LOW TEMPERATURE COOLING CHAMBER FOR DWTT IMPACT SPECIMENS

STANDARDS

ASTM E208
ASTM E436

APPLICATIONS

Low Temperature Cooling Chamber for DWTT Impact Specimens

Low Temperature Cooling Chamber for DWTT Impact Specimens QualiLTC80™ DWTT, featuring an advanced compressor refrigeration system. This chamber is designed to meet the low-temperature device requirements specified in ASTM E436, ASTM E208, JB-5376-1991, Technical Requirements of Low Temperature Constant Temperature Tank Steel-Drop-Weight Tear Test Method.

QualiLTC80™ DWTT features cascade compressor refrigeration technology, the heat balance principle, and a circulating stirring method to achieve uniform cooling and maintain a consistent temperature for test specimens. It fully adheres to the temperature control specifications outlined in relevant standards.

QualiLTC80™ DWTT is equipped with single-chip microcomputer technology for precise control, featuring a digital temperature display, automatic temperature regulation, timing functions, and alarms. It is user-friendly and safe, offering rapid cooling, large capacity, and high accuracy in temperature control. This makes it the ideal solution for cooling and preserving metal material samples during low-temperature impact tests. Additionally, it is suitable for other low-temperature detection and testing applications.

Low Temperature Cooling Chamber for DWTT Impact Specimens

Applicable Standards

1. ASTM E436-2003: Standard Test Method for Drop-Weight Tests of Ferritic Steels
2. ASTM E208-2017: Standard Test Method for Conducting Drop-Weight Test to Determine Nil-Ductility Transition Temperature of Ferritic Steels
3. JB-5376-1991: Technical Requirements for Low Temperature Constant Temperature Tank

FEATURES

Low Temperature Cooling Chamber for DWTT Impact Specimens

1. **User-Friendly Design**: QualiLTC80™ DWTT features a split structure forming an "L" shape, with a high side housing the control panel for easy observation and operation, and a low side containing the freezing tank for convenient sample placement and securing. The height of the machine is aligned with the impact testing machine, allowing for quick and precise sample positioning.

2. **Advanced Refrigeration System Components**: QualiLTC80™ DWTT incorporates high-end components, including a fully enclosed compressor from France's Tecumseh, ensuring stable operation and a long service life. It features a high-efficiency external rotor condensing fan with low noise and durability, an imported brazed plate heat exchanger for compact and efficient cooling, and imported solenoid and expansion valves. The refrigerant used is environmentally friendly.

3. **High Temperature Control Accuracy**: QualiLTC80™ DWTT is equipped with a high-precision temperature control instrument with automatic PID adjustment to maintain a constant temperature. It includes a high-performance PT100 platinum resistance sensor with a stainless steel probe for stable and precise measurements. The fully enclosed stirring motor operates quietly and reliably in low-temperature, high-humidity environments. The tank medium is actively stirred for uniformity, and the high-quality stainless steel heater ensures safety and durability, minimizing temperature fluctuations.

4. **Large Sample Capacity**: QualiLTC80™ DWTT features two specimen baskets and can freeze up to 22 standard specimens of size (305±5) x (762±1.5) x (plate thickness 3~40) in one cycle. It also accommodates various NDT sample sizes:
   - P-1: (360±1) x (90±2) x (25±2.5)
   - P-2: (130±1) x (50±1) x (20±1)
   - P-3: (130±1) x (50±1) x (16±0.5)

5. **Convenient Operation**: QualiLTC80™ DWTT is equipped with universal casters for easy mobility. Sample baskets make it simple to place and remove samples. A liquid discharge port allows for easy recycling of the cooling medium and cleaning. The system includes temperature alarms and insulation timing features to assist with efficient operation.

6. **Comprehensive Protection Features**: QualiLTC80™ DWTT includes various protection functions such as overload protection, leakage protection, phase loss protection, phase sequence protection, grounding protection, compressor overload protection, system pressure protection, medium over-temperature protection (anti-drying), and a unique expansion system.

TECHNICAL SPECIFICATIONS

Low Temperature Cooling Chamber for DWTT Impact Specimens Technical Specifications

Configuration		
Compressor	Tecumseh with original packaging fully enclosed compressor	Two sets
Condensing device	High efficiency finned condenser	One piece

Configuration		
External rotor condensing fan	One piece	
Plate heat exchanger		One piece
Dry filter		Two pieces
Solenoid valve	Imported solenoid valve	One piece
Throttling device	Danfoss thermal expansion valve	One piece
Refrigerant	Fluorine-free environmentally friendly refrigerant	
Heat preservation	Rigid polyurethane foam	
Stirring device		One set
Temperature control device	High-precision intelligent digital temperature control instrument	One piece
	High-precision platinum resistance stainless steel probe	One piece
	Stainless steel heater	One piece
Stainless steel sample basket		Two pieces

Dimensions

Low Temperature Cooling Chamber for DWTT Impact Specimens

Technical Specification	
Temperature control range	+30 ~ -80℃
Temperature control accuracy	≤±0.5℃

Technical Specification		
Temperature uniformity	≤±1℃	
Cooling speed (when room temperature is 25℃)	Room temperature ~ 0℃	About 1.3℃/min
	0℃ ~ -40℃	About 1.3℃/min
	-40℃ ~ -60℃	About 1.0℃/min
	-60℃ ~ -80℃	About 0.8℃/min
Heating speed	About 2℃/min	
Size of cooling tank	About 60L	
Digital timer	1 minute ~ 9999 minutes, resolution: 1 minute	
Effective size of cooling tank	570×390×230mm (length × width × height)	
Specimen basket	2 pieces	
Number of specimens that can be placed	22 pieces (Falling impact specimen size: 305×76.2mm, thickness is according to original material; Specified specimen size in national standard: 305×5+76.2×1.5mm)	
Digital timer	1 minute ~ 9999 minutes, resolution: 1 minute	
Cooling medium	Absolute ethyl alcohol	
Dimension	1510×1010×1160mm (length × width × height, not including the protuberant part)	
Power supply	Three phases five wires, 380V, 50HZ	
Power	14KW	
Operating environment temperature	5℃ ~ 30℃