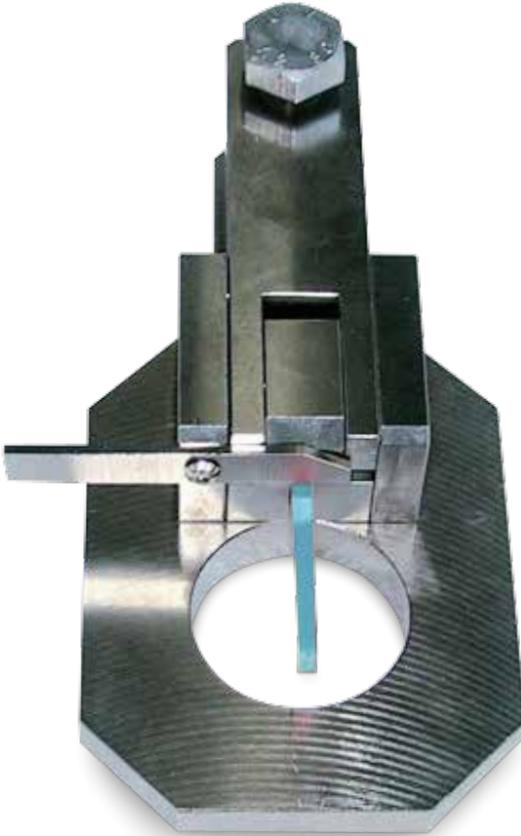
Charpy Testing accessories for CEAST 9350 and CEAST 9340

Testing Standards	Specimen Size		Span		Vice	Shoulders	Stands
	mm	in	mm	in			
ISO 179	4 × 10 × 80	1.57	62	2.44	7520.060	7520.063 (Flatwise)	7520.031 or 7520.035 and 7520.039
						7520.064 (Edgewise)	
ASTM D6110	3.17 × 12.7 × 127	0.125 × 0.50 × 5.00	101.6	4.00		7520.066	
	6.35 × 12.7 × 127	0.25 × 0.50 × 5.00	101.6	4.00			
	12.7 × 12.7 × 127	0.50 × 0.50 × 5.00	101.6	4.00			
ASTM E23	10 × 10 × 55	0.39 × 0.39 × 2.17	40	1.57	7520.069		



# IZOD Testing

Fixtures are available for testing plastics to ASTM D256 and ISO 180 Izod standards.



IZOD Testing Accessories for CEAST 9350 and CEAST 9340

Standard	Specimen Size		Vice	Specimen Adapter	Stands
	mm	in			
ISO 180	4 × 10 × 80	0.16 × 0.39 × 3.15	7520.080	6545.250	7520.031 or 7520.035 and 7520.039
ASTM D6110	3.17 × 12.7 × 127	0.125 × 0.50 × 5.00	7520.080	6545.051 6545.050 6545.124	
	6.35 × 12.7 × 127	0.25 × 0.50 × 5.00	7520.080		
	12.7 × 12.7 × 127	0.50 × 0.50 × 5.00	7520.080		
ASTM E23	10 × 10 × 55	0.39 × 0.39 × 2.17	7520.081	7520.089	



## Pendulum Accessories

The CEAST 9000 Series Pendulum Impact Systems are designed to test a wide range of samples, from bars/dumbbell to pipes, in accordance with specific standards. The CEAST 9050 is the advanced model of the series. It can be fitted with accessories for Charpy, IZOD, Pipe, and Tensile Impact Testing. Each test requires a specific vice/fixture, specimen adapters, and hammers, and most tests can be conducted either with an un-instrumented or instrumented hammer.



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# Charpy Testing | Polymers (ISO, BS, and DIN)

Accessories are available for ISO 179, BS 2782-359, DIN 53453, and DIN 53753. Since the hammer energy determines the velocity of test, the vice required and the shoulders should be chosen based on the specimen size. Samples are aligned on the fixture either by a notch alignment device or side alignment device for un-notched specimens. Instrumented hammers are available and, when combined with a DAS and Visual Impact software, will provide load-displacement data for the test.



Charpy Vices  
Polymers (ISO, BS, and DIN)

Catalog Number	Impact Velocity		Alignment Device	Wooden Case	Testing Standards
	m/s	ft/s			
7610.101	2.9	9.5	7610.112 (Notch)*, 7610.121 (Unnotched, 33-80 mm), 7610.122 (Unnotched, 80-127 mm)	7610.107	ISO 179-1, ISO 179-2, BS 2782-359, DIN 53453 and DIN 53753
7610.102	3.8	12.5	7610.112 (Notch)*, 7610.121 (Unnotched, 33-80 mm), 7610.122 (Unnotched, 80-127 mm)	7610.108	
7610.103	2.9 and 3.8	9.5 and 12.5	7610.113 (Notch)*, 7610.121 (Unnotched, 33-80 mm), 7610.122 (Unnotched, 80-127 mm)	7610.107	

\* If used in combination with Cryobox Notch alignment device must be code 7610.115.

Charpy Shoulders  
Polymers (ISO, BS, and DIN)

Catalog Number	Specimen Dimensions		Span		Test Direction	Testing Standards	
	mm	in	mm	in			
7610.130	4 × 10 × 80	0.16 × 0.39 × 3.15	62	2.44	Flatwise	ISO 179-1, ISO 179-2 and BS 2782-359	
7610.131					Edgewise		
7610.140	3 × 15 × 33-39-75	0.12 × 0.59 × 1.30-1.54-2.95	18-24-60 (Adjustable)	0.71-0.94 -2.36 (Adjustable)	Edgewise		
7610.150					Flatwise		
7610.145	3 × 10 × 33-39-75	0.12 × 0.39 × 1.30-1.54-2.95			Edgewise		
7610.155					Flatwise		
7610.180	4 × 6 × 50	0.16 × 0.24 × 1.97	42	1.65	Flatwise		DIN 53453 and DIN 53753
7610.181	10 × 15 × 120	0.39 × 0.59 × 4.72	72	2.83	Flatwise		DIN 53453
7610.182					Edgewise		

Un-Instrumented Charpy Hammers  
Polymers (ISO, BS, and DIN)

Catalog Number	Potential Hammer Energy		Impact Velocity		Testing Standards
	J	ft/lb	m/s	ft/s	
7600.065	0.5	0.37	2.9	9.5	ISO 179-1, DIN 53453, DIN 53753 and BS 2782-359
7600.001	1.0	0.74	2.9	9.5	
7600.002	2.0	1.48	2.9	9.5	
7600.004	4.0	2.95	2.9	9.5	
7600.005	5.0	3.69	2.9	9.5	
7600.007	7.5	5.53	3.8	12.5	
7600.015	15.0	11.06	3.8	12.5	
7600.025	25.0	18.44	3.8	12.5	
7600.050	50.0	36.89	3.8	12.5	

Instrumented Charpy Hammers  
Polymers (ISO, BS, and DIN)

Catalog Number	Potential Hammer Energy		Load Capacity		Impact Velocity		Connection Type	Testing Standards
	J	ft/lb	kN	lbs	m/s	ft/s		
7601.005.1(C)	5.0	3.69	2	450	2.9	9.5	Slip Ring (Cable)	ISO 179-2
7601.007.1(C)	7.5	5.53	2	450	3.8	12.5		ISO 179-2
7601.015.1(C)	15.0	11.06	2	450	3.8	12.5		ISO 179-2
7601.025.2(C)	25.0	18.44	4	900	3.8	12.5		ISO 179-2
7601.050.2(C)	50.0	36.89	4	900	3.8	12.5		ISO 179-2

# Charpy Testing | Polymers (ASTM)

The vice, shoulders, and hammers listed here are designed to meet ASTM D6110. The test is conducted at 3.46 m/s (11.45 ft/s) and various hammer energies and specimen shoulders are available.

## Charpy Vice Polymers (ASTM)

Catalog Number	Impact Velocity		Alignment Device	Wooden Case	Testing Standards
	m/s	ft/s			
7610.105	3.46	11.35	7610.111 (Notch)*, 7610.122 (Unnotched, 80-127 mm)	7610.108	ASTM D6110

\* If used in combination with Cryobox Notch alignment device must be code 7610.115.

## Charpy Shoulders Polymers (ASTM)

Catalog Number	Specimen Dimensions		Span		Test Direction	Testing Standards
	mm	in	mm	In		
	7610.160	3.17 × 12.7 × 127	0.125 × 0.5 × 5.0	101.6		
7610.161	6.35 × 12.7 × 127	0.25 × 0.5 × 5.0	101.6	4.0	Edgewise	ASTM D6110
7610.162	12.7 × 12.7 × 127	0.50 × 0.5 × 5.0	101.6	4.0	Edgewise	ASTM D6110

## Un-Instrumented Charpy Hammers Polymers (ASTM)

Catalog Number	Potential Hammer Energy		Impact Velocity		Testing Standards
	J	ft/lb	m/s	ft/s	
	7600.165	0.5	50.0	3.46	
7600.101	1.0	0.74	3.46	11.35	ASTM D6110
7600.102	2.7	2.0	3.46	11.35	ASTM D6110
7600.105	5.4	4.0	3.46	11.35	ASTM D6110
7600.110	10.8	8.0	3.46	11.35	ASTM D6110
7600.121	21.6	16.0	3.46	11.35	ASTM D6110
7600.150	50.0	36.9	3.46	11.35	ASTM D6110

## Instrumented Charpy Hammers Polymers (ASTM)

Catalog Number	Potential Hammer Energy		Load Capacity		Impact Velocity		Connection Type	Testing Standards
	J	ft/lb	kN	lbs	m/s	ft/s		
	7601.105.1 (C)	5.4	4.0	2	450	3.46		
7601.110.1 (C)	10.8	8.0	2	450	3.46	11.35	ASTM D6110	
7601.121.2 (C)	21.6	16.0	4	900	3.46	11.35	ASTM D6110	
7601.150.2 (C)	50.0	36.9	4	900	3.46	11.35	ASTM D6110	

# Charpy Testing | Metals

Accessories are available for metals Charpy Testing. Tests can be conducted to ASTM E23, ISO 148, and DIN 50115 with hammer energies up to 50 J.

Charpy Vice  
Polymers (ASTM)

Catalog Number	Impact Velocity		Alignment Device	Wooden Case	Testing Standards
	m/s	ft/s			
7610.102	3.8	12.5	7610.112 (Notch)*, 7610.121 (Unnotched, 33-80 mm)	7610.108	ASTM E23, ISO 148, and DIN 50115

For indirect verification to metals standards only low-energy specimens may be used.

\* If used in combination with Cryobox Notch alignment device must be code 7610.115.

Charpy Shoulders  
Metals

Catalog Number	Specimen Dimensions		Span		Test Direction	Testing Standards
	mm	in	mm	In		
7610.197	10 × 10 × 55	0.394 × 0.394 × 2.17	42	1.65	Edgewise	ASTM E23, ISO 148, and DIN 50115
7910.191	10 × 7.5 × 55	0.394 × 0.295 × 2.17	42	1.65	Edgewise	
7610.192	10 × 5 × 55	0.394 × 0.197 × 2.17	42	1.65	Edgewise	
7610.193	10 × 2.5 × 55	0.394 × 0.098 × 2.17	42	1.65	Edgewise	
7610.194	5 × 5 × 55	0.197 × 0.197 × 2.17	42	1.65	Edgewise	
7610.195	4 × 3 × 27	0.157 × 0.118 × 1.06	24	0.945	Edgewise	DIN 50115
7610.196	6 × 6 × 44	0.236 × 0.236 × 1.73	32	1.26	Edgewise	DIN 50115

For indirect verification to metals standards only low-energy specimens may be used.

Un-Instrumented Charpy  
Hammers - Metals

Catalog Number	Potential Hammer Energy		Striker Radius		Impact Velocity		Testing Standards
	J	ft/lb	mm	in	m/s	ft/s	
7600.650	50.0	36.9	8	0.314	3.8	12.5	ISO 148 and ASTM E23
7600.651	50.0	36.9	2	0.079	3.8	12.5	ISO 148 and DIN 50115

For indirect verification to metals standards only low-energy specimens may be used.

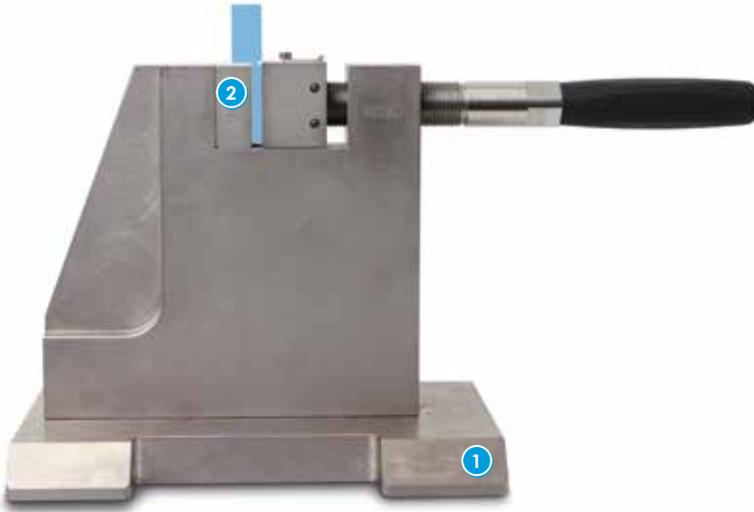
Instrumented Charpy  
Hammers - Metals

Catalog Number	Potential Hammer Energy		Load Capacity		Striker Radius		Impact Velocity		Connection Type	Testing Standards
	J	ft/lb	kN	lbs	mm	in	m/s	ft/s		
7601.650.1 (C)	50.0	36.9	8	1800	8	0.314	3.8	12.5	Slip Ring (Cable)	ISO 148 and ASTM E23
7601.651.1 (C)	50.0	36.9	8	1800	2	0.079	3.8	12.5		ISO 148 and DIN 50115

For indirect verification to metals standards only low-energy specimens may be used.

## IZOD Testing | Polymers

An IZOD test consists of impacting a specimen in a cantilever bending mode while the fixed end is clamped in a vice. This method gives a higher stress than a Charpy test, but may require a controlled clamping force for good repeatability. The manual vice can be tightened using the optional torque wrench (7610.204), while the clamping force can be adjusted using the lever or pneumatically-operated vices. Instrumented hammers are available and, when combined with a DAS and Visual Impact Software, will provide load-displacement data for the test.



Tensile Impact Vice

Catalog Number	Impact Velocity		Clamping Type	Alignment Device	Wooden Case	Testing Standards
	m/s	ft/s				
7610.201	3.46	11.35	Manual or Torque wrench	Notched (Included), Unnotched ISO 180 (7610.206), Unnotched ASTM D256 (7610.205)	7610.108	ISO 180, ASTM D256, and ASTM D4812
7610.210	3.46	11.35	Lever Operated		-	
7610.220	3.46	11.35	Pneumatic		-	

IZOD Specimen Adapters - Polymers

Catalog Number	Specimen Dimensions		Testing Standards
	mm	in	
6545.250	4 × 10 × 80	0.16 × 0.39 × 3.15	ISO 180
6545.409	3 × 10 × 80	0.12 × 0.39 × 3.15	ISO 180
6545.051	3.17 × 12.7 × 63.5	0.125 × 0.50 × 2.50	ASTM D256 and ASTM D4812
6545.050	6.35 × 12.7 × 63.5	0.25 × 0.50 × 2.50	
6545.124	12.7 × 12.7 × 63.5	0.50 × 0.50 × 2.50	



Un-Instrumented IZOD  
Hammers - Polymers

Catalog Number	Potential Hammer Energy		Impact Velocity		Testing Standards
	J	ft/lb	m/s	ft/s	
7600.265	0.5	0.37	3.46	11.35	ISO 180 ASTM D256 ASTM D4812
7600.201	1.0	0.74	3.46	11.35	
7600.202	2.75	2.0	3.46	11.35	
7600.205	5.5	4.0	3.46	11.35	
7600.211	11.0	8.1	3.46	11.35	
7600.222	22.0	16.0	3.46	11.35	
7600.250	50.0	36.89	3.46	11.35	

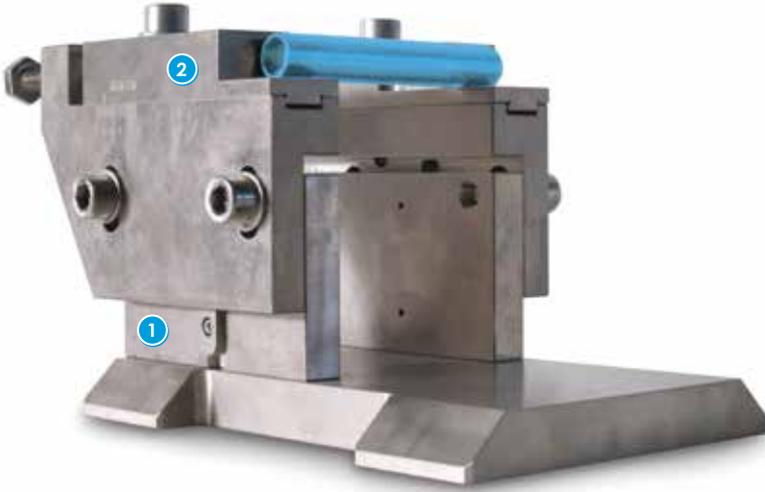
Instrumented IZOD  
Hammers - Polymers

Catalog Number	Load Capacity		Potential Hammer Energy		Impact Velocity		Connection Type	Testing Standards
	kN	lbs	J	ft/lb	m/s	ft/s		
7601.205.1(C)	2	450	5.0	3.69	3.46	11.35	Slip Ring (Cable)	ISO 180 ASTM D256 ASTM D4812
7601.211.1(C)	2	450	11.0	8.1	3.46	11.35		
7601.222.1(C)	2	450	22.0	16.0	3.46	11.35		
7601.250.1(C)	2	450	50.0	36.89	3.46	11.35		



## Pipe Testing | Polymers

According to ISO 7628 and ISO 9854, either complete segments or small sections of pipes are ideal for testing on a pendulum in a 3-point bend configuration similar to the Charpy tests. Sample diameter dimensions up to 25 mm (0.98 in) can be tested with hammer energies of 7.5 - 15 J (5.6 - 11.1 ft-lbs) or 50 J (36.9 ft-lbs), as defined in the ISO standards.



Pipe Testing Vice

Catalog Number	Impact Velocity		Wooden Case	Testing Standards
	m/s	ft/s		
7610.740	3.8	12.5	7610.110	ISO 9854-1

Pipe Testing Adapters

Catalog Number	Specimen Dimensions		Span		Specimen Type	Testing Standards
	mm	in	mm	in		
6546.746	Complete Diameter <25 120 × 15 Diameter >25	Complete Diameter <0.98 4.72 × 0.59 Diameter >0.98	70	2.76	Fig. 1, Shape 1 and 3	ISO 9854-1
6546.747	50 × 6, Diameter >25	1.97 × 0.24, Diameter >0.98	40	1.57	Fig. 2, Shape 2	ISO 9854-1
6546.748	120 × 15, Diameter >75	4.72 × 0.59, Diameter >2.95	70	2.76	Fig. 3, Shape 3	ISO 9854-1
6546.749	50 × 6, Diameter >75	1.97 × 0.24, Diameter >2.95	40	1.57	Fig. 3, Shape 2	ISO 9854-1

Un-Instrumented Pipe Testing Hammers

Catalog Number	Potential Hammer Energy		Impact Velocity		Testing Standards
	J	ft/lb	m/s	ft/s	
7600.715	15.0	11.06	3.8	12.5	ISO 9854-1 ASTM D4812
7600.750	50.0	36.89	3.8	12.5	

# Tensile Impact Testing | Polymers

Hammer geometry, impact energy, specimen shapes, and dimensions are defined in test standards, such as ISO 8256 Method A and Method B. The specimen is either held in the stationary anvil (ISO 8256 Method A) or attached directly to the pendulum hammer (ISO 8256 Method B). Hammer energies are available from 0.5 - 50 J (0.37 - 36.9 ft-lbs) depending on the type of the test. The Tensile Impact Vice can be fitted in the crosshead with an optional device to ensure specimen alignment.



Tensile Impact Clamping Systems

Catalog Number	Description	Testing Standards
7610.040	Crosshead Clamping Jig	ISO 8256 - Method A
7610.341	Tensile Impact Template, Specimen Type 1	ISO 8256 - Method A
7610.342	Tensile Impact Template, Specimen Type 2	ISO 8256 - Method A
7610.343	Tensile Impact Template, Specimen Type 3	ISO 8256 - Method A
7610.344	Tensile Impact Template, Specimen Type 4	ISO 8256 - Method A

Tensile Impact Hammers

Catalog Number	Potential Hammer Energy		Impact Velocity		Testing Standards
	J	ft/lb	m/s	ft/s	
7600.365	0.5	0.37	2.9	9.5	ISO 8256 - Method A
7600.301	1.0	0.74	2.9	9.5	ISO 8256 - Method A
7600.302	2.0	1.48	2.9	9.5	ISO 8256 - Method A
7600.304	4.0	2.95	2.9	9.5	ISO 8256 - Method A
7600.307	7.5	5.53	3.8	12.5	ISO 8256 - Method A
7600.315	15.0	11.06	3.8	12.5	ISO 8256 - Method A
7600.325	25.0	18.44	3.8	12.5	ISO 8256 - Method A
7600.350	50.0	36.89	3.8	12.5	ISO 8256 - Method A

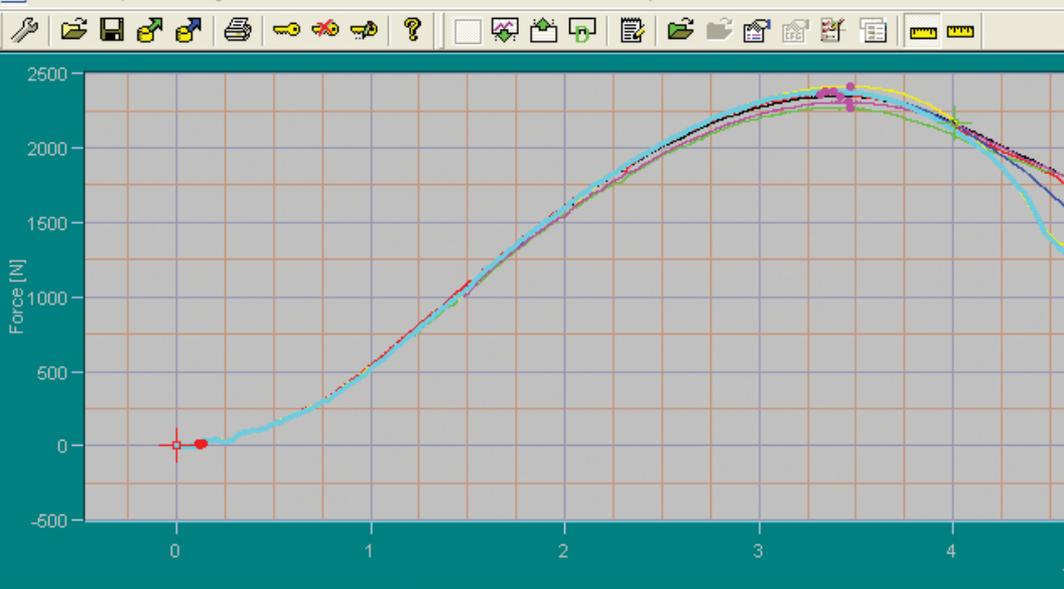
Tensile Impact Vice	Catalog Number	Impact Velocity		Energy Range		Wooden Case	Testing Standards
		m/s	ft/s	J	ft/lb		
		1	7610.304	-	-		
	7610.300	3.8	12.5	>5	>3.69		
2	7610.301	2.9	9.5	Up to 5	Up to 3.69		

Un-Instrumented Tensile Impact Clamps	Catalog Number	Specimen Types	Specimen Thickness		Testing Standards
			mm	in	
			7610.355	1, 2, 3 and 4	
7610.356	5	3.0 to 4.2	0.12 to 0.17		
7610.357	1, 2, 3 and 4	0.01 to 0.5	0.00039 to 0.02		

Instrumented Tensile Impact Clamps	Catalog Number	Specimen Types	Specimen Thickness		Load Capacity	Testing Standards
			mm	in		
			7610.305	1, 2, 3 and 4		
7610.306	5	3.0 to 4.2	0.12 to 0.17	Dependant on Selected Force Sensor		
7610.307	1, 2, 3 and 4	0.01 to 0.5	0.00039 to 0.02	Dependant on Selected Force Sensor		

Force Sensors Tensile Impact	Catalog Number	Specimen Types	Specimen Thickness	Load Capacity		Testing Standards
				kN	lbs	
				7610.310	All	
7610.311	All	All	2.2	495		

Tensile Impact Crossheads	Catalog Number	Description	Specimen Types	Specimen Thickness		Standards Testing
				mm	in	
				3	7610.371	
	7610.372	30 g Crosshead	1, 2, 3 and 4	0.5 to 4.2	0.020 to 0.17	
	7610.373	60 g Crosshead	1, 2, 3 and 4	0.5 to 4.2	0.020 to 0.17	
	7610.374	120 g Crosshead	1, 2, 3 and 4	0.5 to 4.2	0.020 to 0.17	
	7610.381	15 g Crosshead	5	3.0 to 4.2	0.020 to 0.17	
	7610.382	30 g Crosshead	5	3.0 to 4.2	0.020 to 0.17	
	7610.383	60 g Crosshead	5	3.0 to 4.2	0.020 to 0.17	
	7610.384	120 g Crosshead	5	3.0 to 4.2	0.020 to 0.17	
	7610.391	15 g Crosshead	1, 2, 3 and 4	0.01 to 0.5	0.020 to 0.17	
	7610.392	30 g Crosshead	1, 2, 3 and 4	0.01 to 0.5	0.020 to 0.17	



Field	Val...		
--- Break Stats ---			
Not broken [NB]	100.00	%	
Not classifiable [NC]	0.00	%	
Yield deep draw. [YD]	0.00	%	
Yield stable crack. [YS]	0.00	%	

Points Data | Specimen Data

Break type  
All types

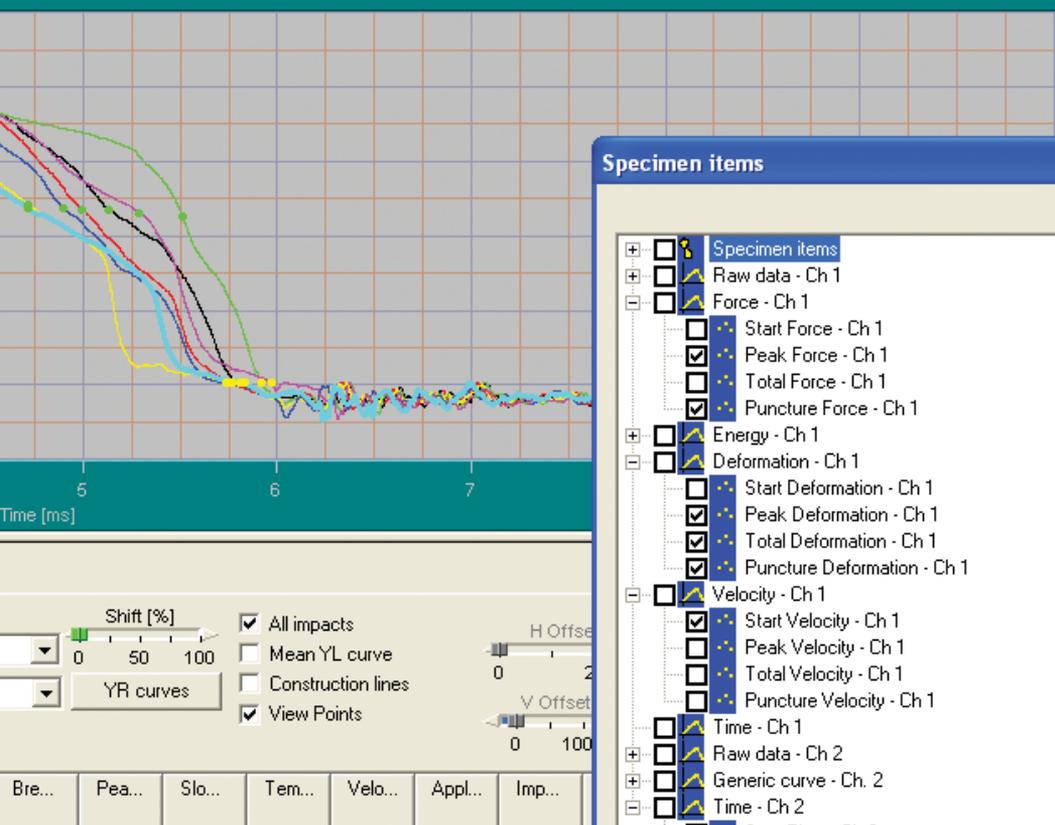
Time [v] Force - Ch 1  
X YL

->D

Disc...	Man...	N. s...	Thic...	App...
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## Instrumentation and Software

The addition of instrumentation to an impact system allows the engineer to “see” all types of information that was previously unknown, including incipient damage points and ductile-brittle transition zones. With instrumentation, the load on the specimen is continuously recorded as a function of time and/or specimen deflection prior to fracture. This gives a more complete representation of an impact than a single calculated value. Because failures originate at the weakest point and propagate from there, samples don’t have to shatter to be considered failures. Depending on the requirements, failure can be defined by deformation, crack initiation, or complete fracture.



## Section at a Glance

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Visual IMPACT Software

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# Instrumentation and Software

## Data Acquisition System

The CEAST DAS 64K is a state-of-the-art Data Acquisition System designed for impact testing instruments. Compatible with the full range of CEAST Impact Testing Systems, the CEAST 9000 Series Pendulum Machines and the CEAST 9300 Series Drop Towers, it's the key for instrumented impact testing. The DAS 64K also enables the data collection from instrumented tups or hammers on older models and non-CEAST impact machines.

The DAS 64K is the result of a complete re-design that enhances its versatility and testing efficiency. This significant step forward is also accomplished by the simultaneous evolution of Visual IMPACT, the dedicated software for instrument handling and data processing.

Catalog Number	Description	Additional Information	Compatible Machines
1 7190.000	CEAST DAS 64k - High Speed Data Acquisition Unit	Up to 4 Channels	CEAST 9050 CEAST 9310 CEAST 9340 CEAST 9350
7191.000	CEAST DAS 64k - SC High Speed Data Acquisition Unit	Single Channel	
7190.010	Strain Gauge Channel for DAS 64k	14 Bit Resolution, Up to 2 MHz Sampling Frequency, and 65,536 Points per Channel	
7190.020	Piezo Channel for DAS 64k		
7190.030*	Voltage Channel for DAS 64k, 0 to +10V		
7190.040*	Voltage Channel for DAS 64k, -10 to +10V		
7190.050*	4 to 20mA Channel for DAS 64k		
7190.061	Cable set for Dynatup Retrofitting	To connect Dynatup tup to DAS 64k and 64k-SC Acquisition Channels	Dynatup

\*To be used only with DAS 64k code 7190.000





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## Visual IMPACT Software

Visual IMPACT v.6.00 is a powerful software suite designed for impact testing. Developed within the CeastVIEW software platform, it brings together CEAST and Instron® experience of impact testing, providing a complete interface between the instruments and the end user. Developed for data processing, organization, and reporting, it is configured into common application areas with a full set of new features for customization.

Catalog Number	Description	Additional Information	Compatible Machines
2 0710.690.1	Visual IMPACT v.6.00 Un-Instrumented Pendulums	For Analysis of Pendulum Tests Conducted with Un-Instrumented Hammers	CEAST 9050
2 0710.690.2	Visual IMPACT v.6.00 Instrumented Pendulums	For Analysis of Pendulum Tests Conducted with Instrumented Hammers	CEAST 9050
2 0710.690.3	Visual IMPACT v.6.00 Instrumented Drop Towers	For Analysis of Tests Conducted with Instrumented Tups on Drop Towers	CEAST 9350 CEAST 9340 CEAST 9310 Dynatup Retrofitting



## Specimen Preparation

Proper preparation of the specimen is a critical process for accurate material characterization. An appropriate preparation of the specimen, as well as an adequate notching procedure, effect the final test results, that generate reliable outcomes in the finished product performances. This is accomplished by several specimen preparation techniques, making them particularly suitable to select the most appropriate material and failure results analysis.

According to the requirements of the main international standards, Instron® offers an extensive range of notching, milling, and punching machines designed to prepare specimens from thin to thick samples, as well as from soft to hard samples and reinforced plastic materials.



## Section at a Glance

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# Notching Machines

Notching Machines are designed to notch specimens for impact resilience determinations according to Izod, Charpy, and Tensile Impact methods. These instruments use a linear knife cutting technique to avoid overheating and consequent stresses during the specimens notching operations. Therefore, they are able to guarantee an accurate notch preparation. Manual, motorized, and fully-automatic models are available to cover the different testing needs.

## Manual and Motorized Models

The manual and motorized Notching Machines are designed to notch thermoplastic material specimens. A notch, with dimension according to the requirement of the main international standards, is obtained by means of a constant profile knife with an alternating linear movement. For high precision, a micro-metric head with digital display can be supplied to ensure a constant monitoring of the specimen notch.

Manual and Motorized Notchvis

Catalog Number	Description
① 6897.000	CEAST Manual Notching Machine - Manually-Operated Notching Machine with Linear Movement of Cutting Knife
② 6898.000	CEAST Motorized Notching Machine - Notching Machine with Motorized Linear Movement of Cutting Knife

Knives for the Manual and Motorized Notchvis

Catalog Number	Notch Radius	Testing Standards	Material
6530.042	0.25 ± 0.05 mm	ISO 179 A ISO 180 A ASTM D6110	Cobalt Steel
6530.045	0.25 ± 0.05 mm	ASTM D256 BS 2782-359 A	Tungsten Carbide
6530.043	1 ± 0.02 mm	ISO 179 B ISO 180 B ISO 8256 1	Cobalt Steel
6530.053	1 ± 0.02 mm	ASTM D256 D BS 2782-359 B	Tungsten Carbide
6530.055	0.1 ± 0.02 mm	ISO 179 C	Cobalt Steel
6530.063	0.1 ± 0.02 mm	ISO 179 C	Tungsten Carbide
6530.062	0.5 ± 0.05 mm	ASTM D256 D	Cobalt Steel
6530.061	0.5 ± 0.05 mm	ASTM D256 D	Tungsten Carbide
6530.041	2 ± 0.2 mm	BS 2782-359 C DIN 53453 C	Cobalt Steel
6530.049	2 ± 0.2 mm	BS 2782-359 C DIN 53453 C	Tungsten Carbide
6530.040	0.8 ± 0.1 mm	BS 2782-359 C DIN 53453 2	Cobalt Steel
6530.064	0.8 ± 0.1 mm	BS 2782-359 C DIN 53453 2	Tungsten Carbide



## Automatic Model

The CEAST AN50 is designed for laboratories that need to perform a large number of impact tests. Up to 50 specimens can be notched in a single cycle with the key parameters stored for later use. The optional knife cooling system, double notch loader, and an adjustable cutting speed allow for consistent time savings and accurate notching operations at the same time.

Catalog Number	Description
6899.000	CEAST AN50 - Microprocessor Controlled Unit to Notch a Set of Specimens and Optionally to Slice Their Ends
6899.000C1	Basic Configuration - Without Cooling or Slicing Devices
6899.000C2	Option for Knife Cooling Device - Based on an Adjustable Jet of Compressed Air
6899.000C3	Option for Knife Cooling and Slicing Devices - Knife Cooling Based on an Adjustable Jet of Compressed Air - Equipped with Two Circular Saws to Automatically Cut Both Ends of the Specimen to 80 or 63.5 mm

## Specimen Loaders

Loaders are used to hold specimens before notching and can be used for holding dumbbell specimens that can be cut to the correct length when the optional slicing device is used.

Loaders for the CEAST AN50

Catalog Number	Description
6867.006	Specimen Loader for both Rectangular and "Dumbbell" Specimens
6867.005	Loader for Double Notching of Rectangular Specimens According to ISO 179-1, ISO 8256, and Equivalent Standards (size 4 × 10 × 80 mm)
6867.005	Loader for Double Notching of Rectangular Specimens According to BS 2782-359 and Equivalent Standards (size 50 × 6 mm)

Knives for the Automatic Notchvis

Catalog Number	Notch Radius	Testing Standards	Material
6819.113	0.25 ± 0.05 mm	ISO 179 A ISO 180 A	Cobalt Steel
6819.100	0.25 ± 0.05 mm	ASTM D6110 ASTM D256 BS 2782-359 A	Tungsten Carbide
6819.119	1 ± 0.02 mm	ISO 179 B ISO 180 B	Cobalt Steel
6819.096	1 ± 0.02 mm	ISO 8256 1 ASTM D256 D BS 2782-359 B	Tungsten Carbide
6819.130	0.1 ± 0.02 mm	ISO 179 C	Cobalt Steel
6819.097	0.1 ± 0.02 mm	ISO 179 C	Tungsten Carbide
6819.314	0.5 ± 0.05 mm	ASTM D256 D	Cobalt Steel
6819.313	0.5 ± 0.05 mm	ASTM D256 D	Tungsten Carbide
6819.115	2 ± 0.02 mm	BS 2782-359 C DIN 53453 C	Cobalt Steel
6819.094	2 ± 0.02 mm	BS 2782-359 C DIN 53453 C	Tungsten Carbide
6819.114	0.8 ± 0.01 mm	BS 2782-359 C DIN 53453 2	Cobalt Steel

# Punching Machines

Clamping These machines are developed to obtain specimens by punching, using hollow dies of different sizes and contours. Several hundreds of dies can be created by interchangeable socket punches with different profiles and sizes according to the standards and to the customer needs. Dies are made of steel with hand-finished cutting edges and can be provided with the ejector for easily removing the specimen after punching.



Pneumatic Hollow Die Punch



Manual Hollow Die Punch

Catalog Number	Shape	Dimensions		Testing Standards
		mm	in	
8160.020	Rectangular	80 × 10	3.15 × 0.4	ISO 75-2, ISO 178 ISO 179-1, 179-2 Type 1 ISO 180, ISO 8256 Type 1
8083.020	Rectangular	127 × 12.7	5 × 0.5	ASTM D648, ASTM D790 ASTM D6110
8246.020	Rectangular	63.5 × 12.7	2.5 × 0.5	ASTM D256
8057.020	Dumb-bell Single Radius	80 × 15 × 10	3.15 × 0.6 × 0.4	ISO 8256 Type 3
8058.020	Dumb-bell Single Radius	60 × 10 × 3	2.4 × 0.4 × 0.12	ISO 8256 Type 4
8369.020	-	80 × 15 × 5	3.15 × 0.6 × 0.2	ISO 8256 Type 5
8017.020	Circular	60	2.4	ISO 6603
8806.020	Square	60 × 60	2.4 × 2.4	ISO 6603
8085.020	Circular	80	3.15	ISO 7765

Hollow Dies

# Appendix

## Standards

### ISO

ISO 6603-1,-2, [p17](#)  
ISO 7765-1,-2, [p17](#)  
ISO 8256 A, [p20](#), [36](#), [37](#)  
ISO 179-1,-2, [p24](#), [28](#), [29](#), [44](#), [45](#), [4](#)  
ISO 179/A, B, [p44](#), [46](#)  
ISO 180/A, B, [p25](#), [32](#), [33](#), [44](#), [46](#)  
ISO 148, [p31](#)  
ISO 8256,-1, [p45](#), [46](#)  
ISO 9854-1, [p35](#)

### DIN

DIN 53453/C, -2, [p28](#), [29](#), [44](#), [46](#)  
DIN 53753, [p28](#), [29](#)  
DIN 50115, [p31](#)

### ASTM

ASTM D5628, [p17](#)  
ASTM D3763, [p17](#)  
ASTM D1709, [p17](#)  
ASTM D7136/M, [p18](#)  
ASTM D2444, [p19](#)  
ASTM D6110, [p24](#), [30](#), [44](#), [46](#)  
ASTM E23, [p24](#), [25](#), [31](#)  
ASTM D256/D, [p25](#), [32](#), [33](#), [44](#), [46](#)  
ASTM D4812, [p32](#), [33](#), [35](#)  
Boeing BSS 7260, [p18](#)

### Other

Montell Method MA 17238, [p17](#)  
Airbus AITM 1.0010, [p18](#)  
Boeing BSS 7260, [p18](#)  
SACMA 2R-94, [p18](#)  
PR EN 6038, [p18](#)  
BS 2782-359/A, B, C [p28](#), [29](#), [44](#), [45](#), [46](#)





[www.instron.com](http://www.instron.com)

### Worldwide Headquarters

825 University Avenue, Norwood, MA 02062-2643 USA  
+1 800 564 8378 | +1 781 575 5000

### European Headquarters

Coronation Road, High Wycombe, Bucks, HP12 3SY UK  
+44 1494 464646

### CEAST Headquarters

Via Airauda 12, 10044 Pianezza TO, Italy  
+39 011 9685 511

