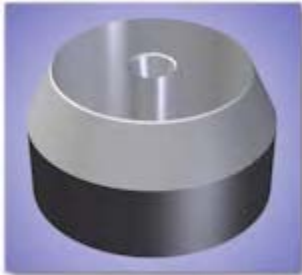


D1646 Upper Specimen Die



D1646 Lower Specimen Die

CCSi manufactures these high quality Specimen Cutting Dies for the techniques employed to measure certain properties using a Mooney Viscometer, as described in [ASTM D1646 'Standard Test Methods for Rubber – Viscosity, Stress Relaxation, and Pre-Vulcanization Characteristics \(Mooney Viscometer\)'](#):

- *Mooney viscosity*, the shearing torque resisting the rotation of a rotor, embedded in rubber, within a die cavity;
- *stress relaxation*, upon abruptly stopping the rotation of the rotor, the torque or stress, on the rotor decreases at a rate dependent on the rubber and the temperature of the test;
- *pre-vulcanization*, when compounded rubber is tested at a temperature at which vulcanization may occur, the vulcanization reaction produces an increase in torque.

It is necessary for the Mooney Viscometer test specimens to be formed in two halves, as they act as an envelope in which the rotor is encapsulated. The lower specimen half requires a centrally located orifice through which the shaft of the rotor passes.

The upper specimen half is a solid disc, which under the pressure and temperature of the Mooney Viscometer die cavity, combines with the lower specimen half to form a homogenous capsule.

The combined volume of the two specimen halves is stipulated as $25 \pm 3 \text{ cm}^3$. The volume may be calculated as a function of the mass, provided the relative density is known. Therefore, it is necessary to first determine the density of the subject material, then adjust the mass accordingly ($\pm 3 \text{ g}$) after the specimens are die cut.

The CCSi lower Mooney viscometer specimen die is of a unique and innovative design, engineered to provide an orifice for the rotor shaft when the specimen is cut... a time saving feature. The orifice is actually a 'bore through', which facilitates the removal of the excess material.

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 1646;
- Compliance with ISO 9001:2000 and ISO/IEC 17025;
- Lower specimen die has an integral 'hole punch' for the rotor shaft.

Available in:

- ASTM D1646 upper die,
- ASTM D1646 lower die.

CCSi *Ultra-Life* ASTM D1646 Specimen Cutting Dies: Specifications & Pricing

Part Number	Description	Dimensions
CCSi-D1646-Un	Upper die without mounting device	45 -0.0 / +0.1 mm Ø (1.75 -0.0 / + 0.004 inch)
CCSi-D1646-Ua	Upper die with arbor press mount	
CCSi-D1646-Up	Upper die with press adapter	
CCSi-D1646-Um	Upper die with mallet handle	
CCSi-D1646-Ln	Lower Die without mounting device	45 -0.0 / +0.1 mm Ø (1.75 -0.0 / + 0.004 inch)
CCSi-D1646-La	Lower Die with arbor press mount	
CCSi-D1646-Lp	Lower Die with press adapter	
CCSi-D1646-Lm	Lower Die with mallet handle	
Please Request a Quotation for current pricing and delivery.		

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