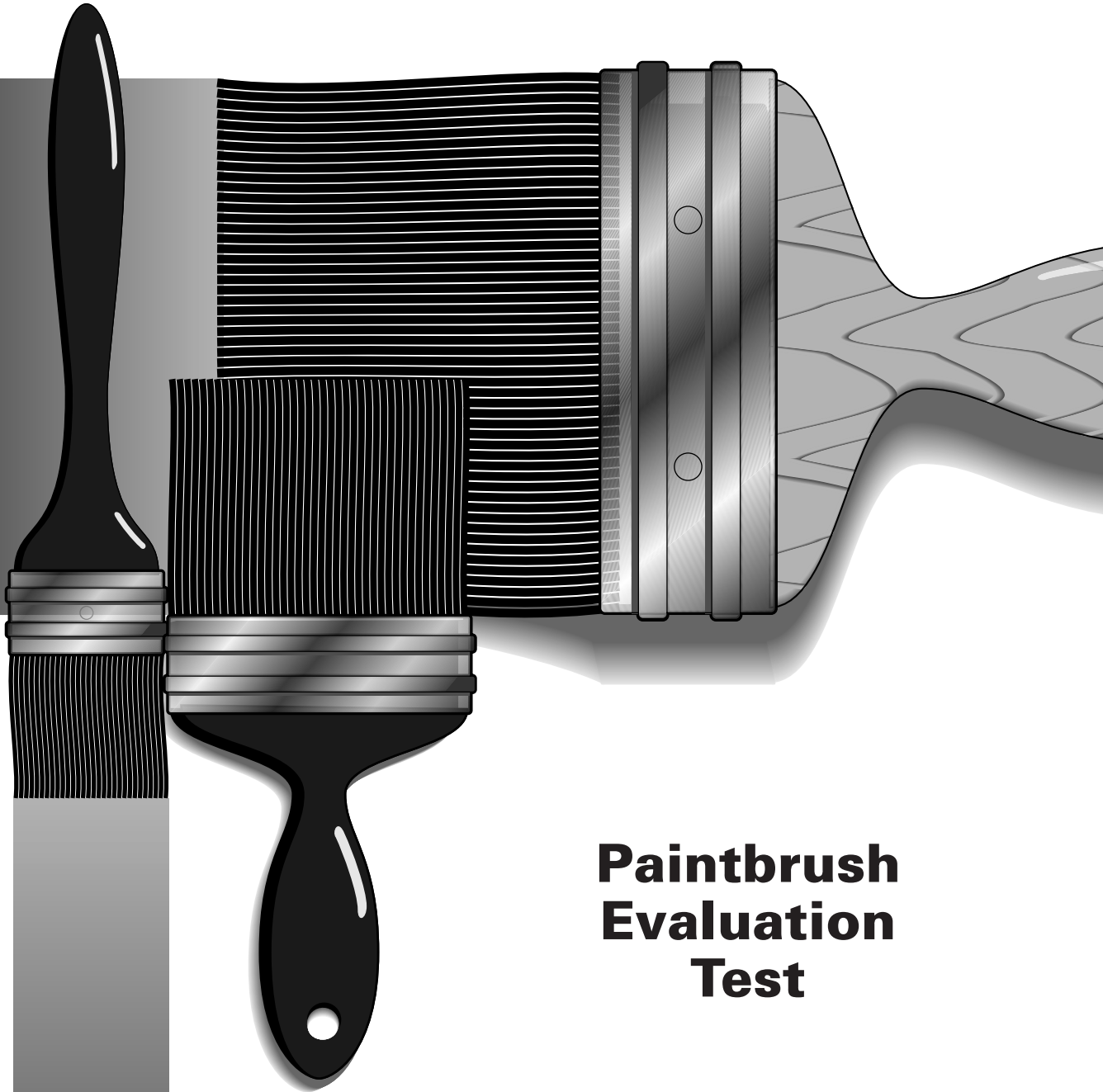




DuPont Filaments



## Paintbrush Evaluation Test

**Tynex® • Orel® • Chinex®**

## Background

Demonstrating paintbrush performance in a consistent and repeatable way is very important to everyone involved in designing, developing, and selling paintbrushes and paintbrush ingredients, including synthetic bristles (filaments). Many years ago DuPont developed a method of testing brushes that has been proven to be a good indicator of paintbrush performance. This method has been adopted by several customers for their own internal needs. This pamphlet provides basic information regarding the equipment and test method. DuPont does not manufacture or sell the test equipment. However, basic design prints are available to our customers.

## Purpose

The purpose of this Paintbrush Testing Method is to measure the brush's ability to pick up paint, to lay paint down on a surface, and to visually show how effectively this is done.

## Test Products

There are two test products: the completed data sheet (see Brush Test Data Sheet) and the paint stripe. The key results on the data sheet are the Paint Pickup, Paint Laydown, and Stripe Length. The Stripe Length is the actual measurement on the paint stripe from the beginning of the stripe to the point where the brush begins to skip. Although this skip point is somewhat subjective, as long as all stripes are judged on the same basis, the comparative results will be consistent.

## Materials Needed

### Paintbrush

This method can be used for any size paintbrush, but the results will be clearest for 3" and larger sizes.

### Paint

A standard paint should be used each time if the objective is to compare brushes or brush design changes. You may want to consider the following:

- Latex (water-based)  
Sears "Easy Living," 15-yr Interior Latex Interior Flat Designers Finish 30 95115 Non-Yellowing White Color 011
- Oil-based  
Sears "Weatherbeater," 15-yr Exterior Oil Gloss, 30 48025 White

This procedure can also be used to test the performance of a brush in different paints.

## Kraft Paper

A course quality paper on rolls is needed to pretest the brush.

- Kraft paper; 30-lb kraft roll cut 6" wide, maximum diameter 9 $\frac{1}{2}$ ", 3" core I.D., available from M. Conley, 13212 Fourth St. SE, Canton, OH 44701, Phone: (216) 456-8243

## Paper for Paint Stripe

A special black lacquered paper is used for the paint stripe test.

- Leneta paper, all black, lacquered on one side, cut to 32" long  $\times$  5 $\frac{1}{2}$ " wide. Available from: The Leneta Company, 15 Whitney Road Mahwah, NJ 07430, Phone: (201) 847-9300

## Weight Scale

An electronic balance scale accurate to 0.01 g.

## Paintout Test Equipment

Must be built. See **Figures 1** and **2**. A set of drawings may be obtained from DuPont.

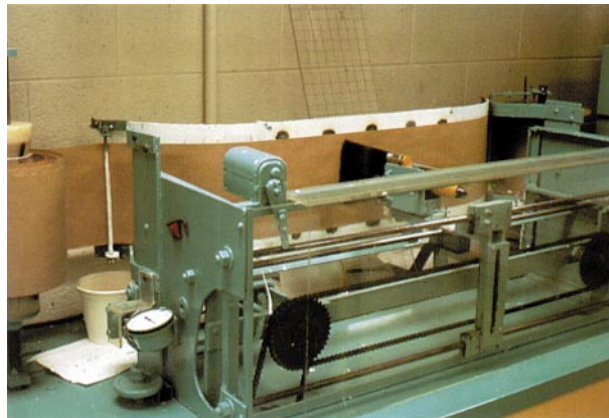


Figure 1. Paintbrush Test Equipment



Figure 2. Paint Stripe

**Procedure**

Refer to the **Brush Test Data Sheet** as you follow this procedure.

1. Weigh clamp and brush, including handle, and record the clamp weight and brush weight.
2. Measure the length of filament clear of the ferrule. This is the **Filament Clear Length** in **Table 1**.
3. Set the speed dial at 70% on the motor control. Use magnetic clamps or masking tape to hold fresh kraft paper in place.
4. Install the brush between the rubber pads of the brush clamp, positioning the ferrule to be flush with the clamp front edge.
5. Loosen the set screws at the base of the clamp assembly and set the clamp so that the bristle tips just touch the steel panel in back of the kraft paper. Read and record this initial scale setting. Subtract the desired brush displacement (**Brush Displacement** is obtained from **Table 1**) from the initial scale setting to determine the final scale setting. Index the clamp assembly forward until the new setting is reached. Retighten the set screws on the clamp base. The center of the ferrule should then be positioned the desired distance from the steel panel.

**Table 1**

Filament Clear Length, in	Brush Displacement, in	Dip Distance, in
1 <sup>3</sup> / <sub>4</sub>	5/8	7/8
2	3/4	1
2 <sup>1</sup> / <sub>4</sub>	7/8	1 <sup>1</sup> / <sub>8</sub>
2 <sup>1</sup> / <sub>2</sub>	1 <sup>5</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>4</sub>
2 <sup>3</sup> / <sub>4</sub>	1	1 <sup>3</sup> / <sub>8</sub>
3	1 <sup>1</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>2</sub>
3 <sup>1</sup> / <sub>4</sub>	1 <sup>3</sup> / <sub>16</sub>	1 <sup>5</sup> / <sub>8</sub>
3 <sup>1</sup> / <sub>2</sub>	1 <sup>5</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>4</sub>
3 <sup>3</sup> / <sub>4</sub>	1 <sup>3</sup> / <sub>8</sub>	1 <sup>7</sup> / <sub>8</sub>
4	1 <sup>1</sup> / <sub>2</sub>	2
4 <sup>1</sup> / <sub>4</sub>	1 <sup>9</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>8</sub>
4 <sup>1</sup> / <sub>2</sub>	1 <sup>11</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>4</sub>

6. Remove the clamp with the brush, and install in the dip clamp.
7. Set the stop on the Dip Rod to set the dip distance (see **Table 1**) so that brush dips in the paint 1/2 the **Filament Clear Length**.
8. Dip the brush for 30 sec and let it drip for 30 sec by raising the dip rod.

9. Replace the brush assembly in the tester, and pass back and forth, over kraft paper, twice.
10. Repeat steps 8 and 9 two more times with fresh kraft paper.
11. Wind in a fresh sheet of kraft paper, and attach the black Leneta chart paper to the kraft paper with tape so that the brush will paint a stripe in the center.
12. Dip the brush one more time for 30 sec and let it drip for 30 sec. Weigh the brush, clamp, and paint. Record in **“BEFORE”** column. Paint one left to right stripe. Do not let the brush paint a return stroke. Quickly reweigh the brush and clamp assembly. Record in the **“AFTER”** column.
13. Remove the brush and weigh the empty clamp before installing the next brush.
14. Once the paint is dry, measure the length of the stripe from where the paint begins to where the brush begins to skip. Record this as the **“STRIPE LENGTH.”**
15. Remove and clean the brush. Replace in the brush keeper for future use.
16. Determine the **PAINT PICKUP** (grams) by subtracting the Brush plus Clamp Weight from the **BEFORE-CLAMP, BRUSH, PAINT WEIGHT**.
17. Determine the **PAINT LAYDOWN** (grams) by subtracting the **AFTER** test from the **BEFORE** test weight for the Brush plus Clamp plus Paint.

**Data Analysis**

The data generated during the paintout test can be analyzed to compare relative paint pickup and laydown among a group of brushes. The tendency of brushes to dump, to skip, and to laydown paint smoothly can also be observed by this test.

While this test has been useful at helping to characterize the performance of different brush constructions, formulations, and finishing techniques, it can also be used to analyze other variables. Running the test with different displacements, different paint, etc., can provide valuable information about how brushes perform.

# Brush Test Data Sheet

Date: \_\_\_\_\_

Paint Used: \_\_\_\_\_

Brush Description	Filament Clear Length, in	Brush Weight, g	Clamp Weight, g	Brush + Clamp Weight, g	Initial Scale Setting, in	Displacement, in	Final Scale Setting, in	Clamp, Brush, Paint Weight, g		Paint Pickup, g	Paint Laydown, g	Stripe Length, in
								Before	After			

## Signs of Quality

### **Trademarks**

**Tynex®**

**Orel®**

**Chinex®**

### **Symbols**



SRT symbol for DuPont Tynex tapered paintbrush filament



SRT symbol for DuPont Orel tapered paintbrush filament



Symbol for DuPont synthetic bristle

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## **DuPont Filaments Wilmington, DE 19898**

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**For more information about DuPont filaments or the name of a brushmaker who might fill your needs, contact one of the DuPont offices below:**

### ***Americas***

DuPont Filaments  
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Washington, WV 26181  
Telephone: (800) 635-9695  
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Telex: 21963  
Fax: 65-272-7494

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P.O. Box 31065  
NL-6370 AB Landgraaf  
The Netherlands  
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Fax: 31-45-327948

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