



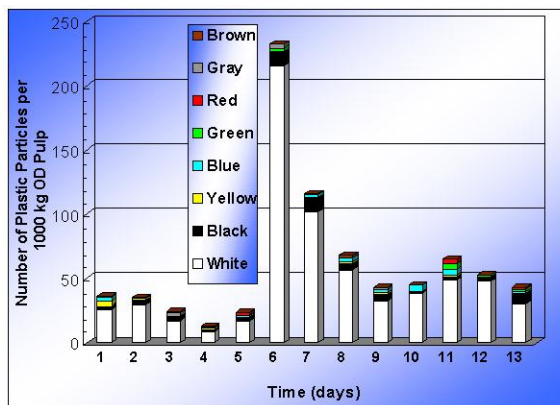
OpTest Equipment Inc.

## PapriSpec

Trace amounts of plastic can render pulp unsuitable for use in coated and photographic papers. Inspectors traditionally examine fewer than 100 m<sup>2</sup> of sheets per day. Research by FPInnovations (Paprican), revealed that for trace levels of plastic, at least 1000 m<sup>2</sup> must be inspected. The PapriSpec tests over 2000 m<sup>2</sup>/day.



It is difficult to see clear or white plastic particles in a white sheet. The Paprispec isolates these particles from the pulp, counting and inspecting becomes very easy regardless of color or size. Even small plastic particles that have a density close to water can be collected by the Paprispec.



Number of plastic particles in 100 kg of OD pulp sorted by color (mostly white or clear)

### ADVANTAGES:

- Continuous on-line sampling and collection of plastic contaminants
- Small, light colour and clear specks - often missed by inspectors - are collected
- Rapid, precise, and more timely determination of the plastic concentration
- Isolated plastic is easier to view facilitating the determination of its origin
- Automatic self-checking diagnostics
- User selected sampling frequency
- Automatic cleaning and diagnostics

The effectiveness of a Paprispec is most dramatically displayed when a grader's plastic count is compared to a Paprispec count, Table 1. All the particles counted by the grader were dark; no white or clear plastic was detected.

Plastic Particles per 1000 kg OD Pulp from Paprispec	Plastic Particles Counted in Sheets by Grader	% White & Clear Plastic Collected from Paprispec
36	0	72
35	0	83
24	0	71
13	0	67
23	0	71
232	0	93
116	0	88
68	0	84
43	1	76
45	0	87
65	0	75
55	2	87
43	0	71

Table 1: A comparison of the Paprispec results with a manual grader. Note that the quantities of pulp inspected by the grader were unknown. They were however typical of the amounts examined on a regular basis by the mill.

**PRINCIPLE OF OPERATION**

The Paprispec processes a continuous side- stream of pulp, approximately 200 L/min of 1% consistency pulp. A reverse hydrocyclone concentrates the plastic particles in the reject stream while accepted pulp is returned to the process. The reject stream is processed further by a pressurized mini-screen shown on the right side of the image below. The screen serves two purposes: It removes any remaining pulp and retains the accumulated plastic until sampling is complete. The accumulated particles are then back-flushed from the mini-screen and sent to the collection cup on the left of the image. On the right is a close-up picture of the pressurized screen. The picture below shows how the screen is connected to the unit, note the collection cup on the far left.



The collection cup easily lifts off its drainage basin. This facilitates the removal of the plastic particles so they can be inspected.

**REPORTED MEASUREMENTS**

Utilizing the reported total pulp flow, the following can be determined:

- Number of plastic particles/kg OD pulp
- Total weight of plastic/kg OD pulp

**LABORATORY ANALYSIS OF PLASTIC**

The plastic particles collected from the Paprispec can be characterized based on:

- Number of particles collected
- Total weight of plastic
- Colour of plastic particles
- Size of particles
- Type of plastic

**OPTIONS**

- Spare mini-screen
- Consistency meter
- Pressurized accept return system
- Preventive maintenance agreement

**DIMENSIONS**

- Paprispec Unit 1.5m W x 1.2m D x 2.0m H (59" W x 48" D x 78" H)
- Paprispec Crate 1.7m W x 1.6m D x 2.3 m H (67" W x 63" D x 90" H)

**WEIGHT**

- Paprispec Unit 250 kg (550 lbs)
- Paprispec in Crate 365 kg (800 lbs)

**PROCESS CONDITIONS**

- Max. Ambient Temperature = 50 °C (150 °F)
- Protective Casings for Electronics are hose down rated SS NEMA 4.

**CONNECTIONS & SERVICES REQUIRED**

- Water (potable):  
Pressure = 350 kPa (50 psig)  
Max. Flow = 40 L/min (9 US gpm)
- Feed Line to Hydrocyclone:  
Max. consistency = 1%
- Accept Line from Hydrocyclone:  
Flow rate = 200 L/min (45 US gpm)  
Discharge Pressure = 70 kPa (10 psig)
- Drain Line from Mini-Screen:  
Flow rate = 10 L/min (2.2 US gpm)  
Discharge Pressure = Atmospheric
- Instrument Air Supply:  
Pressure Range = 500 - 700 kPa (80-100 psig)
- Power with Power off Interlock:  
575 V at 50/60 Hz 3 phase  
120 V or 240 V at 50/60 Hz single phase



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