309.1 - Impact Standards: Charpy V-Notch Specimens

These SRMs are test specimens intended for the indirect verification of Charpy testing machines in accordance with the current ASTM E23 Standard and the current ISO 148-12 Standard.

SRMs 2098, 2561, and 2563 are NIST-Verification Charpy V-notch specimens that have a post-test evaluation service. SRMs 2098, 2561, and 2563 are to be tested at 21 °C. For each of these SRMs, specimens should be impact tested (broken) consecutivelyduring the same day. A completed questionnaire and digital pictures of the broken samples should be then emailed to NIST Boulder for evaluation. An acceptable machine will produce an average value within 1.4 J or 5 % of the NIST certified energy value, whichever is greater.

SRMs 2093, 2097, 2099, 2562, and 2564 are Self-Verification Charpy V-notch specimens that do not have any post-test services available. These SRMs provide a lower cost option for a self-service indirect verification of a user's machine equipped with an 8 mm striker. SRMs 2093 and 2097 are to be tested at -40 °C. SRMs 2099, 2562, and 2564 are to be tested at 21 °C. These SRMs are not returned to NIST Boulder for evaluation, and no questionnaire needs to be completed.

SRMs 2197, 2198, and 2199 are Self-Verification Charpy V-notch specimens that do not have any post-test services available. These SRMs allow performing a self-service indirect verification of a user's machine equipped with a 2 mm striker. These SRMs are to be tested at 21 °C. These SRMs are not returned to NIST Boulder for evaluation, and no questionnaire needs to be completed.

SRMs 2112 and 2113 are Self-Verification Charpy V-notch specimens that are certified for absorbed energy at -40 °C and 21 °C, and for maximum force at 21 °C. These SRMs provide a means to verify the performance of both the energy and force scales of an instrumented Charpy impact machine at 21 °C. They can also be used to verify just the energy scale of a machine at -40° C, similar to SRMs 2093 and 2097. An acceptable machine will produce an average value within 1.4 J or 5 % of the certified energy value, whichever is greater. Currently, specific requirements are not available to verify the performance of the force scale for a Charpy test machine.

SRMs 2216, 2218, and 2219 are miniaturized KLST-specimens intended for the verification of maximum force and absorbed energy values measured at 21 °C using a small-scale Charpy impact machine, in accordance with the current ASTM E2248 or ISO 14556 standards. Each SRM unit consists of a set of three specimens needed to perform a single verification.

SRMs 2237, 2238, and 2239 are miniaturized RHS-specimens intended for the verification of absorbed energy values measured at 21 °C using a small-scale Charpy impact machine, in accordance with the current ASTM E2248 or ISO 14556 standards. Each SRM unit consists of a set of specimens needed to perform a single verification.

PLEASE NOTE: The tables are presented to facilitate comparisons among a family of materials to help customers select the best SRM for their needs. For specific values and uncertainties, the certificate is the only official source.

NIST-Verification

SRM	Description	Unit of Issue	Typical Absorbed Energy Range (J)
	Test at 21 °C, 8 mm Striker		
2561	Low-Energy Charpy V-Notch Specimens (NIST-Verification, 21 °C, 8 mm Striker)	set	13 to 20
2563	High-Energy Charpy V-Notch Specimens (NIST-Verification, 21 °C, 8 mm Striker)	set	90 to 140
2098	Super-High-Energy Charpy V-Notch Specimens (NIST-Verification, 8 mm Striker)	set	175 to 240

Self-Verification

SRM	Description	Unit of Issue	Typical Absorbed Energy Range (J)
	Test at -40 °C, 8 mm Striker		
2093	Low-Energy Charpy V-Notch Specimens (Self-Verification, -40 °C, 8 mm Striker)	set	13 to 20
2097	High-Energy Charpy V-Notch Specimens (Self-Verification, -40 °C, 8 mm Striker)	set	90 to 140
	Test at 21 °C, 8 mm Striker		
2562	Low-Energy Charpy V-Notch Specimens (Self-Verification, 21 °C, 8 mm Striker)	set	13 to 20
2564	High-Energy Charpy V-Notch Specimens (Self-Verification, 21 °C, 8 mm Striker)	set	90 to 140
2099	Super-High-Energy Charpy V-Notch Specimens (Self-Verification, 8 mm Striker)	set	175 to 240
	Test at 21 °C, 2 mm Striker		
2197	Low-Energy Charpy V-Notch Specimens (Self-Verification, 2-mm Striker)	set	15 to 25
2198	High-Energy Charpy V-Notch Specimens (Self-Verification, 2-mm Striker)	set	95 to 150
2199	Super-High-Energy Charpy V-Notch Specimens (Self-Verification, 2 mm Striker)	set	180 to 250
	Test at -40 °C or at 21 °C, 8 mm Striker		
2112	Dynamic Impact Force Verification Specimens (Self-Verification, 8 mm Striker; 24 kN nominal)	set	97.5
2113	Dynamic Impact Force Verification Specimens (Self-Verification, 8 mm Striker; 33 kN nominal)	set	15.3
	Test at 21 °C, Miniaturized Specimens		
2216	Miniaturized Low-Energy Charpy V-Notch KLST Specimens (Self-Verification)	set	1.4 to 1.8
2218	Miniaturized High-Energy Charpy V-Notch KLST Specimens (Self-Verification)	set	5.5 to 6
2219	Miniaturized Super-High Energy Charpy V-Notch KLST Specimens (Self-Verification)	set	9 to 11
	Test at 21 °C, Miniaturized Specimens		
2237	Miniaturized Low-Energy Charpy V-Notch RHS Specimens (Self-Verification)	set	3.5 to 4
2238	Miniaturized High-Energy Charpy V-Notch RHS Specimens (Self-Verification)	set	13 to 15
2239	Miniaturized Super-High-Energy Charpy V-Notch RHS Specimens (Self-Verification)	set	33 to 36