



Ultra-Life Volumetric Die

CCSi manufactures these high quality *Ultra-Life* Specimen Cutting Dies for the determination of plasticity and recovery of unvulcanized rubber by means of the parallel plate plastometer, as described in [ASTM D926](#) 'Standard Test Method for Rubber Property – Plasticity and Recovery (Parallel Plate Method)'.

It is important to note that [ISO 2007](#) 'Rubber, Unvulcanized – Determination of Plasticity – Rapid Plastimeter Method' and [ASTM D3194](#) 'Test Method for Rubber From Natural Sources – Plasticity Retention Index (PRI)' use a principle similar to this test method and the apparatus, test conditions, and procedures are different. Therefore, the test results may not be correlated.

There is a known difficulty with this test procedure, that being the preparation of the test specimen, which is related to obtaining a specimen of the proper geometry and volume. This is evidenced by the historically poor repeatability and reproducibility, and witnessed by the *Precision Statement* in the method. These difficulties may be overcome by employing the CCSi *Volumetric Specimen Dies*, which are of the 'mated pair' configuration

Singly, each die part precisely forms a 16 mm \varnothing , 5 mm thick cylinder. When they are mated, a specimen is formed having the required volume of $2.00 \pm 0.02 \text{ cm}^3$, that being a $16 \pm 0.02 \text{ mm } \varnothing$, $10 \pm 0.04 \text{ mm}$, thick cylinder.

The CCSi *Volumetric Specimen Dies* feature a 'bored-through' orifice in each die part to allow for excess air to escape during the forming process. It may also be used for the introduction of HVLP (high volume low pressure) compressed air to assist in removing the specimen.

Alternatively, the CCSi *Rotating Specimen Die* may be employed to obtain specimens from either plied or homogenous test pieces. This die is equipped with a special integral 0.375 inch diameter shaft, facilitating its mounting in a drill press, or similar device, as it is necessary to rotate the die while cutting the specimen.

The D926 *Rotating Specimen Die* features a top plate positioned at a height of $10.0 \pm 0.04 \text{ mm}$, that allows the $16 \pm 0.05 \text{ mm } \varnothing$ cylinder to form a specimen having a volume of $2.00 \pm 0.02 \text{ cm}^3$. The top plate also has the 'bored-through' orifice feature. It should be noted that extra care is required, when forming specimens from plied test pieces, to avoid voids between them.



Ultra-Life Rotating Die

Accuracy may be further improved by using the CCSi [Williams' Parallel Plate Plastometer \(Plastimeter\)](#) for precisely performing the *D926 Plasticity Procedure* and the CCSi [ASTM D926 Thickness Gauge](#), which is specifically designed for performing the *D926 Recovery Procedure*.

CCSi *Ultra-Life* Specimen Dies: Quality Manufacturing

CCSi *Ultra-Life* specimen cutting dies are manufactured from homogenous, solid, high carbon content A2 tool steel. Each undergoes multi-axis precision grinding and conventional, plunge, or wire EDM (Electrical Discharge Machining) processes ... producing a world-class, close tolerance die.

Precision grinding and EDM processes ensure true parallelism and multi-plane dimensional accuracy. The quality of materials, design, and engineering serve to provide the highest specimen quality possible, over an extended service life.

Where highly technical manufacturing techniques and processes end ... old-world craftsmanship begins!

CCSi *Ultra-Life* specimen cutting dies are individually serialized, hand-honed, and mirror polished. A protective coating of industrial enamel is applied to the non-cutting surfaces before undergoing a rigorous final inspection.

Each *Ultra-Life* specimen cutting die includes a detailed final report and certification to the applicable standard, traceable to NIST, and compliant with ISO 9001:2000 and ISO/IEC 17025. The specimen dies are placed in a plastic, blow-molded, 'clam shell' style case with a foam lining to protect the die during transport and storage.

CCSi *Ultra-Life* Specimen Dies: Features

The CCSi Specimen Cutting Dies Feature:

- Exclusive *Ultra-Life* cutting edge technology;
- Designed with advanced 3D solid modeling;
- High carbon content A2 tool steel;
- Manufactured using computerized systems and techniques;
- EDM (Electrical Discharge Machining);
- CNC (Computer Numerical Control) 4 axis machining;
- Precision ground;
- Expertly honed;
- Finely polished;
- Protective industrial enamel coating;
- Plastic, foam lined, protective case;
- Traceability of dimensional measurement to NIST;
- Certification to ASTM D926;
- Compliance with ISO 9001:2000 and ISO/IEC 17025;

Available in:

- ASTM D926 *volumetric die* (mated pair) configuration;
- ASTM D926 *rotating die* configuration.

CCSi *Ultra-Life* ASTM D926 Specimen Cutting Dies: Specifications & Pricing

Part Number	Description	Dimensions
CCSi-D926-mp	D926 'mated pair' dies, mounting devices are by special request only.	diameter: 16 ± 0.02 mm Ø total depth: 10 ± 0.04 mm volume: 2.00 ± 0.02 cm ³
CCSi-D926-rd	D926 'rotating die', mounting shaft of 9.5 mm Ø	diameter: 16 ± 0.02 mm Ø total depth: 10 ± 0.04 mm volume: 2.00 ± 0.02 cm ³

Please Request a [Quotation](#) for current pricing and delivery.

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