





## **High Performance Polymers**

## **AURUM**™

**Thermoplastic Polyimide** 

ide
naturally PFAS-free!

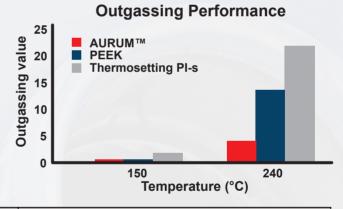
**AURUM™**, a thermoplastic polyimide resin by Mitsui Chemicals, distributed by BIEGLO GmbH is gaining increasing attention for its exceptional performance.

Growth is driven by its unique combination of thermoplastic processability — enabling injection molding and extrusion — together with outstanding heat resistance, mechanical strength, and electrical properties.



**AURUM™** offers the processability of a thermoplastic and superior wear and friction properties of advanced thermoset.

AURUM™ production removes impurities to such an extent, that it is used in laboratory equipment and satellites, applications where low outgasing properties at high temperatures are essential.



| AURUM™       | Grades        | Application Examples   |  |  |
|--------------|---------------|--|--|--|
|              | (Pellet form) |  |  |  |
| Natural      | PL450C        | films, tubes, semiconductor manufacturing equipment and cable coatings |  |  |
|              | PD450 powder  | Bus-bar and other powder-coatings                                      |  |  |
| Glass Fiber  | JGN 3030      | machine components as insulated bushes                                 |  |  |
|              |               | and gears Electrical and Electronic parts                              |  |  |
|              |               | including sockets and connectors                                       |  |  |
| Carbon Fiber | JCN 3030      | structural parts in aircraft, automotive                               |  |  |
|              |               | applications and industrial equipment                                  |  |  |
| Wear &       | JCL 3030      | seals, washers, bearings - industrial                                  |  |  |
| Friction     |               | equipment components and HDD parts                                     |  |  |







## High Performance







## **Thermoplastic Polyimide Electrical Insulation**

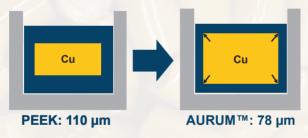
**AURUM™** enables high efficiency production of cables: High Temperature resistance and good elasticity coupled with strong adhesion on metals are the mechanical advantages.

Polyimides also resist very well to Hydrocarbons as in cooling oils and prove to have good electrical insulation properties. AURUM™ contain no PFAS.



| Challenges                         | Our Solution – AURUM™                           |  |  |
|------------------------------------|---|--|--|
| Heat Dissipation inside the engine | translucent AURUM excells                       |  |  |
| Production efficiency              | Extrusion coating – 1 layer of thermoplastic    |  |  |
| Move to 800 V and 1.000 V          | AURUM™allows for higher copper fill factor      |  |  |
| Thinner and lighter cables         | AURUM™enables cable-producer to improve         |  |  |
| Higher power density               | High Tg of 245°C – highest of any thermoplastic |  |  |

Compared to PEEK an AURUM™ insulation can be 25% thinner or at same Insulation thickness a 15% higher voltage can be achieved



Calculated PDIV: 1000 V from dielectric constant at 200 °C



| Property               |       | Unit  | AURUM™        | PEEK         | PAI           | Ероху           |
|------------------------|-------|-------|---------------|--------------|---------------|-----------------|
| Coating Process        |       |       | Extrusion     | Extrusion    | Dipping       | Dipping         |
| Tg /Tm                 |       | °C    | 245/388       | 143/343      | 275 / -       | ~200 / -        |
| Breakdown<br>Voltage   | 23°C  | kV/mm | 28            | 21           | 24            | -               |
|                        | 180°C |       | 36            | 23           | -             | - /             |
| Dielectric<br>Constant | 1 kHz |       | 3.3           | 3.2          | 4.0~4.6       | 3.4~4.4 (1 GHz) |
|                        | 200°C |       | 3.2 (1.0 kHz) | 4.5 (50 kHz) | 4.2 (1.5 kHz) | -               |
| PDIV* 100 μm, 200°C    |       | V     | (1,100)**     | (960)**      | (990)**       | -               |

<sup>\*</sup> Partial discharge inception voltage \*\* Calculated from Dakin formula



