

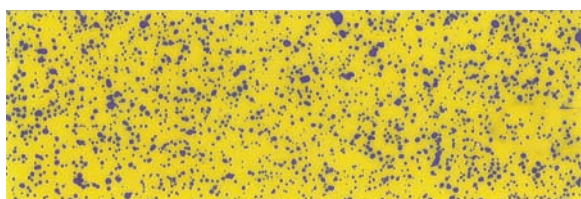
## Instructions for Water Sensitive Paper

9950-0028

### What is Water Sensitive Paper?

Water Sensitive Paper (WSP) is paper with a specially coated yellow side that changes color to blue when exposed to moisture.

Hypro Part #9950-0028 is a moisture-proof envelope of 50 cards, 26 x 76 mm; 1"x3".



### Uses

In ground crops, orchards, and vineyards, WSP may be used to check spray penetration by clipping or stapling cards to poles in the canopy or attaching cards to branches, leaves or vines. It may be used to check spray coverage from airplanes by attaching cards to blocks placed every 1 to 3 meters (3 to 10 feet) across the spray swath.



### Handling



WSP is sensitive to moisture in the air, on the plant and on your hands. Wear waterproof gloves, handle the paper only by the edges, and do not use WSP in plants that are wet. Humidity in the canopy can cause the paper to change blue. After spraying, let the droplets dry before handling. The yellow surfaces of the cards should not be allowed to rub against each other or to become scratched.

Always use the personal protection equipment and safety practices stated on the label and Material Safety Data Sheet for all products in the spray solution.

### Visual inspection of coverage

Cards may be inspected visually after spraying. Run-off indicates over-application. Incomplete coverage or large voids indicate under-application or misdirected spray. The ideal amount of coverage depends on the product being applied, the crop being treated, the pest requiring treatment, and the weather.

### Droplets per square centimeter

Droplet counting is the simplest assessment of coverage. Closely examine the WSP to count the number of droplets landing on one square centimeter of the paper. A hand lens or loop is a helpful aide.

Droplets per cm <sup>2</sup>	Common application
20-30	Insecticides
20-30	Pre-emergent herbicides
30-40	Contact foliar herbicides
50-70	Contact Fungicides



### Droplet sizing

Computer image analysis programs measure the size of the droplet stain and compute the size of the droplet that made the stain. Droplets spread out upon impact so analysis requires a "spread factor" to correct for the difference between stain size and droplet size. Additives and chemicals in the solution affect droplet spread. Specialized laboratories can determine the spread factor for various mixtures if a high degree of accuracy is desired. The following are the spread factors for water-only spray (20°C, 40%RH, at sedimentation velocity).

Stain Diameter (µm)	Spread Factor	Droplet Diameter (µm)
100	1.7	59
200	1.8	109
300	1.9	155
400	2.0	200
500	2.1	243
600	2.1	285

## Limitations

WSP is portable, simple to use, and gives instant visual results, but it does have limitations. Overlapping droplet stains interfere with counting and calculations. Droplets smaller than 30 µm may not leave distinct spots. Droplets landing on the card at a steep angle will leave streaks rather than spots.

Droplet per cm <sup>2</sup> max.	L/ha max.	VMD (µm)
600	12	100
200	24	200
80	33	300
50	48	400
30	55	500

Experience shows that WSP may not be an effective tool under very humid (>80% RH) or cool (<10°C or <50°F) conditions.

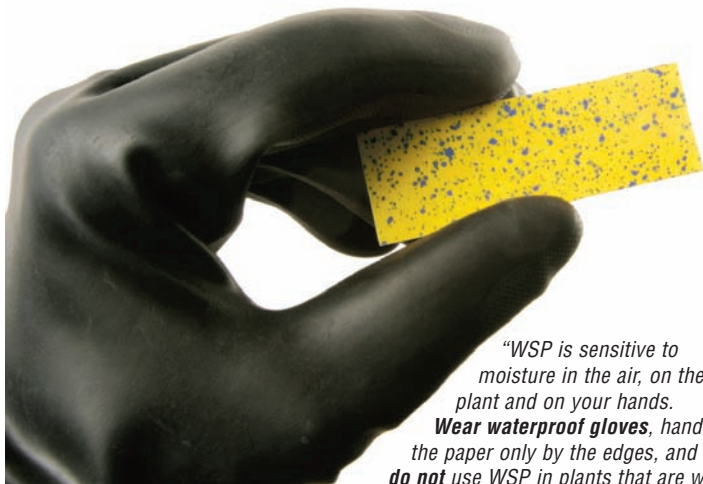
## Sprayed versus Collected Droplets

Detailed droplet volume analysis may not add up to 100% of the solution volume sprayed per treated area (mL/cm<sup>2</sup>, L/ha, or GPA).

Dense canopies, mid-air droplet evaporation, and conditions favoring spray drift reduce number of collectable droplets that reach the card. This is especially true for droplets smaller than 100 µm. Differences in coverage and droplet size collections may be seen under different ambient conditions. Also, the surface of WSP differs from the surface of leaves, soil and other natural targets in its roughness, shape, presence of hairs, and so on. WSP may be less efficient at capturing very small droplets or at retaining very large droplets than the target.

## Storage

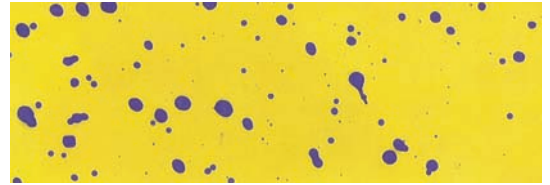
In the original unopened envelopes, WSP may be stored for several years. Once opened, it must be stored in dry conditions in airtight bags to prevent bluing from humidity. Individual exposed cards may be coated with a colorless synthetic resin (pH of 4.5 – 6.0) for protection.



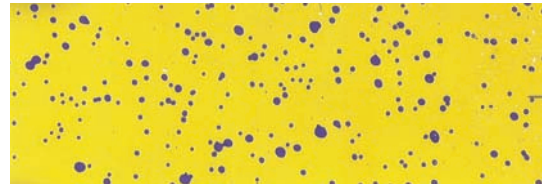
## Example Cards

Computerized droplet analysis programs can produce useful information such as displayed below. Other data such as application rate (l/ha or GPA) and droplet size at the top or bottom 10% of spray volume are also often displayed.

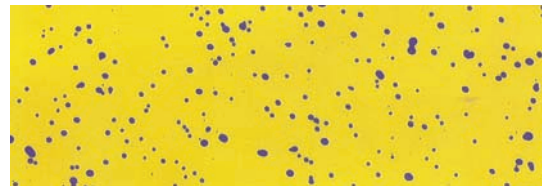
Coverage 5.5%  
VMD 824  
Drops/cm<sup>2</sup> 12



Coverage 6.2%  
VMD 436  
Drops/cm<sup>2</sup> 20



Coverage 4.8%  
VMD 413  
Drops/cm<sup>2</sup> 18



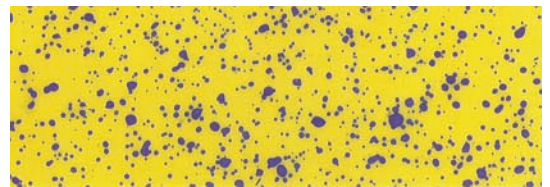
Coverage 3.9%  
VMD 279  
Drops/cm<sup>2</sup> 20



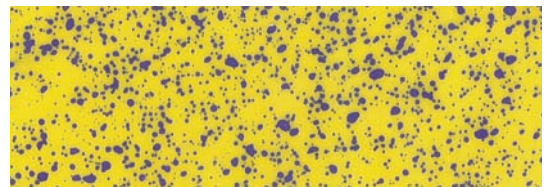
Coverage 12.2%  
VMD 799  
Drops/cm<sup>2</sup> 41



Coverage 11.6%  
VMD 361  
Drops/cm<sup>2</sup> 64



Coverage 17.6%  
VMD 383  
Drops/cm<sup>2</sup> 116



Coverage 12.9%  
VMD 234  
Drops/cm<sup>2</sup> 166

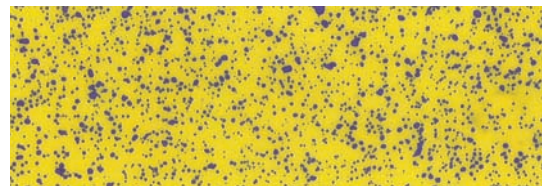


Table data provided by Syngenta ©

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