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News Release

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New flame-retardant polyphthalamides for stable electronic components without corrosion

- PPA compounds by BASF demonstrate high electrical RTI values while being halogen-free according to EN 50642
- Tailored E&E portfolio for connectors in vehicles, appliances and consumer electronics

BASF is now expanding its polyphthalamide (PPA) portfolio by a variety of flame retardant grades that combine high thermal stability with excellent electrical insulation and low water uptake. They are characterized by high electrical RTI values (RTI=relative thermal index) above 140°C while being halogen-free according to EN 50642, thus preventing corrosion and failure of electrical parts when used under moist conditions. The non-halogenated PPAs based on PA9T, PA66/6T, PA6T/66 and PA6T/6 also allow for better colorability and long color stability. With these new flame retardant grades, BASF offers a tailored E&E portfolio which opens new possibilities for applications like connectors for power or data transmission in vehicles, appliances and consumer electronics as well as for e-mobility parts, miniature circuit breakers, switch gear and sensors.

The UL cards for the four new PPA grades show excellent electrical RTI values and offer diverse performance levels for different part requirements. “With our new optimized grades we have developed our broad PPA FR portfolio into a one-stop-shop for all kinds of our customers’ needs when it comes to E&E materials”, says

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Abdullah Shaikh, head of the global PPA team. “We offer PPAs with stable thermal and mechanical performance for classic E&E components, also with non-halogenated flame retardants, up to grades with RTIs that are better than the market standard. This is our answer to new trends like halide-free heat stabilizers to avoid contact corrosion in sensitive components exposed to heat and moisture. Thus, our materials make sure that E&E devices do not break down and operate properly over a long time.”

Now globally available: Ultramid® One J with highest electrical RTI value

The product range includes the easily processable Ultramid® One J 60X1 V30, a PA66/6T acquired from Solvay and now available globally to customers from BASF. Together with the PPA pioneer Ultramid® TKR 4340G6 (PA6T/6), it not only offers the highest electrical RTI value of 160°C but also very easy processability. The PA9T Ultramid® Advanced N3U41G6 shows an electrical RTI of 150°C at extremely low water uptake, which is crucial for SMT (surface mount technology) processing. Its outstanding chemical resistance combined with the most stable mechanical performance of all PPAs at elevated temperatures make it especially suitable for electronic applications. Ultramid® Advanced T2340G6 is a PA6T/66 with very good flowability with an electrical RTI of 150°C and ideally suited for e.g. wire-to-board and board-to-board connectors.

All the flame retardant materials in the PPA portfolio keep their high mechanical and dielectric strength at elevated temperatures. They show very good dimensional stability due to low and slow water uptake as well as a low coefficient of thermal expansion. They allow for V-0 rating at thicknesses down to < 0.4 mm and are in agreement with the cable management standard CMS EN 50654 (2018-05). Thus E&E parts benefit from the flame retardant PPA grades by maintaining their mechanical and electrical properties after heat aging and long-term usage.

About Ultramid® Advanced

BASF’s polyphthalamide portfolio is based on the six polymers Ultramid® Advanced N (PA9T), Ultramid® Advanced T1000 (PA6T/6I), Ultramid® Advanced T2000 (PA6T/66), Ultramid® T KR (PA6T/6), Ultramid® One J (PA66/6T) and Ultramid® D3 (PA/PPA). They open the door to the next generation of lightweight, high-performance plastic components in many different sectors including the automotive

industry, electronics and electric devices, mechanical engineering and consumer goods. The PPA portfolio is available globally and complemented by BASF's Ultrasim® simulation tool and extensive experience in application development. It includes more than 50 compounded grades for injection molding and extrusion, products with or without flame retardants. The compounds are available in different colors, from colorless to laser-markable black, with short-glass, long-glass or mineral fiber reinforcement, and with various heat stabilizers.

Further information: www.ppa.basf.com

About BASF's Performance Materials division

BASF's Performance Materials division encompasses the entire material know-how of BASF regarding innovative, customized plastics under one roof. Globally active in four major industry sectors – transportation, construction, industrial applications and consumer goods – the division has a strong portfolio of products and services combined with a deep understanding of application-oriented system solutions. Key drivers of profitability and growth are our close collaboration with customers and a clear focus on solutions. Strong capabilities in R&D provide the basis to develop innovative products and applications. In 2021, the Performance Materials division achieved global sales of €7.29 billion. More information: www.plastics.basf.com.

About BASF

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. Around 111,000 employees in the BASF Group contribute to the success of our customers in nearly all sectors and almost every country in the world. Our portfolio comprises six segments: Chemicals, Materials, Industrial Solutions, Surface Technologies, Nutrition & Care and Agricultural Solutions. BASF generated sales of €78.6 billion in 2021. BASF shares are traded on the stock exchange in Frankfurt (BAS) and as American Depositary Receipts (BASFY) in the U.S. Further information at www.basf.com.