



Choose **Ducoya** for superior performance and innovation that exceeds expectations
 ← explore our product range



Duvelco

Specialist Polyimide Polymers

Solutions for Critical and Demanding Applications



High Purity



Plasma Resistant



Ultra Low Outgassing

Bringing together high purity, plasma resistance and dimensional stability without outgassing even in an ultra-hard vacuum.



DUCOYA®

FOR PLASMA CHAMBER FURNITURE

DUCOYA®

Specialist Polyimide Polymers For Plasma Chamber Furniture

In plasma etching and plasma enhanced deposition processes such as PECVD and PEALD

The plasma chamber in semiconductor manufacturing operations is a genuinely harsh environment. Both etch and deposition processes involve reactive chemicals, further excited by plasma and elevated temperatures as high as 400°C. Added to this aggressive melee are potentially very hard vacuum conditions as demanding as 10⁻⁹ Torr and a constant and overriding need to avoid contaminating the wafer in process with particles or unintended metallic ions that can disrupt the electronic properties of the wafer and components upon it.

Over the last decade, ceramics have dominated chamber equipment such as electrostatic chucks, shower heads, and exhaust equipment. However, both fabs and companies supplying plasma equipment to those fabs always seek higher yields and greater productivity in general.

Ducoya is based on an old polymer produced in a new and exciting way, transforming properties favourably for use in semiconductor manufacturing. This polymer is PMDA:ODA polyimide, which significantly differs from historical precursor materials.

The purity of components and resistance to particle generation are critical determinants of process yield in semiconductor manufacturing. Ducoya offers more than an order of magnitude improvement in terms of purity compared to what has gone before. When coupled with enhanced plasma resistance and thermal properties, this allows operation at 400°C continuously in a vacuum.

As plasma chambers can be pumped down to a vacuum as low as 10⁻⁹ Torr, any outgassing from plasma chamber furniture can be disruptive, slowing the process of achieving vacuum and allowing potential contaminants to enter the chamber. Ducoya offers exceptionally low outgassing behaviour, ensuring productivity is not adversely affected when switching from ceramics to higher-performance polymeric.

Ducoya is well placed to accommodate inevitable mismatched coefficients of thermal expansion, such as when embedding electrical conductors into electrostatic chucks. Ducoya helps by having greatly improved elastic properties, unlike ceramics. These properties are significantly enhanced in elongation at high temperatures compared to what has historically been available.

Lastly, consider the desirability of 'a gentle but firm touch' when handling wafers. Wafers need to be positively held but not mechanically damaged; a sub-microscopic scratch can kill a component on the wafer. Handling without imparting impurities is also a requirement. Ducoya offers a low modulus compared to ceramics and other plastics.



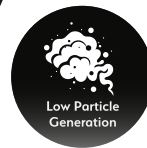
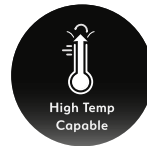
G001

100% unfilled PMDA-ODA polyimide, specially formulated for balanced properties, static sealing and the highest physical strength.



G001 UP

100% unfilled PMDA-ODA produced on a dedicated line, delivers ultra-purity for demanding applications where parts per billion levels of impurities are significant.



To learn more about Ducoya's use in test sockets, please contact Duvelco at info@duvelco.com or request a sample on our website, www.duvelco.com.

Unlock Excellence
Ducoya by Duvelco
Redefining standards in
polyimide technology



Discover more about Ducoya

duvelco.com
info@duvelco.com

© 2024 Duvelco Limited. All rights reserved. DUVELCO and DUCOYA are trademarks owned by Goodwin PLC and licensed to Duvelco Limited.

This preliminary data sheet is based on limited production runs conducted on a pilot reactor. The information provided herein is for general informational purposes only and is shared in good faith. Duvelco Limited (Duvelco) makes no warranties, whether express or implied, regarding the accuracy, reliability, or completeness of the information presented in this document. To the extent permitted by applicable law, Duvelco assumes no liability whatsoever or howsoever caused for any loss or damage resulting from the use of or reliance on the information in this preliminary data sheet. Any use of or reliance on this information is at your own risk. All products and samples are supplied subject to Duvelco's Standard Conditions of Sale.