

$$F \propto S^{-1} \wedge CP \propto S^{-1}$$



Increasing fibre stiffness ($S \uparrow$) generally improves paint transfer ($PT \uparrow$) and brush control ($C \uparrow$). The challenge is to simultaneously improve finish quality ($F \uparrow$), surface protection/coating thickness ($CP \uparrow$) and productivity.



Modern Paints

Paints are shear-thinning fluids - their apparent viscosity (η) decreases as application shear increases. In the 60's, paint viscosity (η) was 500~1000 cPs - today it is 700-3500+ due to VOC targets and enhanced appearance as well as surface protection properties.

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$$S \uparrow \Rightarrow \{PT \uparrow, C \uparrow, F \uparrow, CP \uparrow\}$$

With today's high-viscosity paints, paintbrushes are often judged by how far they can drag paint, and increasing stiffness has become the industry's default solution. Yet, does a longer stroke alone necessarily translate into higher productivity?

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Limitation of Chemically Tipped Fibers

Mechanism: High fibre count \rightarrow finer paint metering \rightarrow longer stroke lengths \rightarrow lower coating thickness. However, even market-leading ultra-stiff brushes (275-300 TU stiffness) cannot deliver a continuous 870 mm robotised stroke with 2100 cPs premium acrylic paint without line breaks. Increasing stiffness requires a larger filament diameter, reducing fibre count and ultimately compromising brush performance.



Overcoming Limitation of Continuously Tapered Fibers

Mechanism: Lower fibre count \rightarrow richer paint metering \rightarrow shorter stroke \rightarrow higher coating thickness. Historically, the industry has compensated for lower paint transfer using Nylon+Poly blends. The best ultra-stiff examples (250-275 TU) perform well with 2100 cPs premium acrylic, but nylon remains a high-cost solution. DT HyperStiff technology achieves >450 TU stiffness ($C \uparrow$), competitive stroke length, a rich coating build and all-poly economics.

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$$\text{Real Productivity } RP = (CV \times A) / t$$

CV (coating value) represents the value of the applied coating, combining finish (even, streak-free application), paint appearance (vividity, sheen and gloss) and protective performance (coating thickness). Real productivity (RP) is determined by the coating value (CV), the area coated (A, m^2) and the time taken (t).

Nexstar DT HyperStiff fibers redefine productivity by delivering exceptional control with more coating value in less time. One Brush. Every Application.