

Redistribution Layer Material Market Size and Forecasts (2020 - 2030), Global and Regional Share, Trends, and Growth Opportunity Analysis Report Coverage: By Type [Polyimide (PI), Polybenzoxazole (PBO), Benzocyclobutene (BCB), and Others] and Application {Fan-Out Wafer Level Packaging (FOWLP) and 2.5D/3D IC Packaging [High Bandwidth Memory (HBM), Multi-Chip Integration, Package on Package (FOPOP), and Others]}

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Abstracts

The redistribution layer material market size was valued at US\$ 192.39 million in 2022 and is expected to reach US\$ 460.15 million by 2030; it is estimated to register a CAGR of 11.5% from 2022 to 2030.

The advanced packaging process starts at the die level, where the objective is always to lessen the die sizes without compromising the input-output (I/O) density. Several other budding packaging technologies play a key role in the heterogeneous integration of devices. Wafer-level fan-out packaging (WLFO) is one of the key packaging technologies that has emerged as a comprehensive packaging process. The WLFO process earlier had only single-die designs, i.e., a single redistribution layer (RDL) on one side of a reconstituted wafer.

The redistribution layer acts as a crucial step in the advanced wafer packaging. RDL serves as a rerouting of the I/O layout and allows a higher I/O number. A high I/O density usually creates better electrical performance, as more outputs result in faster electrical signals between the die and minimize the risk posed by electrical shorts.

Besides, a higher I/O density enables the package to achieve better performance simultaneously. Moreover, the Asia's strategic location as a global manufacturing hub, coupled with competitive production costs, has attracted multinational corporations looking to optimize their supply chains. This has created a robust ecosystem for the redistribution layer material market, with various suppliers and manufacturers establishing a presence in the region.

Based on type, the redistribution layer material market is segmented into polyimide (PI), polybenzoxazole (PBO), benzocyclobutene (BCB), and others. The polyimide (PI) segment held the largest market share in 2022. Polyimides are polymer-based thermoplastics with a high melt viscosity and require higher pressures for forming molded parts. Polyimides offer good chemical resistance, high mechanical strength, higher thermal stabilities, and exceptional electrical properties. For the IC packaging methods, polyimides are used as high-temperature adhesives, mechanical stress buffers, and as a film supporting the micro-sized circuitry. Polyimides require higher cure temperatures, which is its major drawback, as packaging demands lower cure temperatures. Several material suppliers have thus focused on providing polyimides with lower cure temperatures. PI is majorly used in all the flip-chip wafer bumping and WLP applications. Based on application, the redistribution layer material market is bifurcated into fan-out wafer level packaging (FOWLP) and 2.5D/3D IC packaging [high bandwidth memory (HBM), multi-chip integration, package on package (FOPOP), and others]. The redistribution layer material market share of the 2.5D/3D IC packaging segment was notable in 2022. The increased costs of lithography steps and wafer processing in general at the next-generation silicon nodes are driving the industry to find alternatives to improve the performance and functionality of electronic devices. Additionally, the need to integrate disparate technologies such as logic, memory, RF, and sensors in small form factors is driving the semiconductor industry toward 3D integration as a solution.

In 2022, Asia Pacific held the largest share of the global redistribution layer material market. The region is considered a global manufacturing hub owing to the presence of diverse manufacturing industries. With China's evolution into a high-skilled manufacturing hub, developing countries such as India, South Korea, Taiwan, and Vietnam are attracting several businesses that plan to relocate their low to medium-skilled manufacturing facilities to neighboring countries, which results in reduced labor costs. As per the study by the Semiconductor Industry Association, ~75% of global semiconductor capacity is based in East Asia. Semiconductor companies will benefit from a cost advantage of 25% to 50% with the start of manufacturing activities in the region.

SK Hynix Inc, Samsung Electronics Co Ltd, Infineon Technologies AG, Dupont De Nemours Inc, Fujifilm Holdings Corp, Amkor Technology Inc, ASE Technology Holding Co Ltd., NXP Semiconductors NV, JCET Group Co Ltd, and Shin-Etsu Chemical Co Ltd are key players operating in the global redistribution layer material market. Market players focus on providing high-quality products to fulfill customer demand. They are also adopting strategies such as investments in research and development activities and new product launches.

The overall global redistribution layer material market size has been derived using both primary and secondary sources. To begin the research process, exhaustive secondary research has been conducted using internal and external sources to obtain qualitative and quantitative information related to the market. Also, multiple primary interviews have been conducted with industry participants to validate the data and gain more analytical insights into the topic. Participants of this process include industry experts such as VPs, business development managers, market intelligence managers, and national sales managers, along with external consultants such as valuation experts, research analysts, and key opinion leaders, specializing in the redistribution layer material market.

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