

Bowen® Monofilaments for Toothbrushes






Company Profile

Qidong Bowen Engineering Plastics Company Ltd started operations in 1997 in Wuxi, with polymerization of high end polyamides Nylon 6,10, Nylon 6,12, Nylon 10,10, Nylon 10, 12 resins for the automotive and electronics, end use applications. In 2006, they forward integrated into Nylon 6,10 monofilaments for toothbrush industry and simultaneously launched chemically tipped PBT filaments. Buoyed by the rapid growth in business, they set up a new green field site in Qidong Fine Chemicals Park. In this integrated site, they commenced operations in 2008 for polymerization as well as monofilaments extrusion.

Monofilaments quality is basically dependent on three key properties - the bend recovery, the wear performance and the processability. Bend recovery and wear performance are the key value benefits that the consumer or buyer of the toothbrush, cares about. Superior bend recovery ensures that the filaments remain firm and resilient without splaying.



‘Better wear’ relates to the filament durability without wearing off, and ensures that the end rounding is retained. These filaments do not split, break or flower while cleaning the teeth, does not harm the gums and enhances interdental cleaning.

The combination of better bend recovery and wear performance are required for meeting the clinical preference of customers for overall plaque removal, interdental cleaning, healthy gum care and durability. The longer the filament is able to retain both bend recovery and wear performance, better the quality and higher the overall plaque removal and inter-dental cleaning.

For the toothbrush manufacturer, with the advances in high-speed machines tufting at 1000 plus tufts a minute, the need is for filaments to run efficiently at high speeds. Bowen[®] with its proprietary surface finish enhances tufting efficacy and productivity. Bowen[®] has made significant advances in diameter consistency that exceeds the stringent requirements of new auto load toothbrush machines. In-house polymerization of our own Nylon resins, enables viscosity control to get the best end rounding results.

Focus on in-house color development and color recipes ensures consistency of color. Up-most importance is given to quality consistency batch to batch. Bowen[®] is both ISO 9001 and 14001 certified.

Today, Bowen[®] offers the toothbrush industry, a wide variety of offerings in both solid level round filaments, as well as chemically tapered filaments. Thus, Bowen[®] strives to cater to customer needs at all price points.

Bowen[®] has successfully developed its own improved wear technology that provides up to 30-40% better bend recovery, wear performance, as compared to normal Nylon 6,12 filaments. This results in a longer lasting toothbrush, that offers maximum cleaning performance.

The offerings of Bowen[®] can be broadly classified under the following price point segments:

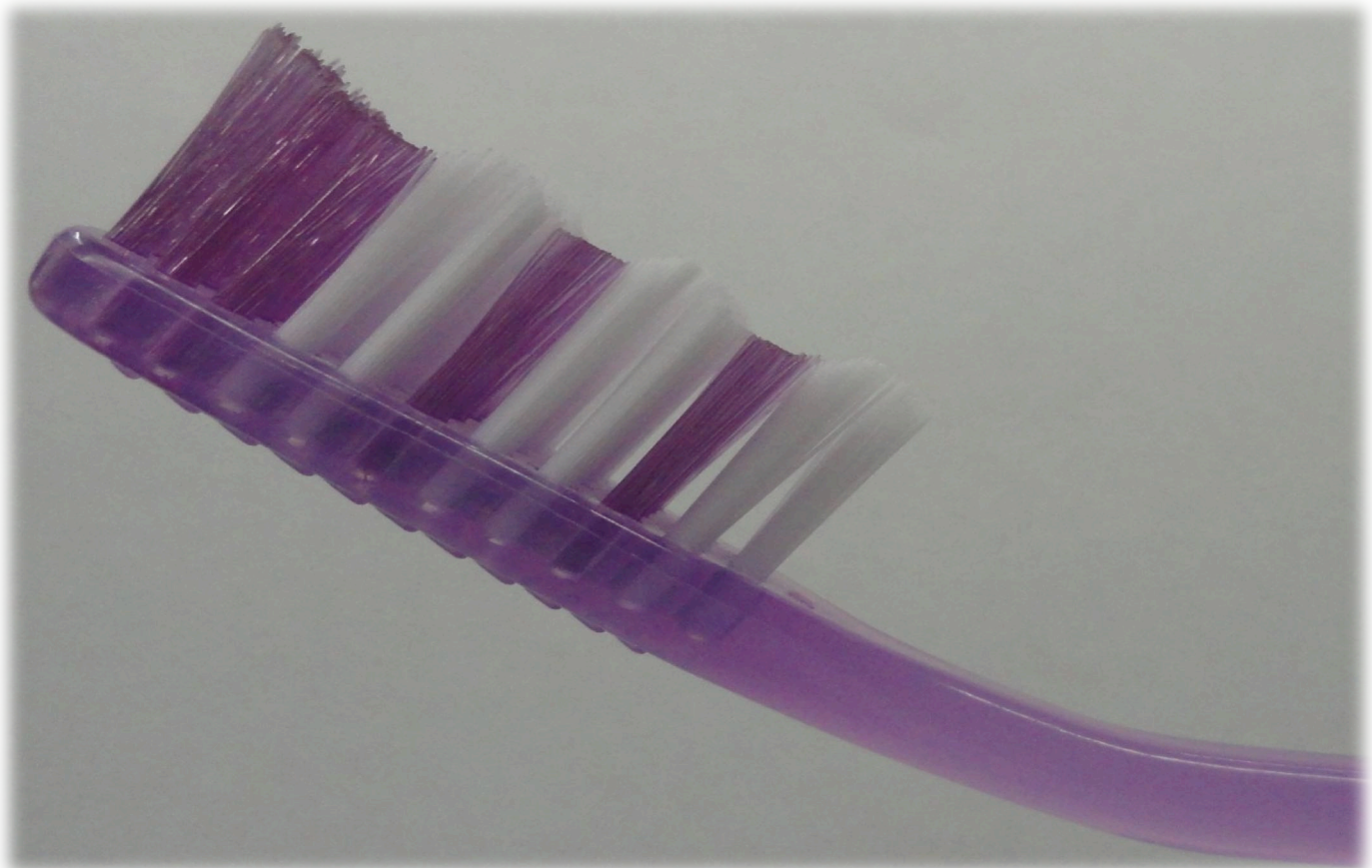
Super Premium: Bowen[®] Plus Improved Wear (IW) Green Nylon 10,10, 100% bio-based. Recently introduced in September 2013.

Premium: Bowen[®] Plus Improved Wear (IW) Nylon 6,12. Industry standard in premium segment.

Sub-Premium: Bowen[®] Virgin Nylon 6,12.

Regular: Bowen[®] Virgin Nylon 6,10 ,
Bowen[®] Co-polymer Nylon 6,10/6,12, polyamides.

Economy: Bowen[®] PBT



Consumer Advantages and Benefits:

The key attributes of Bowen[®]'s Premium offering, Bowen[®] Plus Improved Wear (IW) Nylon 6, 12 are:

Superior Bend Recovery

Bowen[®] Plus filaments possess the natural ability to straighten out, after bending. The filaments remains firm and straight despite harsh brushing action, but at the same time ensures proper and effective cleaning.

Optimum Water Absorption

There is optimum water absorption at 3%, ensuring the right balance. The filaments provide a comfortable “feel” in the mouth, while ensuring superior cleaning and plaque removal. Polyester PBT in comparison to Bowen[®] Plus absorbs small amounts of moisture thus remaining hard and stiff in the mouth during brushing.

Lesser Abrasion to protect your gums and enamel

Comparative tests conducted of Nylon 6,12 and polyester PBT indicated the former is 5 times less abrasive. Due to its resilience, Bowen[®] Nylon filaments have the ability to effectively clean teeth, without harming gums, or eroding the enamel.

Durability

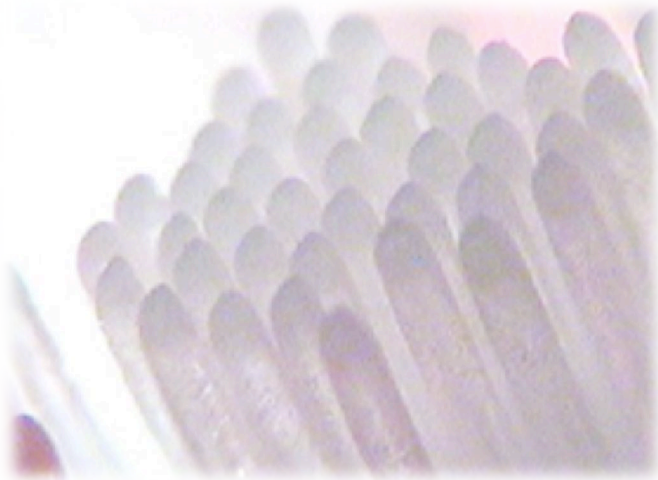
Bowen[®] Plus takes pride in its increased durability. Continuous usage and harsh brushing conditions enable it to remain straight and intact. They do not split, break, flower, bend or splay easily.

Superb end-rounding

The chemical and physical properties of Bowen[®] Plus enable easier end-rounding. The end-rounding is retained for a longer period, since Bowen[®] Plus performs better on abrasion.

Finishing to enable High Speed Tufting

The finish used on Bowen[®] Plus allows high speed tufting in modern tufting machines. It ensures that the filaments do not stick to each other, due to the antistatic property, which is used in the finish.



The Manufacturing Edge with Bowen[®] Plus Nylon 6,12

The unique properties of premium quality Bowen[®] Plus meet the most demanding requirements of your manufacturing process. These properties translate to productivity enhancement and profit maximization for your company.

Superior Surface Finish

The superior finish coating used on Bowen[®] Plus facilitates processing on high-speed machines running at 1000 tufts plus, per minute with lesser downtime and fewer rejections.

Caliper Uniformity

Our online tracking mechanism ensures the consistency of filament diameter. This results in accurate tufting as the correct number of filaments is filled into each hole. Too many filaments in a tuft can cause splaying, while too few give poor tuft retention.

Color Uniformity

Our special color recipes allow consistency of colors, batch to batch, with no variations. We offer a wide range of standard and custom matched colors.

Maximum Yield

Because Nylon 6,12 is lighter in weight than most other filaments, a higher yield per kilogram can be obtained. For example, Bowen[®] Plus IW 6,12 gives you 22% more filaments than polyester PBT, per kilogram.

Sizes Available

4 mils	= 0.102mm
5 mils	= 0.127mm
6 mils	= 0.152mm
7 mils	= 0.178 mm
8 mils	= 0.203 mm
9 mils	= 0.229 mm
10 mils	= 0.254 mm
11 mils	= 0.279 mm
12 mils	= 0.305 mm



Packing:

‘Hanks’ are bundles of filaments that are either PVC film wrapped or paper wrapped, of 50mm +/- 2 mm diameter and length of 1250mm +/- 10mm. We also supply cut pieces (at extra charge), as required. In the case of hanks, there are 12 hanks in a corrugated carton of approximately 22 kgs, net weight.

Bowen[®] Toothbrush Filaments - Food Contact Statement

There are no specific regulations for filaments, used in toothbrushes, however, our Bowen[®] filaments are made from Nylon 6,12, Nylon 6,10, which complies with FDA regulations 21 CFR 177.1500 – “Nylon Resins”. These resins are approved for use in food contact applications. The colorants used in Bowen[®] filaments comply with FDA regulation 21 CFR 178.3297- “Colorants for polymers”. These colorants are approved for use in materials for food contact.

In addition we are also in compliance with European Commission Directive (EU) 10/2011 from 14th Jan. 2011- L 12/1 from 15.1.2011 – ‘Material and objects made of plastic, which are intended to come in contact with food stuffs’.



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