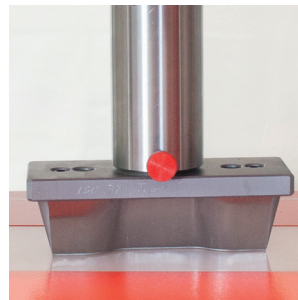
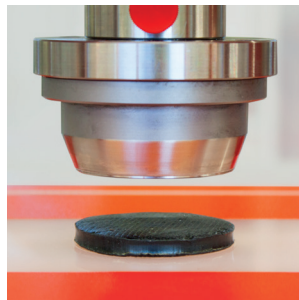


## Specimen and Die cutting



...Innovative testing solutions  
made in Germany!



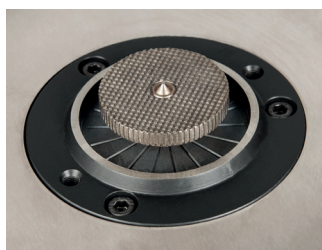
# MONTECH'S RUBBER AND POLYMER TESTING SOLUTIONS AT A GLANCE

MonTech Werkstoffprüfmaschinen GmbH is the world's leading premium manufacturer of rubber testing instruments and laboratory solutions. Our extensive product range covers instruments for basic to high-end testing applications in quality control as well as research and development, integrated laboratory software systems, technical and calibration services as well as world-class application support and consulting.

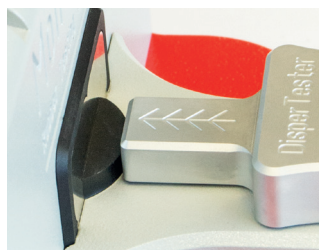
MonTech testing solutions are engineered and manufactured entirely in Germany according to highest quality standards. Our products and services are available to customers in more than 63 countries worldwide with premier local support and assistance. All MonTech products are either available in standard configurations, or can be adapted and built according to individual customer requests and requirements.



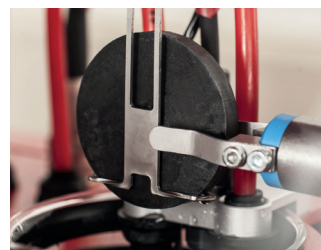
→ MOVING DIE RHEOMETER & RUBBER PROCESS ANALYZER



→ MOONEY VISCOMETER



→ DISPERSION



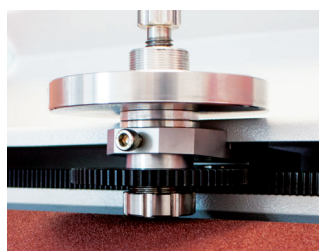
→ HARDNESS & DENSITY



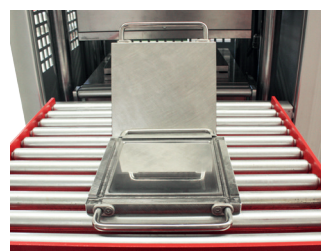
→ PLASTICITY



→ COMPRESSION SET



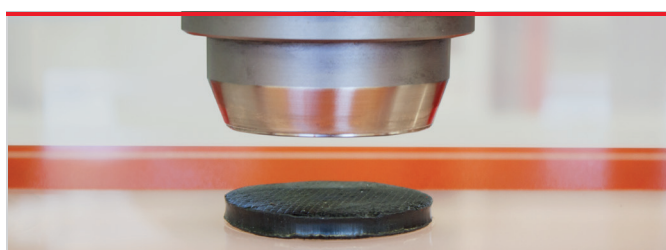
→ ABRASION



→ LABORATORY PRESSES



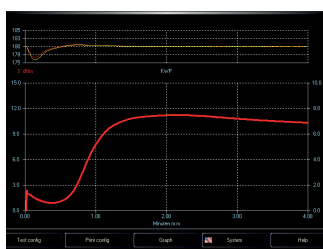
→ FATIGUE



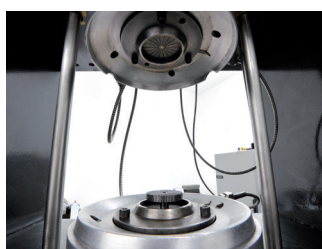
→ SAMPLE CUTTERS + DIES



→ BALE CUTTERS



→ LABORATORY INFORMATION MANAGEMENT SYSTEM (LIMS)



→ UPGRADES & REBUILDS



→ CALIBRATION, SERVICES & SUPPORT



# P-VS 3000 Die cutter / clicker press series

Designed for cutting cured rubber sheets, elastomers, plastic, cardboard, paper and many other materials



	<b>P-VS 3000 M</b>	<b>P-VS 3000</b>	<b>P-VS 3000 Plus</b>	<b>P-VS 3000 L</b>	<b>P-VS 3000 Plus L</b>
<b>Specification</b>	Manual sample cutter	Universal Sample cutter	High force sample cutting press	Large working area universal sample cutter	High force large working area sample cutting press
<b>Cutting force</b>	3.8 kN	8 kN	15 kN or 40kN	8 kN	15 kN or 40kN
<b>Cutting stroke</b>	30 mm	30 mm	30 mm	30 mm	30 mm
<b>Die height</b>	20 – 150 mm	20 – 50 mm	20 – 50 mm	20 – 50 mm	20 – 50 mm
<b>Throat depth</b>	70 mm	120 mm	120 mm	180 mm	180 mm
<b>Cutting area</b>	120 x 80 mm	250 x 100 mm 250 x 125mm optional	250 x 100 mm 250 x 125mm optional	370 x 200 mm	370 x 200 mm
<b>Max. material thickness / hardness</b>	6 mm / 95 Shore A	8 mm / 95 Shore A	10 mm / 98 Shore A (15kN) 10 mm / 70 Shore D (40kN)	8 mm / 95 Shore A	10 mm / 98 Shore A (15kN) 10 mm / 70 Shore D (40kN)
<b>Compatible cutting knives</b>	Any ISO, DIN, ASTM and other standard die types	Any ISO, DIN, ASTM and other standard die types	Any ISO, DIN, ASTM and other standard die types	Any ISO, DIN, ASTM and other standard die types	Any ISO, DIN, ASTM and other standard die types
<b>Reproducibility</b>	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %
<b>Dimensions (H x W x D)</b>	380 x 120 x 180 mm	440 x 350 x 380 mm	690 x 350 x 380 mm	440 x 470 x 500 mm	690 x 470 x 500 mm
<b>P-VS Sliding table Dimensions (H x W x D)</b>	–	460 x 300 x 1050 mm	460 x 300 x 1050 mm	–	–
<b>Weight</b>	14 kg	50 kg	72 kg (15kN) 108 kg (40kN)	78 kg	100 kg (15kN) 146 kg (40kN)
<b>Pneumatics (recommended line pressure)</b>	–	min. 5.0 Bar	min. 5.0 Bar	min. 5.0 Bar	min. 5.0 Bar

... please see the following pages for a detailed description on each sample cutter model!

# P-VS 3000

## DIE AND UNIVERSAL CUTTING OF RUBBER SPECIMENS AND SHEETS



### MonTech P-VS 3000 M Manual sample cutter

#### The P-VS 3000 M Lever Press

assures constant accuracy and precise cutting results. The cutter can conveniently be used for all types of ASTM, ISO, DIN, JIS cutting dies for all kind of samples made from rubber, leather and paper. It allows easy, quick and convenient sampling with simplified operation.

The base as well as head of the P-VS 3000M cutter is made from precisely machined cast steel ensuring highest rigidity and best cutting results. An integrated height adjustment spindle allows a quick set-up and adjustment of the cutter to any height of cutting dies. Once a specific cutting height is set, the cutting head can easily be clamped and fixed in the particular position.

Cutting dies can easily be inserted in the precisely guided piston rod and simply clamped by a central locking screw. The cutting table is built from durable PTFE material and fixed to a T-slot groove in the machine base. This design preserves the cutting dies from excessive wear as well as provides a solid work area.

Optionally large support tables and special accessories for cutting curved materials like hoses, tubes or cables are available.



### MonTech P-VS 3000 Standard model pneumatic sample cutter

#### Universal sample cutter

for fast and precise preparation of sample test specimens for tensile tests and all other DIN, ISO, ASTM, JIS, ... standard sample shapes from rubber, elastomers, foam rubber, plastic films, foils and paper.

The machine cuts the exact shape of the test samples using a powerful, direct pneumatic piston ram system. For safe and easy operation, the universal P-VS 3000 sample cutter is equipped with a two-hand safety operation system.

Any type of cutting knife can be used with the P-VS 3000 sample cutter. Die assemblies can be changed in seconds and cutting height can easily be adjusted on the upper piston ram.



### P-VS 3000 Sliding table option for efficient series cutting from a single slab



### MonTech P-VS 3000 Plus High force sample cutting press with 15kN or 40kN cutting force

#### High force universal sample cutter

for multiple-blade cutting knives or tough materials requiring high cutting forces.

Whenever there is a need to save time and increase productivity by cutting multiple samples at the same time, the P-VS 3000 Plus is the ideal sample cutter.

Equipped with 2-hand anti-tie down control and completely pneumatic operation, sample cutting is made easy and safe. The cutting force can be preset on the regulator unit, allowing enough cutting force to ensure precise and repeatable results while maintaining a long lifetime for the cutting knife.

By eliminating any need for electric or hydraulic supplies, the cutter can easily be hooked up almost anywhere, and can even be used in clean-room environments because of the fully enclosed design.



### MonTech P-VS 3000 L

Universal pneumatic sample cutter with larger working area

#### Large universal sample cutter

featuring an extended working area to easily handle larger slabs and specimens.

For large cutting dies with a total length of more than 160mm or larger slabs of more than 150x150mm to be cut, the P-VS 3000 L is the answer.

With a working area extended by 60mm to all sides as well as a cutting table enlarged by 60%, this larger version of the P-VS 3000 series provides you with the flexibility you need.

Like on all P-VS 3000 cutters also the L version feature transparent safety covers on both sides as well as backside of the cutter, combined with the two-hand anti tie down control making the instrument a completely safe and easy to use tool.

A recessed top platen allows easy access to the cutting area and a ergonomic operation of the cutter.



### MonTech P-VS 3000 Plus L

High-force pneumatic sample cutter with larger working area

#### Large and strong universal sample cutter

designed for large format slabs, hard materials and multi knife die assemblies for a highly efficient sample preparation.

Large format dies and tough materials in the high Shore A and low to medium Shore D range require higher cutting forces. For these applications the P-VS 3000 Plus with larger working area is the model of choice!

Featuring a direct pneumatic tandem or even pneumo-hydraulic cutting actuator the P-VS 3000 Plus is able to precisely process these tough materials.

A specially reinforced frame made from aerospace grade, high-strength aluminum absorbs all the additional cutting forces ensuring highest dimensional cutting accuracy.



### MonTech P-VS 3000 Strip

Guillotine strip cutting

#### Strip sample cutter

designed for cutting strips and stripes from raw materials, compounded rubber or cured sheets and products.

With a large, hardened and precision ground cutting knife sheets of up to 300mm in length and 30mm in height can be cut into sections of 2 to 50mm in width. The desired cutting width can easily be set by an adjustable backstop ensuring reproducible cutting results.

With a total cutting force of 15kN even hard and tough as well as even textile reinforced materials can be processed. The cutting force can easily be adjusted with the regulator unit supplied with the machine.

Similar to all other P-VS 3000 models the cutting table consists of a durable PTFE cutting board which can easily be replaced.

CUTTING TRIALS CAN BE PERFORMED WITH YOUR MATERIALS  
AT ANY OF OUR GLOBAL SHOWROOMS - CONTACT US TODAY TO  
SCHEDULE YOUR INDIVIDUAL TRIAL AND DEMONSTRATION!

# P-VS 3000

## SPECIAL APPLICATION VERSIONS COMPRESSION FORMER / PARALLEL CUTTER



### MonTech P-VS 3000 Compression former

Universal pneumatic sample former for “press to shape” applications

The P-VS 3000 Compression former has been specifically designed for pressing and forming of specimens from e.g. pellets, crumb rubber polymerisation, reactor slurry from polymer, very hard or brittle materials such as polymer reinforced ceramic materials, abrasive compounds and polymer bound additives.

Sets of samples can be prepared in a matter of seconds - for easy sample handling, the unit is fitted with an exchangeable piston / barrel assembly for fast material loading and removal of samples. The diameter of these preparation tools can be selected as per the customers individual application requirements such as e.g. RPA testing, Mooney testing, Moulding, ...

Compression tools are easily interchangeable and the Compression former unit can be converted into a normal P-VS 3000 sample cutter in a matter of seconds which makes the unit even more versatile.



Compression  
Forming tool set



### MonTech P-VS 3000 Para

Universal pneumatic sample cutter with large working area and parallel guided crosshead

The P-VS 3000 Para has been designed for versatile applications to prepare samples e.g. from rubber, cardboard or film sheets.

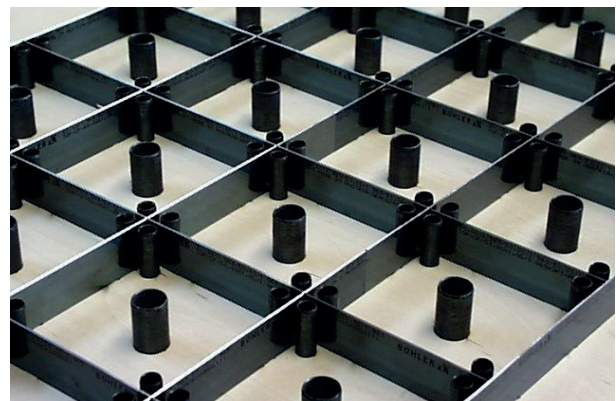
The large working area paired with the 4-point parallel guided crosshead ensures a perfect pressure distribution on the entire cutting / compression die and is therefore the ideal machine for cut-to-shape applications.

The P-VS 3000 Para is typically used with MonTech contour dies which are made to customers specification and are easily interchangeable.

This makes the cutter not only ideal for sample preparation in the laboratory but also for small-scale or trial production runs.

The P-VS 3000 Para is additionally available with higher cutting forces, hydraulic drive and swiveling crosshead.

*Contact us today to discuss your specific cutting application...!*



# RC 3000

## SPECIAL APPLICATION CUTTER FOR RING SPECIMENS



### MonTech RC 3000 Ring cutter

The special RC 3000 "Ring cutter" version has been designed for the accurate preparation of Ring shaped specimens from cured rubber sheets. Various precision die configurations according to e.g. ISO 37, DIN 53504 and ASTM D 412 are available.

The RC 3000 is equipped with 3 or 4 cutting stations allowing the simultaneous preparation of two ring samples or a single sample with pre-cutting from a raw sheet. For precision cutting of the cutting dies are mounted to a single crosshead with embedded ejector in order to meet the dimensional sample tolerances required by the relevant standards.

The cutter is supplied with a set of cutting dies according to ISO, ASTM, DIN or any other applicable standard. A die cutting set consists of cutting die(s) for outer diameter, inner diameter and optional pre-cutting.

#### The cutting process is extremely simple:

- Pre-cutting of the sample (optional)
- Inserting the sample in the next cutting station
- Cutting the outer diameter of the ring
- Inserting the sample in centering ring of the next station
- Cutting of the inner diameter
- Taking out of the finished sample

Parallel processing of multiple samples at the same time is of course possible.

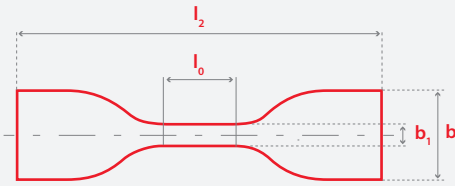
The cutter only requires compressed air eliminating the need for an electrical or hydraulic supply and simplifying operation and maintenance. In addition the unit is equipped with two-hand safety control and anti tie-down, the assuring a safe and reliable operation at all times - whether in a R&D or QC environment. For additional operator safety the cutting dies are equipped with automatic ejectors which are also safely protecting the sharp knife edges during the standby of the machine.

#### Technical specification

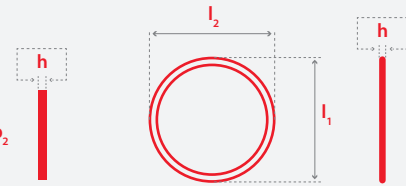
<b>Cutting force</b>	15 kN
<b>Standards / Ring sizes</b>	ISO 37 - Normal and Small size DIN 53504 - R1 and R2 ASTM D 412 - 1 and 2 <i>other sizes are available upon request</i>
<b>Cutting stations</b>	up to 4 cutting stations
<b>Max. material thickness / hardness</b>	8 mm / 98 Shore A
<b>Sample ejection</b>	Integrated in crosshead, automatic
<b>Inlay</b>	Cardboard or plastic inlays available
<b>Reproducibility</b>	better than 0.02 mm
<b>Cycle time</b>	< 3 seconds
<b>Dimensions (H x W x D)</b>	500 x 600 x 460 mm
<b>Weight</b>	~78 kg

# MonTech's

## UNIVERSAL SAMPLE CUTTING KNIVES AND DIES



- $L_0$  – gauge length
- $L_1$  – length of narrow parallel-sided portion or inner diameter
- $L_2$  – overall length or outer diameter



- $b_1$  – width of narrow portion
- $b_2$  – width at ends
- $h$  – thickness

1) Cutting is only possible for specimen showing a hardness less than 95 Shore A. Harder materials shall be machined by use of milling machines or other convenient machinery acc. to ISO 2818.

2) This specimen shape is specially designed for moulding. Cut specimens do not correspond to any standard.  
3) Value indicates the upper and lower tolerances.

MonTech's range of cutting knives and dies are durable and built to last, machined from a solid piece of steel, precision ground and hardened. MonTech cutting knives guarantee optimal dimensional stability, form accuracy and a long lifetime. All dies are available with automatic ejectors.

### Precision specimen cutters

MonTech is the leading supplier for specimen preparation systems for the rubber, plastics and composites industry with over 2000 dies and preparation systems manufactured annually.

The product line includes a full range of precision specimen cutting dies as well as clicker presses. MonTech dies are built to last and are considered to be the most reliable and durable in the market due to special machining and hardening processes, full compliance to international standards and a stringent quality control

All specimen cutting dies are manufactured from high grade tools steel to guarantee long lasting cutting edge sharpness for highly precise and repeatable test specimen preparation and therefore a higher test result accuracy and improved repeatability.

The cutter are precision machined and EDM cut before they are heat treated several times during the manufacturing process to remove any machining stresses. Each die is individually diamond lapped finished for increased cutting edge wear resistance. All cutters are supplied as a complete assembly with a spring loaded sample ejection system to remove the cut sample from the die and at the same time protect the cutting edges.

Cutters are available in accordance to international standards but can also be manufactured to any size or shape required.

Each cutting die is of course supplied with a detailed, traceable test and calibration report listing all critical sizes and dimensions and proofing full compliance to the related international standard or specification.

Each die is also available as a multi station die combining multiple cutting dies onto a single cover platen and mounting stud allowing multiple samples to be cut in a single operation.

### Mounting studs and die height configuration

MonTech precision cuttings dies are equipped with mounting studs with a internal thread of M16x1 (in the cover platen) and a outer diameter of 25mm to accurately fit in P-VS 3000 series sample cutters.

All dies are precisely machined and calibrated to a die height of 32mm plus a 12mm cover platen to which the actual cutting die is fitted to.

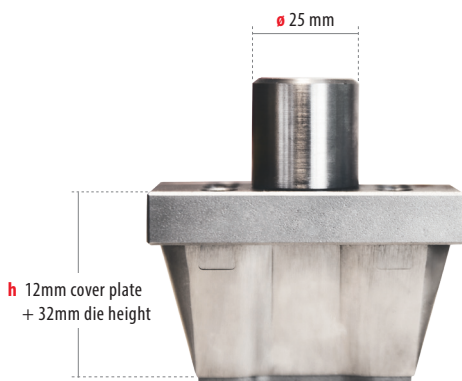
Of course customized mounting shanks and studs are also available to suit individual customer requirements. These include also recessed or grooved studs, quick-clamp and magnetic studs or simply flat cover platens.

The cover plate - with or without attached stud - ensures an even distribution of the cutting force onto the entire die as well as houses the ejector system. This full-faced mechanical ejector is incorporated into the blade and is factory adjusted to the target specimen thickness. On completion of the cutting operation the finished specimens are ejected. This minimizes the risk of injury to the operator and damage to the blade. For sensitive materials also specialized foam ejectors are available.

### Sharpening and re-certification of cutting dies

In order to maintain highest quality of production and standards MonTech also offers re-calibration and re-sharpening of test dies to ensure that dies are capable of meeting the requirements defined by the related standards or specification.

While re-sharpening dies the die height is precisely calibrated to the initial height of 32mm eliminating the need for the customer to re-adjust the sample cutter stroke and height when changing over between different dies. All results of the rework and re-sharpening process are precisely documented in a detailed test report and traceable calibration certificate.





# DIE CUTTERS FOR SPECIMEN PREPARATION

## Universal sample Cutting knives and Dies

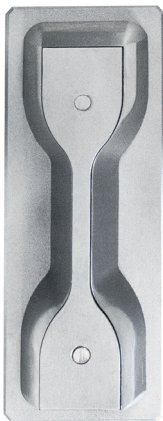
MonTechs range of cutting knives are all made from a single, solid piece of steel, precision ground and hardened. This special design guarantees optimal dimensional stability, form accuracy and a long lifetime. All ISO, ASTM, DIN, JIS, GB as well as selected die types according to other international standards are readily available.

Below you can find example die configurations and on the following pages the most common die types according to international standards with their specific shapes and geometries along with MonTech part numbers:

**All cutting dies are available as single, double, triple or multi dies with various similar or different dies mounted on a single cover plate - this allows cutting of multiple specimens in a single step!**

### DIN 53504 S1

Standard size Dumbbell die



### DIN 53504 S2 Triple

Three dies mounted on a single cover plate for preparation of three specimens simultaneously.



### ISO 34-1 and

ASTM D 624 Crescent

Tear die



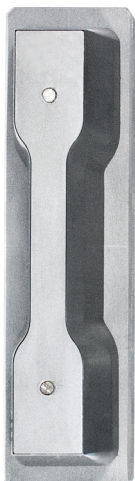
### ISO 34-1 Angle

Tear die with embedded nick



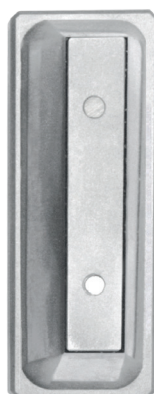
### ASTM D 638

Tensile die for plastic materials



### ISO 178

Die for Thermoplastic and Thermosetting materials



### ISO 34-1

Trouser Tear die



### ISO 37 A

Circular specimen cutting die








# DIE CUTTER OVERVIEW

## RUBBER DUMBELL AND RING

Standard	Type	Application	$l_2$ mm	$l_1$ mm	$b_2$ mm	$b_1$ mm	h mm	$L_0$ mm	Shape	Part - No
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### Rubbers and elastomers – Dumbell shape

Application: ISO 37 | Rubber, vulcanized or thermoplastic — Determination of tensile stress-strain properties

ISO 37	1	Preferred size	>115	33±2	25±1	6.2±0.2	2±0.2	25±0.5		MC 1.1010
ISO 37	1A	Smaller size	>100	21±1	25±1	5±0.1	2±0.2	20±0.5		MC 1.1011
ISO 37	2	Smaller preferred size	>75	25±1	12.5±1	4±0.1	2±0.2	20±0.5		MC 1.1012
ISO 37	3	Smaller size	>50	16±1	8.5±0.5	4±0.1	2±0.2	10±0.5		MC 1.1013
ISO 37	4	Very small size	>35	12±0.5	6±0.5	2±0.1	1±0.1	10±0.5		MC 1.1014







### Rubbers and elastomers – DIN 53504

Application: DIN 53504 | Rubber, vulcanized or thermoplastic — Determination of tensile stress-strain properties

DIN 53504	S1	Larger size	>115	33±1	25±1	6±0.05	2±0.2	25		MC 1.1020
DIN 53504	S1A	Smaller size	>100	250±1	25±1	5±0.05	2±0.2	25		MC 1.1024
DIN 53504	S2	Preferred size	>75	25±1	12.5±1	4±0.05	2±0.2	20		MC 1.1021
DIN 53504	S3A	Smaller size	>50	16±1	8.5±0.5	4±0.05	2±0.2	10		MC 1.1022
DIN 53504	S3	Very small size	>35	12±0.5	6±0.5	2±0.05	1±0.1	10		MC 1.1023

### Rubbers and elastomers – ASTM D 412

Application: ASTM D 412 | Standard test methods for rubber and thermoplastic elastomers

ASTM D 412	A	Possible size	>140	59±2	25±2	12±0.05	1.5...3.0	50±0.08		MC 1.1031
ASTM D 412	B	Possible size	>140	59±2	25±2	6+0.05	1.3...3.3	50±0.08		MC 1.1032
ASTM D 412	C	Smaller preferred size	>115	33±2	25±2	6+0.05	2±0.2	20/25 ±0.08		MC 1.1030
ASTM D 412	D	Possible size	>100	33±2	16±2	3+0.05	1.3...3.3	25±0.08		MC 1.1033
ASTM D 412	E	Possible size	>125	59±2	16±2	3+0.05	1.3...3.3	50±0.08		MC 1.1034
ASTM D 412	F	Possible size	>125	59±2	16±2	6+0.05	1.3...3.3	50±0.08		MC 1.1035

### Ring specimen cutting

For precision cutting of rubber test rings MonTech offers a special version of the RC 3000 "Ring cutter" containing a pre-cut station as well as two separate ring cutting stations for inner and outer diameter cutting. The multi cutting station design eliminates the need for frequent die changes as well as ensures a highly efficient sample preparation.

For more information on precision ring sample cutting, please also see page 7 of the brochure or contact MonTech!







# DIE CUTTER OVERVIEW

## RUBBER TEAR, MODULUS AND FATIGUE

Standard	Type	Application	$l_2$ mm	$l_1$ mm	$b_2$ mm	$b_1$ mm	h mm	$L_0$ mm	Shape	Part - No
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### Rubbers and elastomers – Ring shape

Application: ISO 37, DIN 53504, ASTM D 412 | Rubber, vulcanized or thermoplastic — Determination of tensile stress-strain properties

ISO 37	A	Normal size	52.6	44.6±0.2	-	-	4±0.2	-		MC 1.1016
ISO 37	B	Small size	10	8±0.1	-	-	1±0.1	-		MC 1.1017
DIN 53504	Ring - R1	Preferred size	52.6+0.05	44.6+0.05	-	-	4 / 6.3±0.2	152.7		MC 1.1025
DIN 53504	Ring - R2	Small size	44.6+0.05	36.6+0.05	-	-	4 / 6.3±0.2	127.5		MC 1.1026
ASTM D 412	Ring - 1	Preferred size	52.6±0.1	44.6±0.1	-	-	4..6	-		MC 1.1037
ASTM D 412	Ring - 2	Larger size	33.5±0.1	29.5±0.1	-	-	4..6	-		MC 1.1038

### Rubbers and elastomers – Trouser, Angle, Crescent shape

Application: ISO 34 and ASTM D 624 | Rubber, vulcanized or thermoplastic - Determination of tear strength

ISO 34-1	A	Tear test, trouser preferred size	>100	40±5 slit	15±1	7.5±0.5	2±0.2	-		MC 1.1050
ASTM D 624	T		>150							MC 1.1051
ISO 34-1	B	Tear test, angle with nick	>100	-	19±0.05	90°±0.5	2±0.2	-		MC 1.1055.N
ASTM D 624	C		MC 1.1056.N							
ISO 34-1	B	Tear test, angle without nick	>100	-	19±0.05	90°±0.5	2±0.2	-		MC 1.1055
ASTM D 624	C		MC 1.1056							
ISO 34-1	C	Tear test, crescent with nick	>100	-	25±0.5	R12.5±0.1	2±0.2	-		MC 1.1057.N
ASTM D 624	B		MC 1.1058.N							
ISO 34-1	C	Tear test, crescent without nick	>100	-	25±0.5	R12.5±0.1	2±0.2	-		MC 1.1057
ASTM D 624	B		MC 1.1058							
ASTM D 624	A	cutting die A	42	-	-	10.2	-	-		MC 1.1060
ISO 34-2	A	Delft tear test	120	-	-	9	2±0.2	-		MC 1.1065





### Rubbers and elastomers – Fatigue to Failure

Application: ASTM D 4482 - Fatigue to Failure FTF

ASTM D 4482		Fatigue to Failure FTF	78.74±0.01	25±0.05	12.5±1	4±0.1	1.4±0.05	25±0.5		MC 1.1039
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### Circular and Rectangular dies

Application: ISO 815 and General purpose

ISO 815	A	Compression set Large specimen	29±0.1	-	-	-	1-8	-		MC 10.1129
ASTM D 395	1									
ISO 815	B	Compression set Small specimen	13±0.1	-	-	-	1-8	-		MC 10.1113
ASTM D 395	2									
Circular General purpose		Diameter as per customer choice	>1-50	-	-	-	1-6	-		MC 10.1000
			>50-100	-	-	-	opt. 10	-		MC 10.1010
			>100-200	-	-	-	-	-		MC 10.1020
Rectangular General purpose		Dimensions as per customer choice	TL 1-50	-	-	-	1-6	-		MC 10.5000
			TL >50-100	-	-	-	opt. 10	-		MC 10.5010
			TL >100-200	-	-	-	-	-		MC 10.5020



# DIE CUTTER OVERVIEW

## THERMOPLASTICS







Standard	Type	Application	$l_2$ mm (inch)	$l_1$ mm (inch)	$b_2$ mm (inch)	$b_1$ mm (inch)	h mm (inch)	$L_0$ mm (inch)	Shape	Part - No
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### Thermoplastic and thermosetting materials

Application: ISO 3167 | Plastics - Multipurpose test specimens









ISO 3167	A	Injection moulded multipurpose	>150 (170)	80±2	20±0.2	10±0.2	4.0±0.2	-		MC 2.1000
ISO 3167	B	Compr. moulded or machined multip.	>150	60±0.5	20±0.2	10±0.2	4.0±0.2	-		MC 2.1010

Application: ISO 527-2 | Plastics - Determination of tensile properties - Part 2: Test conditions for moulding and extrusion plastics

ISO 527-2	1A	Injection moulded specimen	>150	80±2	20±0.2	10±0.2	4.0±0.2 (preferred)	50±0.5		MC 2.2000
ISO 527-2	1B	Compression moulded or machined specimen	>150	60±0.5	20±0.2	10±0.2	4.0±0.2 (preferred)	50±0.5		MC 2.2010
ISO 527-2	1BA	Specimen proportional 1:2 to type 1B	>75	30±0.5	10±0.5	5±0.5	>2	25±0.5		MC 2.2020
ISO 527-2	1BB	Specimen proportional 1:5 to type 1B	>30	12±0.5	4±0.2	2±0.2	>2	10±0.2		MC 2.2030
ISO 527-2	5A	identical to ISO 37 2 and ISO 527-3 5	>75	25±1	12.5±1	4±0.1	>2	20±0.5		MC 2.2040
ISO 527-2	5B	identical to ISO 37 4 and ISO 527-3 5	>35	12±0.5	6±0.5	2±0.1	>1	10±0.2		MC 2.2050

### Thermoplastic and thermosetting materials

Application: ASTM D 638 | Standard test method for tensile properties of plastics

ASTM D 638	I	Preferred specimen for rigid plastics	>165 (>6.5)	57±0.5 (2.25)	19+6.4 (>0.75)	13±0.5 (0.5)	3.2±0.4 (0.13±0.02)	50±0.25 (2)		MC 2.3000
ASTM D 638	II	Preferred if type I does not break in the narrow section	>183 (>7.2)	57±0.5 (2.25)	19+6.4 (>0.75)	6±0.5 (0.25)	3.2±0.4 (0.13±0.02)	50±0.25 (2)		MC 2.3010
ASTM D 638	III	for thickness > 7 mm (rigid and non-rigid plastics)	>246 (>9.7)	57±0.5 (2.25)	29+6.4 (>1.13)	19±0.5 (0.75)	7...14 (0.28/0.55)	50±0.25 (0.28/0.55)		MC 2.3020
ASTM D 638	IV	Smaller specimen from parts or semi-products	>63.5 (>2.5)	9.53 (0.375)	9.53+3.1 (>0.375)	3.18±0.5 (0.125)	3.2±0.4 (0.32±0.02)	7.62 (0.3)		MC 2.3030
ASTM D 638	V	For comparison between rigid and non-rigid plastics	>115 (>4.5)	33±0.5 (1.3)	19+6.4 (>0.75)	6±0.05 (0.25)	3.2±0.4 (0.32±0.02)	25±0.13 (1)		MC 2.3040
ASTM D 638	M-I	Preferred metric size for rigid and semi-rigid plastics	>150	60±0.5	20±0.5	10±0.5	<10	50±0.25		MC 2.3050
ASTM D 638	M-II	Metric size for non-rigid materials	>115	33±0.5	25±0.5	6±0.5	<4	25±0.5		MC 2.3060
ASTM D 638	M-III	Smaller metric size to M-I	>60	10±0.5	10±0.5	2.5±0.5	<4	7.5±0.2		MC 2.3070

Application: ISO 178 and ISO 179 | Plastics - Determination of flexural properties Izod/Sharp

ISO 178		flexural properties (center part of ISO 3167 specimen)	>80	-	10±0.2	4 (preferred)	-	-		MC 2.4000
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# DIE CUTTER OVERVIEW

## THIN SHEETS, FILM AND REINFORCED PLASTICS

Standard	Type	Application	$l_2$ mm	$l_1$ mm	$b_2$ mm	$b_1$ mm	h mm	$L_0$ mm	Shape	Part - No
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### Thin sheetings and films

Application: ISO 527-3 | Plastics - Determination of tensile properties - Part 3: Test conditions for films and sheets

ISO 527-3	2	10mm size	>150	–	–	10	<1	50±0.5		MC 3.1000
ISO 527-3	2	12mm size	>150	–	–	12	<1	50±0.5		MC 3.1010
ISO 527-3	2	13mm size	>150	–	–	13	<1	50±0.5		MC 3.1020
ISO 527-3	2	15mm size	>150	–	–	15	<1	50±0.5		MC 3.1030
ISO 527-3	2	20mm size	>150	–	–	20	<1	50±0.5		MC 3.1040
ISO 527-3	2	25mm size	>150	–	–	25	<1	50±0.5		MC 3.1050
ISO 527-3	4	Specimen shape for thin sheets	>152	50±0.5	38	25.4±0.1	<1	50±0.5		MC 3.1060
ISO 527-3	5	Specimen shape for QC purpose	>115	33±2	25±1	6±0.4	<1	25±0.25		MC 3.1070
ISO 527-3	1B	Specimen shape for QC purpose	>150	60±0.5	20±0.5	10±0.2	<1	50±0.5		MC 3.1080
ASTM D 882		Strip for quality control	>150	–	–	5...25.4	<1	100		MC 3.1100
ASTM D 882		Strip for modulus measurement	>300	–	–	5...25.4	<1	250		MC 3.1110

### Reinforced plastic composites

Application: ISO 527-4 | Plastics - Determination of tensile properties - Part 4: Test conditions for isotropic and anisotropic fiber reinforced plastic composites

ISO 527-4	1B	Preferred for isotropic and orthotropic reinforced composites and for multidirectional and fiber-reinforced materials	>150	60±0.5	20±0.2	10±0.2	4.0±0.2	50±0.5		MC 4.1000
ISO 527-4	2		>250	–	25±0.5 50±0.5	–	2...10	50±1		MC 4.1010
ISO 527-4	3		>250	–	25±0.5 50±0.5	–	2...10	50±1		MC 4.1020

### Reinforced plastic composites

Application: ISO 527-5 | Plastics - Determination of tensile properties - Part 2: Test conditions for unidirectional fiber reinforced plastic composites

ISO 527-5	A	Unidirectional fiber-reinforced plastic composites, longitudinal	250	–	15±0.5	–	1±0.2	50±1		MC 4.1050
ISO 527-5	B	For transverse direction	250	–	25±0.5	25±0.5	2±0.2	50±1		MC 4.1060







### Density and Specific Gravity

Application: ISO 1183 and ASTM D 792 | Plastics - Methods for determining the density of non-cellular plastics

ISO 1183 ASTM D 792		Round form	29	–	–	–	>1.5	–		MC 4.2000
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# DIE CUTTER OVERVIEW

## FOAMS

Standard	Type	Application	$l_2$ mm	$l_1$ mm	$b_2$ mm	$b_1$ mm	h mm	$L_0$ mm	Shape	Part - No
<b>Flexible cellular polymeric materials (soft foams)</b>										
Application: ISO 1798   Flexible cellular polymeric materials - Determination of tensile strength and elongation at break										
ISO 1798	1	Tensile specimen	152+5	55	25±0.5	13	10...15	25-50		MC 2.5000
ISO 1798	1A	Tensile specimen	122+5	40	25±0.5	10	10...15	-		MC 2.5010
ASTM D 3574	E	Tensile specimen	139.7	34.9	25.4	6.4	12.5±1.5	20 or 25		MC 2.5050
ISO 8067	A	Tear strength, method A	125±25	-	25±1	-	25±1	-		MC 2.5080
ISO 8067	B	Tear strength, method B	>100	19	12.7	-	-	-		MC 2.5090
ASTM D 3574	F	Tear resistance test	152.4	-	25.4	-	25.4	-		MC 2.5060

# DIE CUTTER OVERVIEW

## PLASTIC PIPES

Standard	Type	Application	$l_2$ mm	$l_1$ mm	$b_2$ mm	$b_1$ mm	h mm	$L_0$ mm	Shape	Part - No
<b>Plastic piping</b>										
Application: ISO 6259-2   Thermoplastic pipes - Determination of tensile properties										
<b>PVC-Pipes</b>										
ISO 6259-2	1	Machined specimen	>115	33±2	>15	6+0.4	wall thickness	25±1		MC 5.1000
ISO 6259-2	2	By cutting die produced specimen	>115	33±2	25±1	6+0.4	wall thickness	25±1		MC 5.1010
<b>Polyolefin pipes (PE, PP)</b>										
ISO 6259-3	1	Wall thickness >5 mm similar ISO 527-2 1B	>115	60±0.5	20±0.2	10±0.2	wall thickness	50±0.5		MC 5.2000
ISO 6259-3	2	Wall thickness <5 mm similar ISO 37 Type 1	>115	33±2	25±1	6+0.4	wall thickness	25±1		MC 5.2010
ISO 6259-3	3	Wall thickness >12 mm	>250	25±1	100±3	25±1	wall thickness	20±1		MC 5.2020

# DIE CUTTER OVERVIEW

## COUNTRY OR APPLICATION SPECIFIC CUTTERS

### Other available standard die types include:

**ISO:** ISO 179 with / without notch  
 ISO 180 with / without notch  
 ISO 294-2  
 ISO 812 type A  
 ISO 812 type B  
 ISO 816  
 ISO 974  
 ISO 1431  
 ISO 1432 Gehman  
 ISO 2285 T50  
 ISO 2285CL  
 ISO 2921 T50  
 ISO 4674-A2  
 ISO 5603  
 ISO 6383-1 Trouser 150 × 50  
 ISO 6383-2 Tear 75 × 63 mm  
 ISO 6603-1&2 60 × 60 mm  
 ISO 8256 die 3  
 ISO 8256 die 4  
 ISO 8256 die 52  
 ISO 12244  
 ISO/DIS 3604

**JIS:** JIS K 6251  
 JIS K 6301 Types 1 to 4  
 JIS K 6301 Types A and B

**GOST:** GOST 2621  
 GOST 270

**ASTM:** ASTM D395  
 ASTM D413  
 ASTM D454  
 ASTM D470  
 ASTM D4701  
 ASTM D518  
 ASTM D572  
 ASTM D573  
 ASTM D575  
 ASTM D623  
 ASTM D648  
 ASTM D746  
 ASTM D814  
 ASTM D816  
 ASTM D865  
 ASTM D925  
 ASTM D926  
 ASTM D945  
 ASTM D991  
 ASTM D1052  
 ASTM D1053  
 ASTM D1054  
 ASTM D1149  
 ASTM D1229  
 ASTM D1148

ASTM D1329  
 ASTM D1460  
 ASTM D1630  
 ASTM D1646  
 ASTM D1693  
 ASTM D1822  
 ASTM D2084  
 ASTM D2136  
 ASTM D2137  
 ASTM D2209  
 ASTM D3395  
 ASTM D3763  
 ASTM D4482  
 ASTM D5963  
 ASTM D6049

**IEC:** IEC 811-1-1 Fig 12  
 IEC 811-1-1 Fig 13

*... as well as many more on request*

### Custom shapes and geometries, multi-dies

MonTech is able to design, produce and calibrate cutting dies of any shape. Whether according to a national / international standard or specifically designed for your application we are the right partner for any needs.

Cutting dies along with their mounting studs, cover platens and ejectors are 3D modeled and FEM simulated before each die is actually manufactured.

This also covers combination dies where different standard test dies are grouped together in order to produce multiple similar or different specimens in a single cutting step. This allows to you standardize and simplify your laboratory processes as well as save major sample preparation time and cost.

Besides die cutter and cutting presses MonTech also designs and manufactures curing compression moulding presses for the preparation of test slabs for die cutting.

***Our applications team can provide you with answers and solutions for your entire sample preparation process!***

### Compression platens

For all standard P-VS 3000 models specific compression platens are available allowing the cutters also to be utilized with dies which do not have a specific mounting shank. This also includes contour dies allowing a flexible and efficient operation of the cutting system.

Standard compression platens include the following models:

- Ø 100mm anodized aluminum	MC 50.1000
- Ø 200mm stainless steel	MC 50.2000
- 140x100mm stainless steel	MC 50.3000

*...other types are available on request*

# CIRCULAR DIE CUTTERS

## ROTATING AND NON-ROTATING CIRCULAR CUTTING DIES

Specific applications such as abrasion testing, compression set testing, DMA and other require circular test specimens of various thicknesses to be prepared from finished rubber goods, products, parts or sheets.

Circular, non-rotating cutters therefore provide an easy sampling solution for these applications allowing easy sample extraction even from complicated rubber parts. MonTech dies and inserts have therefore a specially designed cutting edge to ensure that the parts and samples are punched out with a perpendicular force application and therefore distortion during the cutting process is minimized.

Rotating cutters are available in a variety of sizes and configurations ranging from 2 to 60mm in diameter. Depending on the die design and application drilling knives are either an exchangeable drilling insert or directly ground into the die body.

As drilling speeds of typically >1.000 rpm are utilized - or even higher drilling speeds for harder samples - MonTech rotating dies are precise calibrated for a minimized concentric runout. Rotating cutters are fitted with standard, threaded, hexagonal or conical shafts such as MK2 in order to utilize the cutters directly in standard column drills. Additionally MonTech can also supply suitable drilling machines, table supports, clamping devices, cooling systems and handling tools.



# CONTOUR DIES

## TO CUSTOMER DESIGN OR INTERNATIONAL STANDARDS

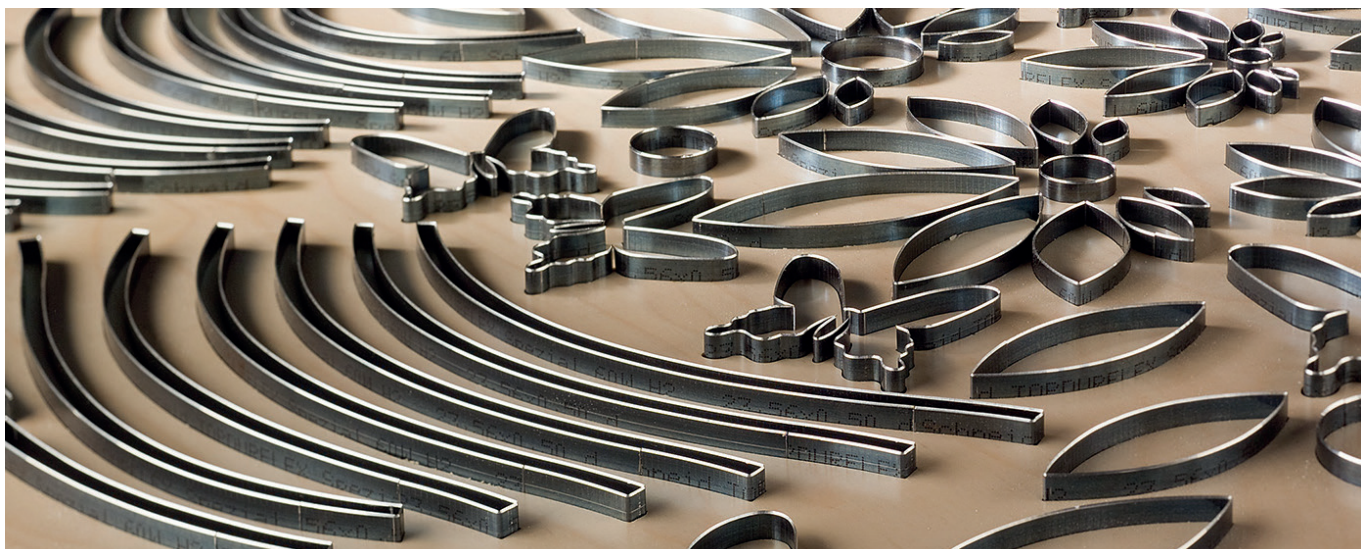
MonTech manufactures contour dies in various configurations as per customer requirements to cut any kind, shape, geometry or form of sample.

Ribbon steel contour dies are the ideal solution for low-cost prototyping, special shapes and geometries. Dies are always customized formed using high-strength, tension free rolled strip steel. These strips are cut to the specific geometry length, bent to shape, welded together where needed and afterwards precisely assembled on a backing plate - depending on the application made from metal, wood, acrylic glass or plastic materials.

Ejection mechanisms - either full face spring loaded ejectors, pin ejectors or foam ejection system - can easily be integrated.

In conjunction with the P-VS 3000 with compression platen or P-VS 3000 Para for larger dies, almost any cutting shape of rubber, cardboard, plastic, composite, tape or film materials can be realized in a short period of time.

**Contact us today to discuss your specific cutting application...!**





# ACCESSORIES AND TOOLS

## FOR SPECIMEN PREPARATION

A wide assortment of highly productive tools and accessories for sample preparation produced by MonTech ensures an efficient workflow and highest productivity. Available systems include:



- **Thickness gauges** with a variety of measurement tips and ranges as well as deadloads  
Available with different stands or as handheld units

- **Nick cutters**  
for nicking and notching of tear samples.  
Standard types include:  
- ISO 34-1 Type B Angle  
- ISO 34-1 Type C Crescent  
- ASTM D 624 Type B Crescent  
- ...

- **Piercing tools**  
for De-Mattia testing and other tests  
requiring pierced samples  
Typical types include:  
- ISO 132  
- ASTM D 813  
- ...

- **Bench markers**  
For quick and easy indication of  
required gauge length settings



# CONSUMABLES AND PUNCH PLATES

## FOR ALL KINDS OF SPECIMEN PREPARATION SYSTEMS

MonTech provides a wide range of standard and customized die cutting plates and punch underlays used in all kinds and types of cutting presses  
Available types include:

- LDPE and HDPE strips and plates in various hardnesses and grades
- PTFE plates and blocks for sensitive applications
- Cellular materials for complex geometries and highly sensitive applications
- Economic paper and cardboard sheets and strips

Using high quality MonTech punch plates and consumables will provide you with the best and highly repeatable cutting results - ensuring that dimensional sample specifications are met.

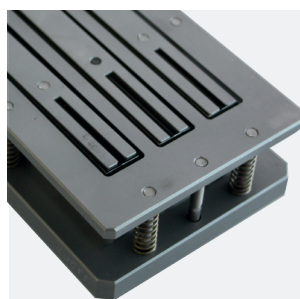
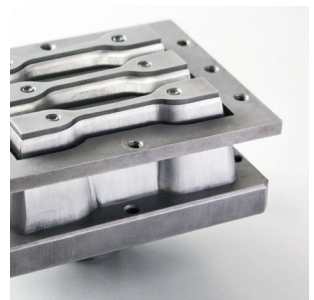
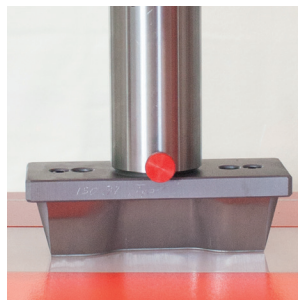
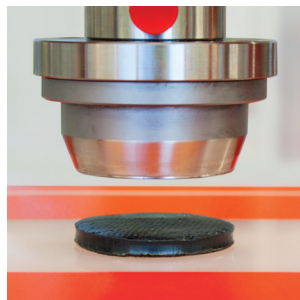
Your advantages at a glance:

- Optimum surface hardness  
adjusted to the materials to be cut and protecting the knife edge at the same time.
- Superb flatness  
for faster alignment and precise cutting results
- Constant material quality  
Lot traceable and application tested
- Longer shelf life and service life  
for optimum diecutting results, even with highly intensive use

CONTACT US TODAY TO  
DISCUSS AND FIND YOUR  
INDIVIDUAL SAMPLE  
PREPARATION SOLUTION!



## Specimen and Die cutting



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