Design and Development of HDPE Plastic Sheet Testing Machine

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ABSTRACT

In this work main objective is to check the quality of plastic sheet paper of different companies and suggest best of one, so that farmers in India should know the quality and get awareness about the plastic sheet paper. This test method may be used to test all plastics within the thickness range described and the capacity of the machine employed. At this checking of tensile strength all size of sheet paper was performed. This tensile test measure the force required to break a specimen and extent to which the specimen stretches or elongate that braking point.

Keywords: HPDE plastic sheet, Tensile strength.

1 Introduction

Generally, papers start with show. It contains the short-considered work, need for this assessment work, issue clarification, and maker's responsibility towards their investigation. Continuous references [1] should be consolidated for appearing past work done and meaning of current work. This section should be brief, with no subheadings aside from if unavoidable [2, 3]. Express the objections of the work and supply an acceptable establishment related with your work, avoiding a through and through composing study or a summary of the results

2 Literature Review

A. I. De Bearer et al. found relates to the getting a handle on of the model with standard snaps. The most noteworthy place of the model shouldn't contact the clasps in light of the fact that the model should be disengaged from the malleable machine. If a social event of mechanical wedge holds is used, it's for the most part just fitted to either strain or pressing factor testing yet on occasion for both. For the getting a handle on, the rule of a wedge is used; plainly this solitary works a solitary way. If the wedges are pulled down (bendable test), the holds move inwards, growing contact pressure. Regardless, if the wedges are pushed up (compressive test), the wedges open and likewise the contact pressure decreases [1].

It is possible to have mechanical handles for compressive tests, just by putting the wedges the mistaken far up; on the other hand, they're going to not work in pliable conditions. Hold gathering gadget for manageable testing, By D.H.Pham, et al presented relates to Grip mechanical get together to be used with flexible pressing factor testing contraption consolidates a housing having partner infers on the of the housing for interfacing the getting a handle on gadget to the versatile pressing factor testing apparatus[2]. John M Curtis worked to Improvements in test model hold contraption for pliable pressing factor testing machines fuses replaceable handle installs that are ready to oblige broader than customary test models. The model handles means or hold inserts are threaded hung on and perhaps more broad than their supporting jaw people. The hold housing, what's more, is given openings for induction to the hung retainers for direct handle insert ejection and replacement [3].

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As demonstrated by the current situation, there's the supply of additional created handle mechanical gathering for flexible pressing factor testing machines that has replaceable hold inserts that are ready to oblige broader than standard test models. F.C.Huyserf et al, worked to methodology been taken on for securely holding the test models inside the highest points of the testing machine incorporate the utilization of sets of wedges arranged in wedge-framed openings inside the highest points of the machine which are to be drawn or compelled apart[4].

Exactly when a test is to be made the guide to be attempted is set between the roughened impassive articulations of the wedges of the upper and lower highest points of the machine and thusly the wedges at first fixed there against. Then the pile =n applied to detach the heads the wedge holds slip where it counts inside the openings inside the heads, and thus the skewed edges of the grips assisting the skewed edges of the openings inside the heads cause the guide to be held between the grips.

3 Experimentation

a) First of all calibrate the load cell by using standard weights.
b) Measure the initial dimensions offset specimen. Eg .length, width, thickness
c) Fix the test specimen between two clamping units.
d) Set the load indicator at zero position by employing a fine & coarse adjustment knob.
e) Mark the initial position of the movable clamping member.
f) Apply the tensile load gradually by employing a lifting mechanism.
g) Record the elongation of test specimen & period of your time elongation is in mm & load is in kg.
h) Take the reading until the specimen breaks into two pieces.
i) Plot the load versus elongation graph.

Figure 1 *Calibration of Load cell*

Figure 1.2 *Elongation of Plastic Sheet*

4 Observations

Experiment performed for various specimen which are given bellows tables

Table No 1 ***Specimen name: HDPE super seal***

Sr.	**Without neck specimen**	**Load (kg)**	**Elongation (mm)**
1	Length -100 m Width -10mm Thickness- 1.5mm	17	10
2		18	15
3		20	20
4		20	115
5		21.4	450

Table No 2. ***Specimen name: HDPE super seal***

Sr.	**With neck specimen**	**Load (kg)**	**Elongation (mm)**
1	Length -100 m Width -10mm Thickness- 1.5mm	19	10
2		28	15
3		16	20
4		17	23
5		18	25 (break)

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Table No 3 *Specimen name: LDPE*

Sr.	**Without neck**	**Load (kg)**	**Elongation (mm)**
1	Length -100 m Width -10mm Thickness- 0.5mm	5	5
2		5.8	20
3		6	45
4		6.3	75
5		6.2	370

Table No 4. *Specimen name: LDPE*

Sr.	**With neck specimen**	**Load (kg)**	**Elongation (mm)**
1	Length -100 m Width -10mm Thickness- 0.5mm	5	5
2		5.6	18
3		7	20
4		6.3	22(break)

5 Results and Discussion

The actual design and fabrication work of the testing machine is performed as a part of project title. The actual load carrying capacity of two plastic specimens is studied by number of testing on this machine. Breaking Factor(nominal) shall be calculated by dividing the maximum load by the original minimum width of the specimen. Strength(nominal) shall be calculated by dividing the maximum load by the original minimum cross-sectional area of the specimen. The result shall be expressed load in kg.

6 Conclusions

- The performance and low compliance value of our testing machine indicate that it is appropriate to obtain reliable mechanical properties of compliant materials in thin and soft materials.
- Our testing machine permits to interchange different elements according to the user.
- In tensile testing, the gripping of the specimen with standard clamps with help of mechanical wedge gripper higher the contact pressure becomes and the better the specimen can grip. Gripping device is capable of withstand maximum stresses.
- This machine having high accuracy and it shows correct load against any plastic sheet.
- This machine gives the result for HDPE having thickness 1.5 mm give load charring capacity 20 kg and Maximum Elongation 450 mm
- This machine gives the result for LDPE having thickness 0.5 mm give load carrying capacity 6.3 kg and Maximum Elongation 370 mm

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