



Filter Pressure Tester for Masterbatches (FPV Tester)

Description

In 1998, all started " at that time, several companies founded the "CEN Committee Filter test "consisting of masterbatch producing companies and manufacturers of laboratory lines for the processing of plastic. Aim of this initiative was to develop a standardized method for the determination of the pressure filter value.

In 2004, with EN 13900-5, the CEN Committee finally presented a uniform measuring method with which the suitability of pigments for coloring plastic can be described and which, in the meantime, as ISO 23900-5 has become international standard.

Application

The pressure filter test is used to detect quality differences in a polymer caused by agglomerates, fillers, which are not completely dispersed resp. impurities.

It can be used e. g.

- in the field of product development for optimizing the color etc.
- for quality control resp. outgoing and incoming goods control of masterbatches, compounds or polymers

Function

The material to be tested is melted and homogenized in an extruder and via a melt pump, it is guided through a screen with a defined and constant volume flow. The screen is clogged by particles with a certain size, which results in a reduced opening of the screen. At a constant volume flow, this causes a pressure increase in front of the screen, which is determined by a sensor and which is used for the determination of the sample quality.

- A filter cassette system allows a filter change within a few seconds
- Integrated pre-heating of the screen
- Easy-to-use software for calculating the pressure filter value and determining a listing

Measuring value detection

A pressure filter test unit with an integrated computer detects the test data:

- Melt pressure in front of the filter
- Melt temperature
- Melt pump speed

The time curves of melt pressure and temperature are represented in a diagram.

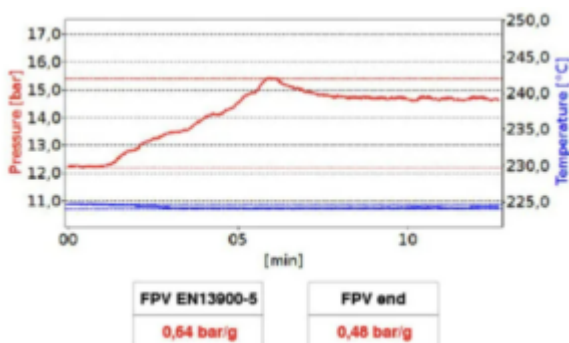
Via a start and stop button, the operator defines the start (filling in the sample) and the end of the test. The calculation of the pressure filter value (FPV = Filter Pressure Value) is effected at the end of the test by determining the initial pressure P_{Start} resp. the maximum pressure P_{max} during the test and by using the formula:

$$FPV = (P_{max} - P_{Start}) / m$$

*m is the pigment weight in the sample

The recorded data can be stored in the Collin microcontroller and a test protocol can be printed.

Sample test graph is as below:



- A servo motor drives the melt pump
- Equipped with manual plate nitride treated screen changer of high hardness and wear resistance
- High-precision melt pressure sensor provides an accurate melt pressure
- Computer included and machine has 6 ceramic heating zones
- Equipped with 2 melt pressure sensors and a Swiss-made melt pump
- Software is based on LABVIEW and reporting is on MS WORD
- Pressure and melting temperature measurement
- Simple sieve change
- Data recording and evaluation using AHP Filter Test Software
- Fulfilment of DIN EN 13900-5
- Screw diameter: 25 mm
- Test amount 0.2-1 kg depending on the material
- Used diameter for breaker plate 28mm
- Filter area 616 mm²

- Simple sieve change
- Free area behind the filter 302 mm²
- Gear pump servo motor power: 0.75 KW
- Pressure range: Maximum 300 bar
- Gear pump inlet pressure: 0-100 bar
- Melt pump included (mandatory as per standard)
- Screw rotational speed: 0-100 rpm
- Filter 5-40 Micron

[BS EN 13900-5 Determination by Filter Pressure Value Test- Testing Equipment](#)

AHP PLASTIK MAKINA