



Ultra-Life D1329 Specimen Die

CCSi manufactures these high quality Specimen Cutting Dies for the determination of the Temperature Retraction (TR) for the evaluation of the effects of crystallization and for the comparison of the viscoelastic properties of rubber and rubber-like materials at low temperatures, as described in [ASTM D1329](#), “Standard Test Method for Evaluating Rubber Property—Retraction at Lower Temperatures (TR Test).”

This test method is carried out by:

- elongating the specimen;
- locking it in the elongated condition;

- “freezing” it to a state of reduced elasticity;
- releasing the specimen and allowing it to retract freely while raising the temperature at a uniform rate;
- measuring the length of the specimen at regular temperature intervals while it is retracting;
- computing the percentage retraction at the temperature intervals.

Three die lengths (the narrow rectangular portion) are specified in the method: 25, 38, and 51 mm, while the end “tabs” are all of the same dimensions. These are used according to the ultimate elongation and the limitations of the specimen racks.

In practice, the temperatures corresponding to 10% (TR10) and 70% (TR70) retraction are of particular importance.

The difference in the temperature between 10% retraction and 70% retraction increases correspondingly to an increase in crystallization. Where TR70 correlates with low-temperature compression set, TR10 correlates with brittleness points in vulcanizates with similar polymers. The retraction rate correlates with low temperature flexibility of both crystallizable and non-crystallizable rubbers

This test provides for the evaluation of the effect of crystallization and comparing viscoelastic properties of materials at low temperatures. When employed in conjunction with other low temperature tests, it is very useful in selecting materials for low temperature applications.

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 D1329;
- Compliance with ISO 9001:2000 and ISO/IEC 17025.

Available in:

- ASTM D1329 overall lengths of 37, 50 & 63 mm.

CCSi *Ultra-Life* ASTM D1329 Specimen Cutting Dies: Specifications & Pricing

Part Number	Description	Dimensions
CCSi-D1329-37n	37 mm Die without mounting device	25 ± 1.27 + $[6.4 \pm 0.2 \times 6.4 \pm 0.2]$ x 2.0 ± 0.2 mm
CCSi-D1329-37a	37 mm Die with arbor press mount	
CCSi-D1329-37p	37 mm Die with press adapter	
CCSi-D1329-37m	37 mm Die with mallet handle	
CCSi-D1329-50n	50 mm Die without mounting device	38 ± 1.27 + $[6.4 \pm 0.2 \times 6.4 \pm 0.2]$ x 2.0 ± 0.2 mm
CCSi-D1329-50a	50 mm Die with arbor press mount	
CCSi-D1329-50p	50 mm Die with press adapter	
CCSi-D1329-50m	50 mm Die with mallet handle	
CCSi-D1329-63n	63 mm Die without mounting device	51 ± 1.27 + $[6.4 \pm 0.2 \times 6.4 \pm 0.2]$ x 2.0 ± 0.2 mm
CCSi-D1329-63a	63 mm Die with arbor press mount	
CCSi-D1329-63p	63 mm Die with press adapter	
CCSi-D1329-63m	63 mm Die with mallet handle	
Please Request a Quotation for current pricing and delivery.		

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