



Patented ColorSave® technology - one step ahead in Precise Masterbatch Metering, for injection molding machine

Comparative Masterbatch Saving Test – Case Study

We have learned from our experience that most potential customers are unaware of the enormous waste of masterbatch/additive due to the use of volumetric masterbatch feeders with their injection-molding machines.

The main advantage of the ColorSave 1000, due to its unique control features, is its ability to overcome and prevent this waste.

The following is a description of a comparative test that was conducted at one of Israel's leading plastic factories. It shows a potential saving in masterbatch costs of 65% (or 650,000 EUR per year for 40 molding-injection machines), just by changing from existing volumetric feeders to the **ColorSave 1000** systems.

Note that these results are based on a partial sample only, and according to our general experience, the average total masterbatch saving is usually in the range of 35%-50%.

1) Case general data

- Plant size — medium (about 40 injection-molding machines)
- Line of products — storage boxes and containers
- Molded parts weight — medium (0.25-1.5 kg), 2 shots/minute
- Total annual masterbatch consumption — about 200,000 kg/year
- Average masterbatch cost: 4 – 6 EUR/kg
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- Number of machines involved in the test: 3 – 2 with volumetric feeders and 1 with a **ColorSave 1000** feeder
- Duration of the test — 3 hours (not including installation prior to the test)
- Management of test — raw material manager

2) Test survey

The test was conducted in 2 phases

Phase A: Comparison of desired dosing (%) with actual measured dosing (%)

- a. The 3 machines were set to the desired masterbatch dosage (%)
- b. The machines were running for 2 hours
- c. The total masterbatch quantity consumed by each machine during the test was measured by weighing the quantity of the masterbatch in the containers (or sacks) and the hoppers, at the beginning and the end of the test
- d. The actual average dosing percentage (%) of each machine was calculated by dividing the total consumed kg of masterbatch by the molded part weight (kg), and the total injection shots (N) during the test

Phase A Test Results:

Injection machine no.	Feeder type	Molded part weight	Desired set percentage	Actual measured percentage	Excess dosing (waste)	Annual extra expenses (*)
1	Volumetric	440gr	1.4 %	2.75 %	96.4 %	25,500 EUR
2	Volumetric	350gr	1.5 %	1.87 %	24.6 %	5,600 EUR
3	ColorSave	370gr	2.3 %	2.31 %	0.4 %	160 EUR

(*) Based on 300 working days per year and masterbatch average price of 2.5 US\$/pound

Phase B: Reduction of desired dosing % from present value to a lower one

The purpose of this test was to check if and to what level the present set-up of desired % could be reduced, without degrading in the product quality. The dosing set-up % was gradually reduced, together with continuous quality control of the produced parts.

Remark: This test can only be performed with the gravimetric **ColorSave** feeder, as the volumetric feeders are not accurate enough and are too sensitive to any random change in the process parameters, and therefore require constant maintenance of an adequate “safety factor” to ensure the right minimum required dosage under all circumstances.

Phase B test results:

Injection machine no	Feeder type	Molded part weight	Initial set percentage	Final set percentage	Reduction in percentage	Annual cost saving (*)
3	ColorSave	370gr	2.3	1.6	-30.4 %	11,100 EUR

(*) Based on 300 working days per year and masterbatch average price of 5 EUR/kg

3) Summary

From the above-mentioned data we can conclude the following results:

- a. An average saving in masterbatch consumption of at least 35% was achieved by switching from the volumetric systems to the ColorSave 1000, without reducing the dosing percentage.
- b. Additional saving of about 30% was achieved by using the ColorSave unique control features to reduce masterbatch set percentage.
- c. Assuming that the rest of the machines behave similarly, total anticipated saving in masterbatch cost by replacing all the existing volumetric feeders to ColorSave 1000 systems, could reach as much as 65%, or 650,000 EUR per year, in this case.

We would like to emphasize again that these results are based on a partial sample only, and according our general experience, the average total masterbatch saving is usually in the range of 35%-50%.