

Environmental Stress Cracking Apparatus

Model: ESC-95

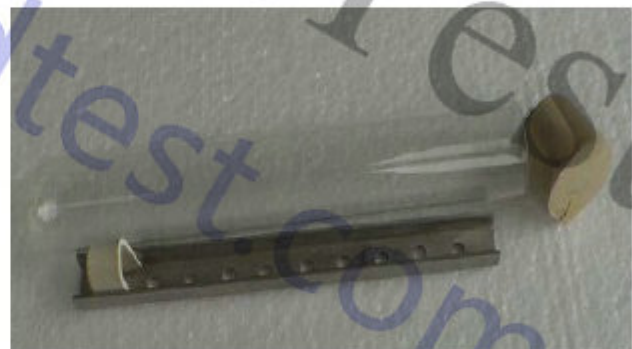


1, General introduction

ESC-95 Environmental Stress Cracking Resistance (ESCR) Apparatus determines the susceptibility of ethylene plastics to stress-cracking when exposed to different environments such as soaps, wetting agents, oils and detergents. When the material is under certain conditions of stress, these reagents can accelerate the cracking process which is one of the most common causes of unexpected brittle failure of polymers known. Designed in accordance with the ISO 4599, ASTM D1693 international test standard, the apparatus is extremely cost effective and very simple to use.



Notch jig



Sample holder, test tube and closures



Test Tube Rack



Bending clamp

Key Features

- 1, Manufactured to a high standard, the apparatus is supplied with electronic digital temperature control, temperature bath and all tooling accessories.
- 2, The integrated temperature bath fitted with digital temperature controller, heater and a PT100 platinum resistance thermometer accurately maintains the test temperature, accuracy is $\pm 0.5^{\circ}\text{C}$.
- 3, To ensure temperature stability within the bath, a stirrer motor system is fitted and the built in electronic timer monitors the duration of the test.
- 4, The bath is fitted with a stainless steel sample rack which holds up to 8 glass test tubes which are immersed in a heat transfer medium such as silicone oil.
- 5, The specimen holder is designed to maintain a constant stress on the mid section of the test samples with up to 8 specimens fitted into a specimen holder at one time.

2, References

ISO 4599 "Plastics -- Determination of resistance to environmental stress cracking (ESC) -- Bent strip method"

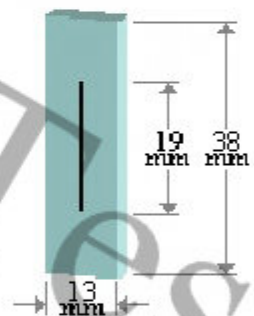
ASTM D1693 "Standard Test Method for Environmental Stress-Cracking of Ethylene Plastics"

GB/T 1842 etc.

3, Principle & Test procedure

Environmental stress cracking is the formation of cracks in a material caused by relatively low tensile stress and environmental conditions. Environmental Stress-Cracking Resistance (ESCR) is the number of hours that 50% of the specimens tested exhibit stress cracks.

ESCR Specimen

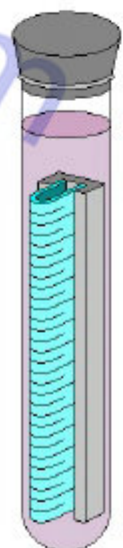


ESCR testing is performed by slowly bending the test specimens and placing them in a holding clamp. The clamp and specimens are then placed in a test tube and immersed in a specified reagent. The test tube is sealed and placed in a constant-temperature bath. Multiple test specimens are tested at one time.



ESCR Specimens in Holder

Specimens are inspected periodically for failure. Cracks generally develop at the notch, perpendicular to the notch, and run to the edge of the specimen. Any cracks constitute failure, not just cracks that reach the edge of the specimen. Cracks sometimes appear beneath the surface and are visible as surface depressions. If a depression develops into a surface crack the time at which the depression was noted is taken as the time of failure.



ESCR Test

4, Main technical specification

Model	ESC-95
Bath temperature range	ambient temperature to 95℃
Temperature accuracy	± 0.5℃
Sample dimensions	Length: 38±2.5mm, Width: 13±0.8mm, Height: 1.75--3.00 mm
Heating power	3Kw
Volume	40L
Power supply	220V, 50HZ, 1 phase
Sample cutting device notch depth	0.3~0.65 mm
Weight	30Kg

5, Main accessories

Item	Quantity
Frame	1 set
Test tube rack	1 set
Notch jig	1 pc
Blanking die	2 pcs
Test tube	1 pc
Sample moving pliers	1 pc
Sample bending device	1 pc
Blade	1 pc
Documents (Manual, packing list, certificate)	