

## PENDULUM IMPACT TESTER FOR "CHARPY-IZOD" TESTS

PIT-25 model

For tests of resistance to axial impact (resilience) in standardized specimens of rigid plastics, composites, ceramics..., ranging from 0,5 - 25 Joules

Equipped with "Touch-Screen" digital control display

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**TECHLABSYSTEMS**

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Essentially, the impact test is one of the most important properties of materials and is defined as a single test point that measures the resistance of a material to the impact of a pendulum with an impact hammer defined by the Charpy or Izod method.

### APPLICABLE STANDARDS

ASTM D 6110 and ISO 179 (Charpy tests) - ASTM D 256 and ISO 180 (IZOD tests)

### GENERAL INFORMATION

The PIT-25 model is specifically designed to be used in the Quality Control Department as a quick and simple axial impact resistance measuring equipment for standard rigid plastic specimens.

### PRINCIPLE

The impact resistance of plastics is frequently measured by tests using a pendulum with an impact hammer with an edge striking the sample. From the displacement of the pendulum after breaking the sample, the impact resistance can be calculated as the energy required to cause the break. The plastic specimen is often tested with a standard notch in the center to improve reproducibility of break or failure mode, but can also be tested complete without a notch.

This test can be used as a quick and easy quality control to determine if a material meets the specific impact properties or to compare the impact resistance of materials in general.

There are several different methods to determine the impact resistance, the most used are by lateral (axial) blow of the specimen with a pendulum impact hammer such as **IZOD** (ASTM D256, ISO 180) and **CHARPY** (ASTM D6110, ISO 179).

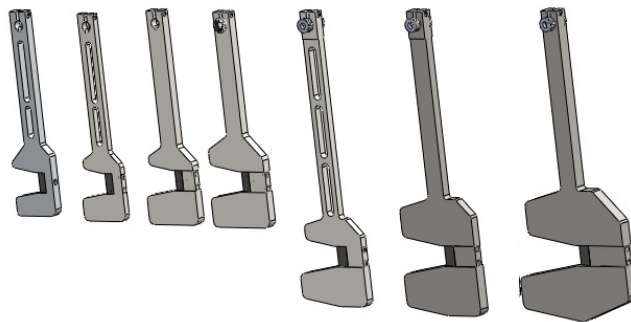
These two methods differ in that, according to **Charpy**, the test specimen is supported on both ends, whereas according to Izod the test sample is held only on one side, also the point for impact varies.



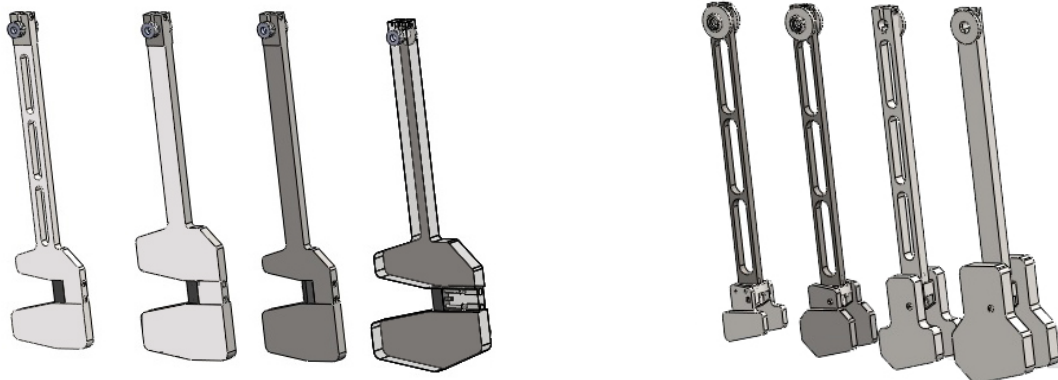
The ability of a material to resist the impact of a blow is called the **impact tenacity** of the material. While **fracture toughness** is defined as the ability of the material to resist an applied load when the material contains imperfections.

ISO 179-1 defines the method for determining the plastic's resistance to break when it is impacted in a 3-point flex configuration using a pendulum with an appropriately sized hammer. The test is non-instrumented and is used to determine the energy required to break the specimen. Different test parameters are established depending on the type of material and the notch made. Although similar to ASTM D6110 (Charpy Impact Resistance of notched Plastic Specimens), the tests are significantly different and cannot be extrapolated.

- Impact energy range: **0 to 25 Joules**
- Units: **Joules**
- Reading resolutions: **0.001 J and 0.1 KJ / m<sup>2</sup>**
- Pendulum release angle: **145°**
- Impact Speed with CHARPY impact Hammer (ISO) 0,5-1-2-4-5 J = **2,9 m/s**
- Impact Speed with CHARPY impact Hammer (ISO) 7,5-15-25 J = **3,8 m/s**
- Impact Speed with CHARPY impact Hammer (ASTM) 1 - 21,6 J = **3,46 m/s**
- Impact Speed with IZOD impact Hammer (ISO) = **3,5 m/s**
- Impact Speed with IZOD impact Hammer (ASTM) = **3,46 m/s**
- **Digital Touch Screen** with self-adjusting functions used impact hammer, compensation lost energy by the action of friction (the axis of rotation and air)
- **Polycarbonate testing area protection screen** avoids operator accidents, according to 89/392 / EEC, with electric lock for door opening.
- **Automatic brake** to stop oscillation impact hammer after each test.
- **RJ-45 Ethernet** port connection to PC **and USB** for data storage in USB memory Stick
- **Compatible with the T-LAB** Test Management System
- **Optional metal base** adaptable to meet **ISO standards** when using impact hammers **> 15 Joules**
- **Modular construction** (impact hammers available according to standard or materials)
- **Easy to use and robust construction**
- Impact energy readings on the front **digital display "Touch Screen"**
- Easy-to-change **Interchangeable Impact Hammers**



CHARPY Impact Hammers according to ISO standards



CHARPY Impact Hammers according to ASTM standards

IZOD Impact Hammers (ASTM and ISO)

**Code 10012808 CHARPY impact specimen holder (127x12,7x6,4 mm) horizontal according to ASTM**

**Code 10012737** CHARPY impact hammer according to ASTM standards, with impact energy of 1 Joule

**Code 10012738** CHARPY impact hammer according to ASTM standards, with impact energy of 2.7 Joules

**Code 10012739** CHARPY Impact hammer according to ASTM standards, with impact energy of 5.4 Joules

**Code 10012740** CHARPY impact hammer according to ASTM standards, with impact energy of 10.8 Joules

**Code 10012741** CHARPY Impact hammer according to ASTM standards, with impact energy of 21.6 Joules

**Code 10012725 CHARPY impact specimen holder (80x10x4mm) horizontal according to ISO**

**CHARPY (ISO) short of impact energies 0.5 - 1 - 2 - 4 - 5 Joules**

**Code 10010778** CHARPY impact hammer according to ISO standards, with impact energy of 0.5 Joules

**Code 10012730** CHARPY Impact hammer according to ISO standards, with impact energy of 1 Joule

**Code 10012731** CHARPY Impact hammer according to ISO standards, with impact energy of 2 Joules

**Code 10012732** CHARPY Impact hammer according to ISO standards, with impact energy of 4 Joules

**Code 10012733** CHARPY Impact hammer according to ISO standards, with impact energy of 5 Joules

**Code 10012734** CHARPY Impact hammer according to ISO standards, with impact energy of 7.5 Joules

**Code 10012735** CHARPY Impact hammer according to ISO standards, with impact energy of 15 Joules

**Code 10012736** CHARPY Impact hammer according to ISO standards, with impact energy of 25 Joules

**Code 10012727 IZOD impact specimen holder according to ASTM and ISO standards**

**Code 10012742** IZOD Impact hammer according to ASTM and ISO standards, with impact energy of 1 Joule

**Code 10012743** IZOD Impact hammer according to ASTM and ISO standards, with impact energy of 2.75 Joules

**Code 10012744** IZOD Impact hammer according to ASTM and ISO standards, with impact energy of 5.5 Joules

**Code 10012744** IZOD impact hammer according to ASTM and ISO standards, with impact energy of 11 Joules

**Code 10012744** IZOD impact hammer according to ASTM and ISO standards, with impact energy of 22 Joules

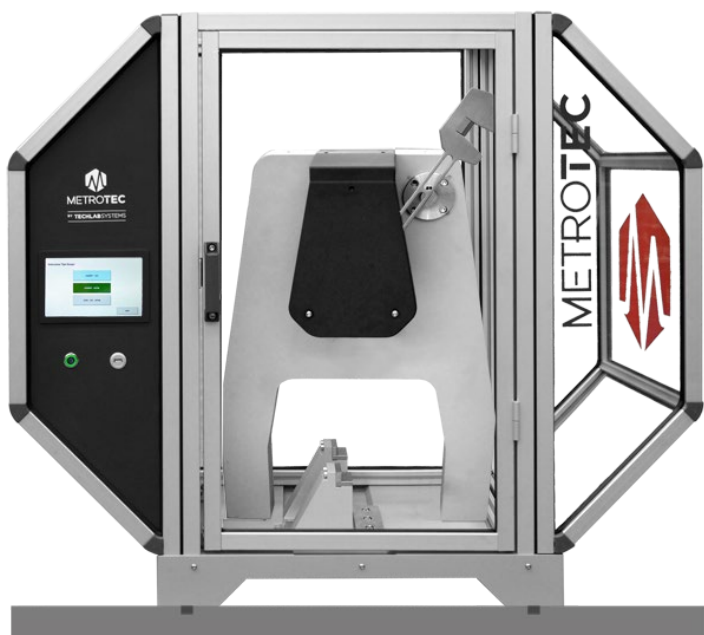
**For strict compliance with international standards using impact hammers > 15 Joules, we offer 2 options:**

**Code 10005917** Base metal plate to attach to the base of the PIT-25 Pendulum

**Code 10005417** Support table (consisting of the Base Plate Code 5917 + 4 Legs)



**PIT-25 Impact Pendulum + Support Table**  
(compliance standards >15 Joules)



**Pendulum with Base Plate 1000x600x20 mm in steel**  
(compliance standards > 15 Joules)

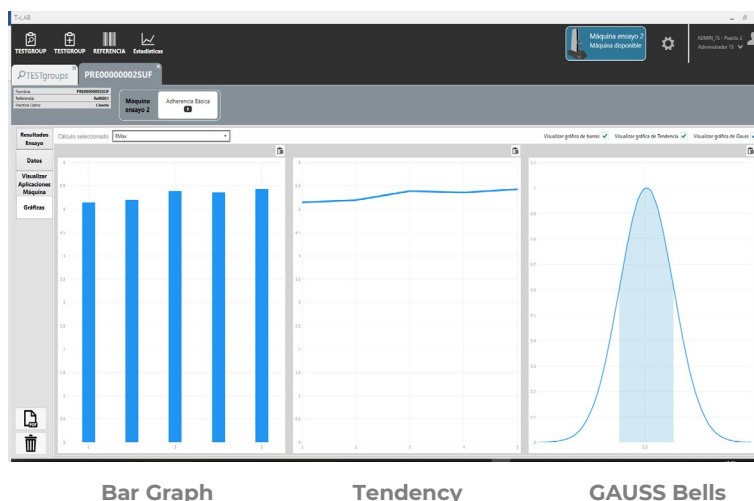
### OPTIONAL: Software for Charpy-Izod axial impact resistance tests on plastics

- Quickness in the execution of tests and in obtaining results
- Without human error
- Traceability according to ISO 9000
- The software records minimum, maximum and median value and standard deviation
- Storage capacity up to 100 tests per report
- SAVE functions. PRINT AND COPY TO CLIPBOARD - Reports in PDF format



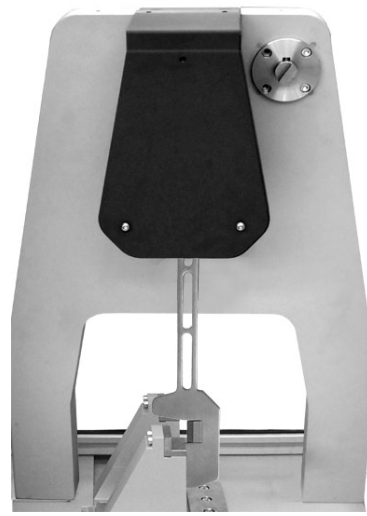
The Testing Software allows testing and determining the resistance to axial impact Charpy-Izod methods of rigid plastic materials.

A package with Basic Statistics is included, to be able to perform data management, choice of language, generation of reports, library for changing test units, different levels of Password, Entering minimum, maximum and optimal values to manage data with Statistics, Bar charts, GAUSS Bells, Comparison of Tolerances ..., export data to Word - Excel ..., PDF generation





Start position



End position

CHARPY-IZOD IMPACT TEST PENDULUM PIT-25 model				
Model	Application	Tester dimensions WxDxH /mm	Net Weight kg	Power W
PIT-25	Plastic impact	1000 x 446 x 940	200	150

**ELECTRICAL CURRENT:** 110V / 60Hz or 220V / 50Hz single phase

**TRANSPORT PACKAGING DIMENSIONS:** 1200 x 650 x 1150 mm (W x D x H)

**TOTAL GROSS WEIGHT:** 285 Kg

\* Depending on the number of hammers the weights will change (Complete Set of Impact Hammers - Net Weight = 35 Kg)

**STANDARD SUPPLY CONTENT:**

- \* PIT-25 model impact pendulum tester
- \* Grips + impact hammers (Charpy / Izod) (ordered)
- \* User manual