How labels can improve recyclability

PET Thermoforms Workshop
19.09.2017

Testing protocol: test procedure

- 1. all trays have to be washed in cold water to remove silicon residuals
- 2. labels to be tested have to be applied on a plain flat surface of the tray, preferably on the bottom side
- 3. after 24h time, from each labelled area of the tray, a minimum of 50 10x10mm samples have to be extracted
- 4. 10x10 mm samples have to be washed in a 1% caustic soda solution @ 70°C and no addittives, using a 4 cm. magnetic stirrer @ 500 rpm for 6,5’ time; beaker dimension 1000 ml with internal diameter 9,5 cm.; ratio between caustic solution and flakes should be 4:1 (i.e. 200 ml : 50 flakes)
- 5. flake samples have to be then rinsed in cold water for 3’
- 6. flake samples have to be dried @ 80°C for 2 hours

Testing protocol: final calculation

- After drying step, samples will be visual inspected to check how many samples got the label removed and how many did not. The result will be listed in %.
- To show an evidence about residuals, an Oven Test has to be performed. Half of the washed and rinsed flakes have to be put in an oven for one hour @ 220°C; one high resolution picture has to be taken after oven test. The picture has always to be shown together with the above result in %.
- Test is done with 5 repeats

Label system description

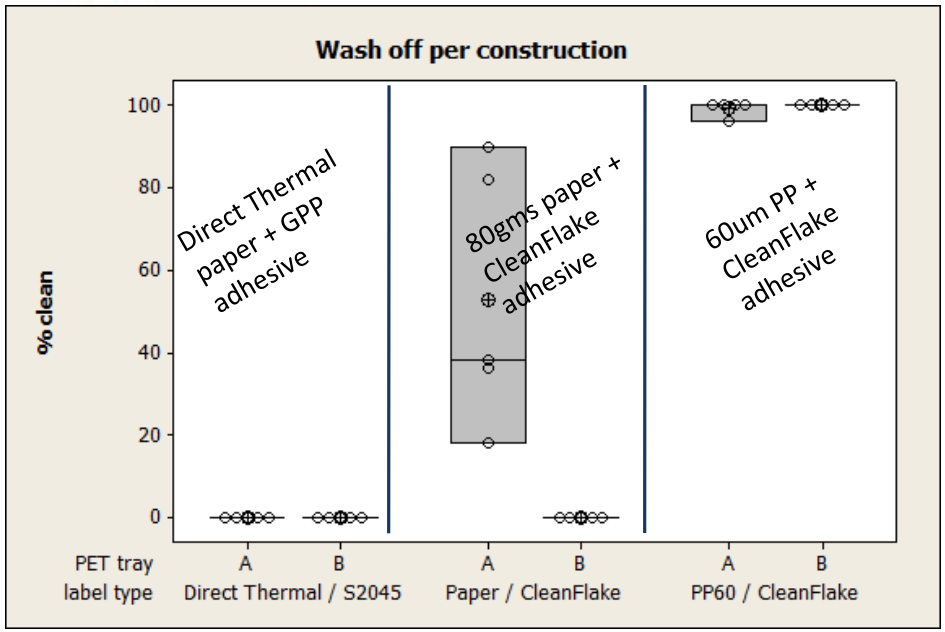
As agreed in the WG the test setup should consist of:

-Standard thermal paper, with a general purpose adhesive.
- An 80 gms paper with wash off performance
- A 60 micron clear film label with wash off performance

The tests have been performed using the described protocol, with 5 repeats.

Facestock	Adhesive	Spec code	%-washed off
Direct Thermal paper	General hotmelt adhesive, S2045	AT095	0 %
60 micron Polypropylene	Avery Dennison CleanFlake adhesive	BF557	100 %
80 gms type paper	Avery Dennison CleanFlake adhesive	n.a.	50 %

Test results



Direct Thermal / S2045 hotmelt adhesive

0% flakes are clean

MC primecoat Paper + cleanflake adhesive

High variablity due to PET source

60 micron PP + cleanflake adhesive

All flakes are 100% clean, irrespective of PET source.

Shear and other factors can have a significant impact on the wash-off results. It is important to verify the results in an actual recycling process.

Contact

If we you need further information on Avery Dennison materials, please contact:

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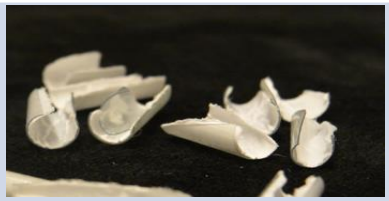
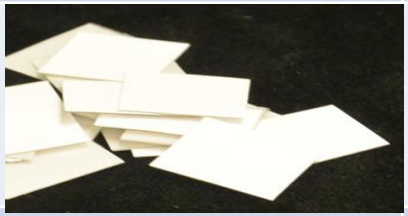
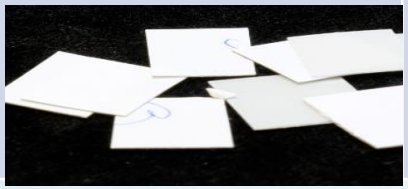
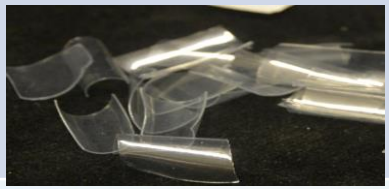
Label system description

- UPM Raflatac label materials used in the test

Test point	Face	Adhesive	%-washed off
1) paper/GPP	RAFLACOAT PLUS-FSC	RP51	0%
2) film/wash-off	PP WHITE TC 60	RW85C	72%-80%
3) paper/wash-off	RAFLAGLOSS WSA	RP30W	100%

Test results

	Before washing	After washing	After Heat Treatment
Paper/GPP			
Film/wash-off			
Paper/wash-off			

Contact

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