

# Pendulum Impact Tester for Metal Specimens

## CHKTest 450 series

The quality of a specimen's or part's impact resistance is a key measure of durability and reliability that designers must consider when designing products. These tests examine materials under extreme stress – impact, and the resistance of materials can be sensitive to changes in temperature. For accurate measurement of these parameters, LABORTECH offers an innovated impact pendulum tester called CHKTest 450, which brings a new design, the use of state-of-the-art technologies and a number of innovations that simplify and make the performance of tests more pleasant. Thanks to the central integrated control via an articulated LCD touch monitor, you have all parameters under control, from the measurement data to the test itself. Modifications of impact hammers up to 450 J:

### Key features

- Very rigid base structure with 4 levelling holes.
- Centrally ergonomically located controls ensuring simple operation and testing, including indication of the status of individual processes.
- Automatic hammer lift by means of a special magnetic gearbox with integrated AC motor, controlled by an inverter with an electronic brake.
- Protective safety cover with electronic door opening monitoring and high security according to ČSN EN ISO 13849-1, ČSN EN ISO 12100 and ČSN EN ISO 14120 and illumination of the working area of the machine.
- A new type of support with the possibility of using up to 4 times the service life.
- Easy hammer and striker change with complete automatic identification in IMPACTTest software.
- New automatic centering of samples with damage protection in the base of the machine.
- Starting and breaking the sample after closing the door within 5 seconds.
- Integrated sampling box designed for collecting broken samples with an efficiency of up to 98% for further use.
- Integrated articulated touch panel with LCD monitor and keyboard, with a PC in the machine frame with the intuitive and powerful IMPACTTest software at the base of the machine.
- Analog and digital impact energy display.
- High-resolution incremental encoder up to 262,144 imp per revolution for accurate angle measurement.
- Possibility to import data from OPTOLab 55 II.

basic, instrumented,  
with angle adjustment...



### Types of tests according to standards

- Impact tests of metals by Charpy, Izod, Dynstat, Bruggen, tensile impact test etc. according to ČSN EN ISO 148-1, ČSN EN ISO 148-2, ČSN EN ISO 14556, ČSN EN ISO 11343, ASTM E23, BS131-1, GOST 9454-78.

### Industrial use

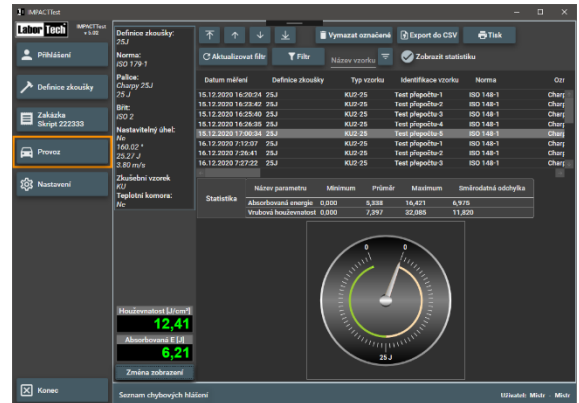
- engineering, metallurgical, aerospace and nuclear industries, research institutions, universities, etc.



## Impact pendulum modules

### Module – BASIC

- Basic module integrated in IMPACTTest software.
- Defined basic types of tests in the database – Charpy, Izod, Brugger, tensile impact tests of metal samples, etc.
- Digital and analog display of measured values.
- Storage of measured data in a database with the possibility of filtering by definition, order, date, etc.
- Automatic identification of the hammer and striker in the base of the machine.
- Integrated calibration mode – hammer weight, swing radius, starting angle, actual energy, friction correction, swing time – angle, calibration of strikers and supports, etc.

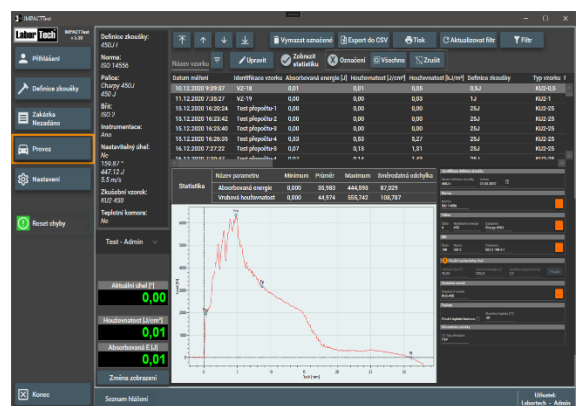


### Module – I – instrumented test

- Automatic recording of instrumented test results, including reverse modification and evaluation according to ČSN EN ISO 14556.
- Recording multiple waveforms, zooming in – finding out the x and y coordinates of individual samples, etc.
- Dynamic linearization at ASTM E 2298.
- Linearization of the course of instrumented strikers, including calibration according to ČSN EN ISO 148-2, ASTM E 23, ASTM E 2298 and ČSN EN ISO 7500-1.

Ratings	Units	Module-I
Sampling rate *	MHz	4
AD converter	bit	16
Path resolution	mm	< 0,07

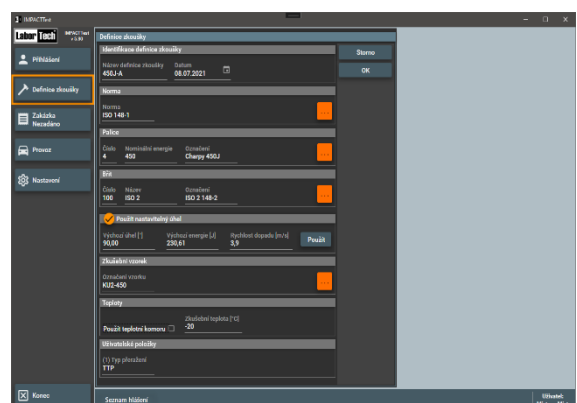
\* For four measuring channels



### Module – A – continuously adjustable starting angle

- Setting and gripping the test hammer with a special magnetic coupling that offers unprecedented possibilities to perform notch toughness testing associated with the development of new materials.
- Freely electronically adjustable starting angle with an accuracy of 0.05° **without any angle limitation**.
- After the test starts, the hammer is adjusted to a predefined position, waiting for stabilization and breaking the specimen.

Ratings	Units	Module-A
Adjustable impact rate – max 5,5 m/s	%	3 to 100
Adjustable starting energy – max 450 J	%	7 to 100
Continuously adjustable starting angle	%	15 to 100



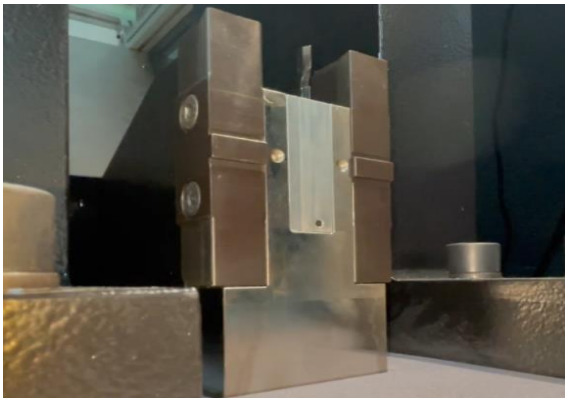
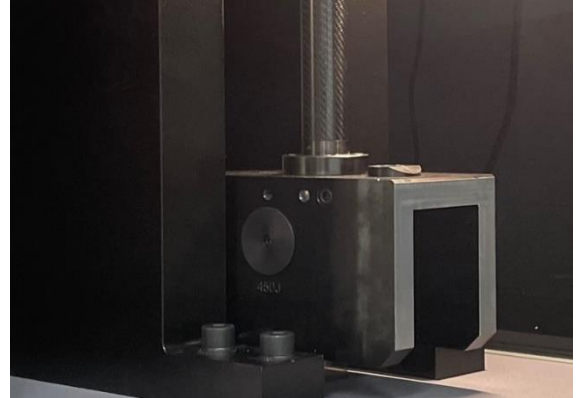
### Combinations without limits

Individual basic modification modules can be combined with each other and thus increase the versatility of the CHK series impact hammers from LABORTECH.

## Individual parts of CHKTest pendulum impact testers...

### NEW Test hammer and striker

- In some standards, the impact energy is associated with the energy of the test hammer. LABORTECH offers test hammers: 150 J, 300 J and 450 J.
- Replacing the test hammer with another type is simple with 2 screws [more information HERE](#).
- Identification of the test hammer is a matter of course.
- The type of test strikers and supports is always linked to the test standard. Types of strikers: radius 2 and 8 mm, instrumented, Charpy, Izod and other types.
- Changing the strikers is easy with 4 screws.
- Automatic identification of the IMPACTTest software is included in each test striker.

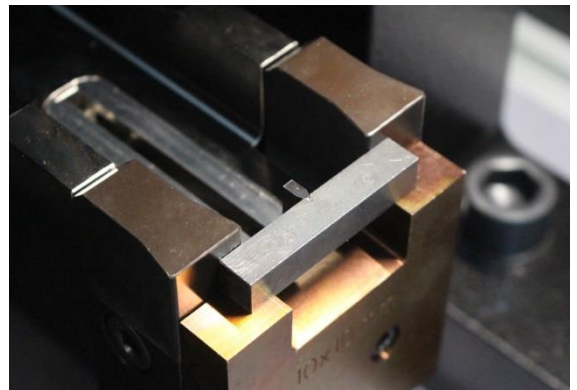


### NEW Test Supports

- The test supports are designed in such a way that the specimens do not remain in the working area after breaking, making them suitable for serial or robotic testing.
- Test supports can be used on multiple support points, which is why the usability and service life are 4 times higher.
- Changing positions at the supports is easy with 2 screws per abutment and precise centering guarantees calibration according to ČSN EN ISO 148-2 and ASTM E23 – [more information HERE](#).

### NEW centering device

- LABORTECH offers a central centering device as standard for its machines.
- Centering allows you to center the sample exactly centered along the notch, regardless of whether it is a U or V notch. When the tread is loaded and the door is closed, the center stop is automatically released.
- For robotic systems and calibration, sample centering is switchable.
- For testing samples from a liquid medium, centering is provided with a drainage of excess fluid from the system.



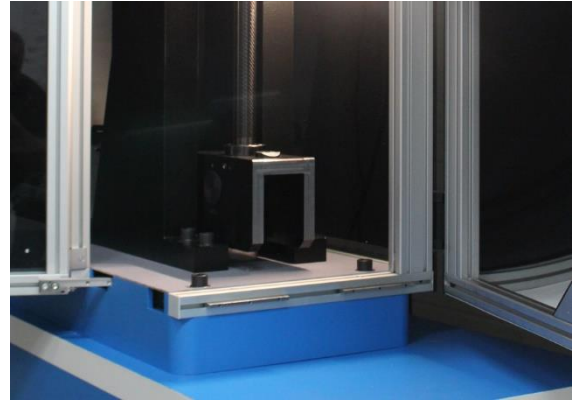
### NEW Console

- With the help of an articulation system, the control panel can be moved to any position acceptable to the operator. Part of the kinetic system is a hinged stop.
- Maximum angle of rotation of the monitor in relation to the machine – 105°
- Control membrane keypad designed for: ON – connection of the power part of the machine (drive), OFF – disconnection of the power part, Button for moving to the home or basic position
- Colour light function of the panel (perimeter bar) – LGBT states – blue, green, white, red.
- Touch monitor – 21.5" diagonal, Active matrix TFT LCD 16.7 million colors, 1920 x 1080 resolution.

## Individual parts of CHKTest...

### NEW Open machine workspace

- Opening of the working area of the machine in the range of up to 230° - i.e. protective cover 120° and entrance door 110° without strut.
- Easy handling when calibrating the machine, changing the hammer or striker.
- Integrated, switchable LED lighting of the machine's work area.
- Mechanical door opening stops.

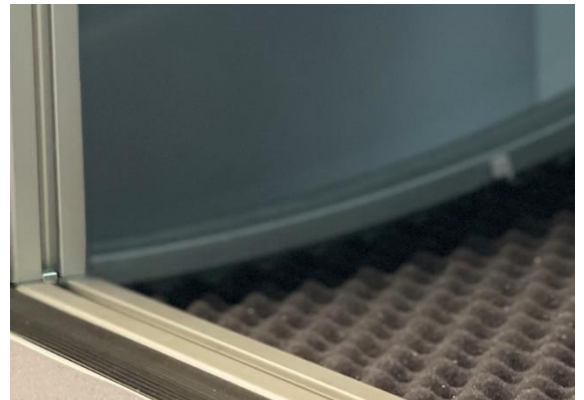


### NEW Collection of broken samples

- Each impact pendulum tester of the CHK.2 and CH.3 series from LABORTECH includes a pull-out box designed for collecting broken samples and a collecting tunnel.
- This tunnel has an efficiency of up to 98% in capturing broken test samples, so the samples are not in the working area of the machine, but in a precisely designated place – a pull-out box – [more information HERE](#)
- Each machine includes a so-called magnetic pencil, which allows the collection of samples that have gone outside the tunnel (< 2%)

### NEW Integrated soundproofing system

- Soundproofing system during impact test using acoustic foam (acoustic foam) in the form of fittings of more than 8 dB.
- Noise reduction in confined spaces and for reverberation time control in the protective safety cover of the pendulum hammer.
- Soundproofing of the impact surface of the sample with a special impact silica fabric..



### NEW Concrete Foundations

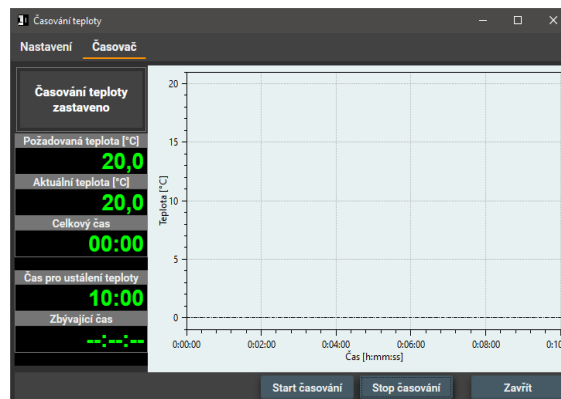
- Perfect design with high utility value
- According to EN ISO 148-2, the pendulum impact hammer must have a base weight of at least 40 times the pendulum energy.
- LABORTECH has produced a special design concrete foundation for its customers with a preparation for anchoring the impact hammer and a preparation for easy handling
- The foundation of LABORTECH weighs 1620 kg.



## Impact pendulum expansion

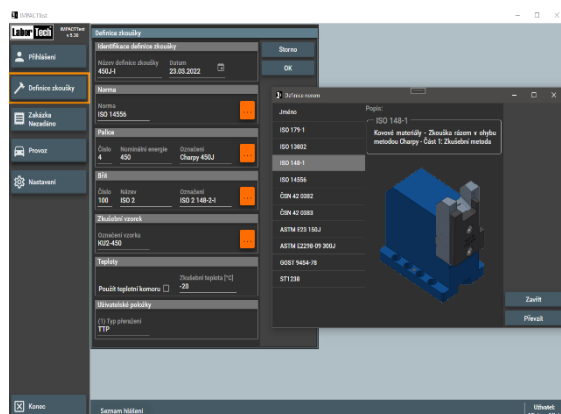
### Module – T – automatic temperature monitoring

- Automatic temperature monitoring and mutual communication with the LABCool 21 cooling chamber.
- Setting parameters – temperature tolerance of the cooling medium, setting of the time for temperature stabilization, setting of the time for temperature stabilization after a drop out of tolerance, setting of units for the X and Y axes in the graph, tolerance zones, etc.
- After the timing ends, the background of the information message will be changed to green and the "Test start" button on the machine panel will be unlocked.
- Display – desired temperature, current temperature, total time, time for temperature stabilization, remaining time, graphical display of progression, etc.



### Module – BR – robotic workplace X-RUNNER

- The BR software module is designed for the BLUE RUNNER and YELLOW RUNNER robotic systems from LABORTECH.
- These systems have been developed primarily to minimize operator influence on the reproducibility of test results by loading and breaking samples within 5 seconds, as required by EN ISO 148-1.
- Automatic selection of samples from a predefined container.
- Communication and control with a temperature chamber for temperatures down to -95 °C, including a storage system. Communication with OPTOLab 55 II optical sample control, including database exchange of measured data.
- This module can be applied to both the BASIS module and the I, A or combined IA module.



### Module – O – checking the dimensions of samples

- Data acquisition module from the OPTOLab 55 II optical system.
- Display of measured values with given tolerances directly on the sample.
- Storing all values in a database with filtering of individual parameters.

Data transfer from OPTOLab	Units
Sample height	mm
Sample length	mm
Sample width	mm
Axis distance	mm
Height under groove	mm
Groove angle	°
Axis angle	°
Radius of the root	°
Side angle	°



### Module activation

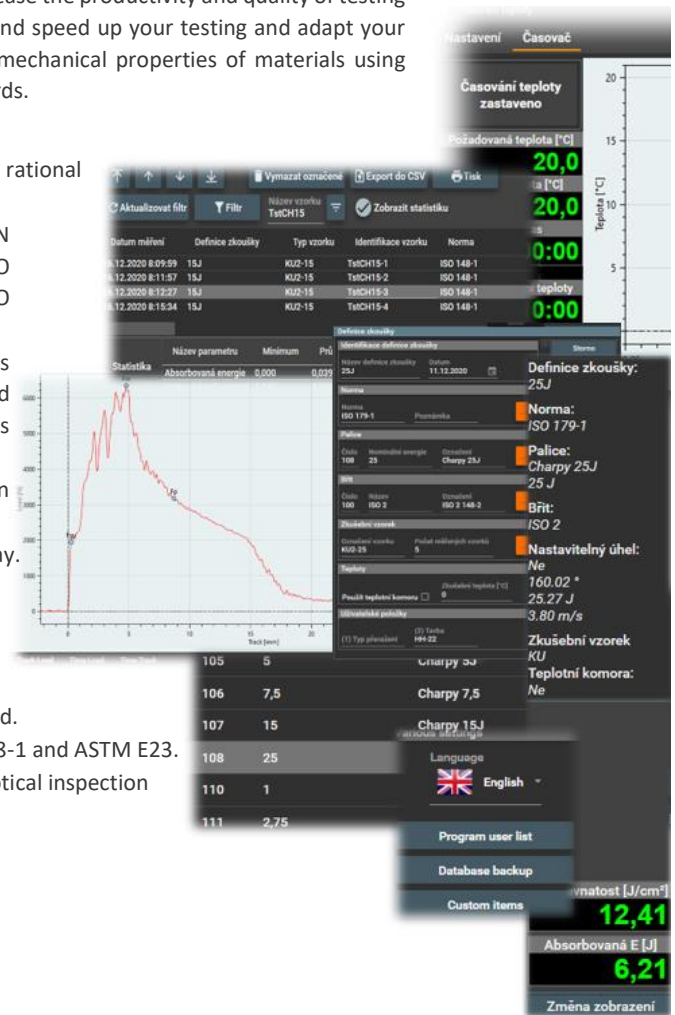
If you decide to buy the OPTOLab 55 II optical sample dimensional control together with the CHK impact pendulum, the LABCool 21 sample cooling chamber or the X-RUNNER robotic workplace from LABORTECH, we will automatically activate the individual impact pendulum expansion modules for you.

## Software IMPACTTest – BASIC

### Measuring the impact strength of materials and the impact force curve that you will love...

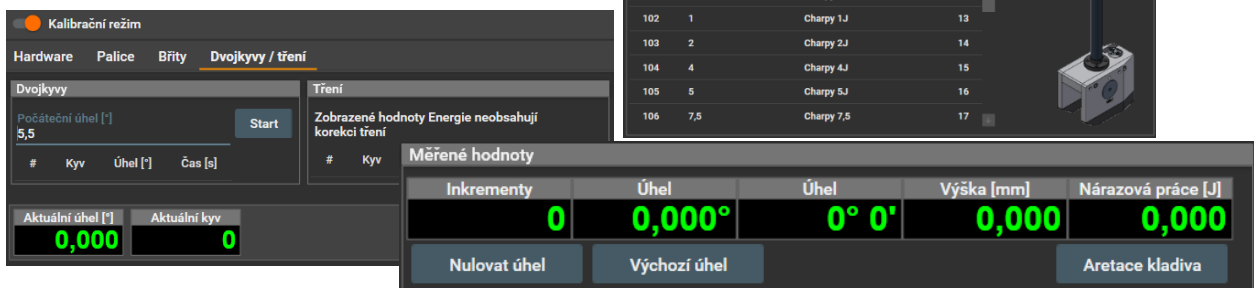
IMPACTTest – intelligent, intuitive and powerful software that is an integral part of all LabTest CHK series impact pendulum hammers from LABORTECH. This software will help you increase the productivity and quality of testing in your test rooms and test laboratories. You can streamline, refine and speed up your testing and adapt your testing environment to make it easy for operators to measure the mechanical properties of materials using notched toughness according to EN, ISO, DIN, ASTM and GOST standards.

- Intelligent, intuitive and powerful software designed for fast and rational impact tests.
- Software designed for impact bending test according to ČSN EN ISO 148-1, ČSN EN ISO 148-2, ASTM E23, GOST 9454-78, EN ISO 14556:2015, ČSN 42 0382, ČSN 42 0383, EN ISO 179, ISO 9854, ISO 8256, ASTM D1822, ASTM D256.
- Unlimited number of test methods, modular system of libraries designed for standardized tests, easy orientation in pre-selected definitions with visualization of abutments, cutting edges and mallets.
- Editable sample types and test standards, including modification of item names.
- Digital display of all current values including analog energy display.
- Storage of measured data in a database with the possibility of filtering by definition, order, date, etc.
- Statistical evaluation of data and graphs, extensive selection of statistical methods.
- Extensive calibration mode according to EN ISO 148-2 as standard.
- Automatic cooling timing prior to testing according to EN ISO 148-1 and ASTM E23.
- Data transmission from temperature chamber, thermometer, optical inspection of OPTOLab 55 II samples, VRE notching device, etc.
- Multilingual version (CZ, EN, DE, FR, POL, RU, ESP etc.)
- Print the report in PDF format.
- Export data to CSV – BASIS, or to MY SQL and MS SQL.
- Perpetual license.
- Install on any computer without using a license, etc.



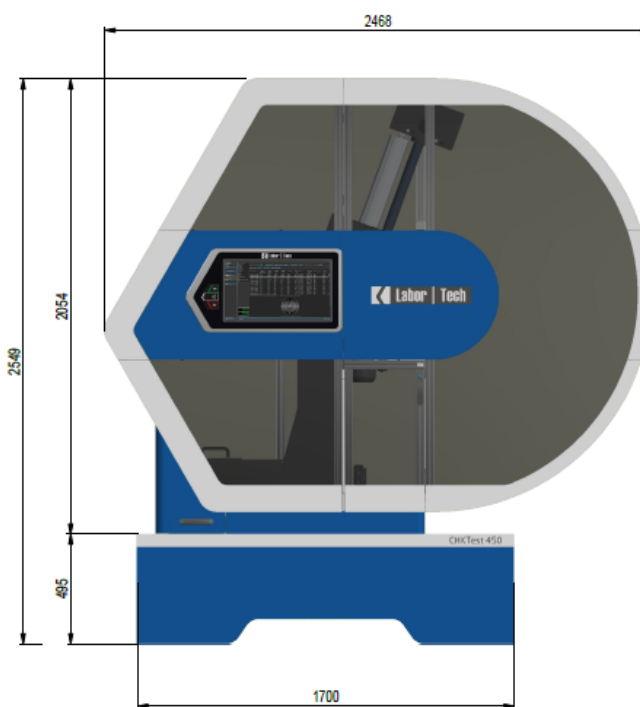
### Extensive calibration mode as standard

- Calibration according to ČSN EN ISO, ASTM and GOST standards.
- Sophisticated measurement of the following parameters: ram weight, swing radius, starting angle, actual energy, friction correction, swing – time – angle, calibration of cutting edges and abutments, etc.



## Specification

Ratings	Units	CHKTest 450
Product code		1.09020124
Maximum working range	J	450
Fall height	m	1533
Resolution at max. working range	J	0,0017
Angular resolution	°	0,0013
Max. impact speed of the hammer	m/s	5,5
Calibration mode according to		ISO 148-2:2016, ASTM E23
Machine weight without cover and ram	kg	1470
Enclosure weight	kg	150
Weight of concrete foundation	kg	1620
Environmental conditions		
Temperature of the working	°C	+10 ... +35
Storage temperature	°C	-25 ... +55
Humidity of the working environment	%	<90
Electrical connection		
Supply Voltage/Frequency	V	200 to 240 V
Number of phases		1
Frequency	Hz	50–60
Wattage	kVA	0,55
Other parameters		
Colour combination	RAL	1015, 5015
Interface with PC		Ethernet, USB ...



Accessories	
Product code	Product name
1.09050124	Instrumented striker – 2 mm*
1.09050224	Instrumented striker – 8 mm*
2.320024	Charpy hammer 150 J
2.321724–924	Izod hammer 150, 300, 450 J
2.322024	Izod striker – SH
1.09050424	Striker Izod instrumented blade*
2.322224	Support for Izod
2.322317	Impact tensile striker
2.322417	Fixture for impact tensile test
2.322517	Instrumented striker for tensile testing
2.3226-717	Brugger hammer 300, 450 J
2.322817	Brugger striker
2.322917	Brugger instrumented striker
2.323017	Brugger supports

\* Module included

Measurement parameters		
Aries energy J	Resolution at 15 J	Measuring range
150	0,008	0,2
300	0,016	0,4
450	0,023	0,6

