測試規範 ASTM D5420

ASTM D5420 Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact)

11. Procedure

11.1 Determine the number of specimens for each sample to be tested, as specified in 9.3.

11.2 Mark the specimens and condition as specified in 10.1.

11.3 Prepare the test apparatus for the geometry (GA, GB, GC, GD, or GE) selected.

11.4 Measure and record the thickness of each specimen in the area of impact. In the case of injection molded specimens, it is sufficient to measure and record thickness for one specimen when it has been previously demonstrated that the thickness does not vary by more than 5 %.

11.5 Choose a specimen at random from the sample. Use a random numbers table if desired.

11.6 Position the specimen. Ensure that the same surface or area, or both, is targeted on all test specimens. (see 6.2).

NOTE 5—Normally the specimen is not clamped because the test apparatus does not have provision for clamping. However, the apparatus can be modified to permit clamping, which should improve the precision of the measurement.

11.7 Place the test specimen on the tester anvil, after raising the weight and striker foot. Be sure the specimen is flat against the specimen-support plate before the striker foot is brought in contact with the top surface of the specimen. (Fig. 3 shows the position of the test specimen.) Raise the weight in the tube to the desired impact value, as shown on the appropriate scale, and release it so that the weight drops on the striker.

11.8 As a result of the wide range of failure types that are observed with different materials, the definition of failure defined in the material specification shall take precedence over the definition stated in 3.2.1. Other definitions of failure shall be used if agreed upon between the supplier and the user.

11.9 Remove the specimen and examine it to determine whether or not it has failed. Permanent deformation alone is not considered failure, but note the extent of such deformation (depth, area). For some polymers, for example, glass-reinforced polyester, it is difficult to assess incipient cracking with the naked eye. In such cases, it is permissible to expose the stressed surface to a penetrating dye, such as gentian violet, to help determine the onset of cracking.

11.10 If the first specimen fails, decrease the drop height while keeping the mass constant (see 11.11). If the first specimen does not fail, increase the drop height one increment, as above. Then test the second specimen.

11.11 In this manner, select the impact height for each test from the results observed with the specimen just previously tested. Test each specimen only once.

11.12 Keep a running plot of the data, as shown in Appendix X1. Use one symbol, such as *X*, to indicate a failure and a different symbol, such as *O*, to indicate a nonfailure at each height level.

11 步驟

11.1 每種試樣的測試數量如 9.3 中指定。

11.2 標記每個試樣並依 10.1 條件調質。

11.3 選擇測試裝置的配置（GA，GB，GC，GD 和 GE）。

11.4 測量和記錄每個樣品衝擊區域的厚度。塑模射出的試樣，如已證明厚度偏差不超過 5 %，測量和記錄一個試樣就足夠。

11.5 隨機挑選樣品。如果需要可使用隨機數表。

11.6 將試樣定位。確保所有測試樣品有相同的撞擊表面及區域。（見 6.2）。

注 5：一般情況下，測試設備不具有夾持功能。然而，該裝置可修改加裝夾持機構，這應該會提高精度測量。

11.7 把落錘與衝頭升起後將試樣放置於衝擊座上。確認樣品平貼衝擊座的上表面後再將衝頭放下與試樣接觸（Fig3 顯示試樣的位置）。將管內的落錘提高至預設的撞擊高度，然後鬆開，使其落下撞擊衝頭。

11.8 由於不同材料的破壞類型過於廣泛，破壞類型的定義應以材料規範中的定義為主，優其次再參考 3.2.1 的定義說明。其他破壞類型的定義可依供應商和用戶之間的協定使用。

11.9 取出試樣並檢查確認是否被破壞。單純永久變形並不被認為是破壞，但須紀錄變形程度（深度，面積）。對於某些聚合物，例如玻璃纖維聚酯，初始裂紋難以被分辨出來。在這樣的情況下，允許以表面探傷劑，如紫藥水，以輔助確認開裂的起始點。

11.10 如第一試樣出現破壞，減少跌落高度但維持落錘重量（見 11.11）。如果第一試樣沒破壞，增加跌落高度一個增量，如上述。然後測試第二試樣。

11.11 以此類推，依照前次測試結果選擇下次的衝擊高度。每個樣品只測試一次。

11.12 依照附錄 X1 維持數據圖。在每高度水平使用符號，如 X，標示破壞和另一個符號，如 O，以表示非破壞。