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SIGRAFINE® SiC

Handling instructions for coated graphite parts

Material: SiC coated graphite parts

Application: Semiconductor – Epitaxy

Thank you for purchasing SGL Group's high purity, SIGRAFINE silicon carbide coated susceptors. We take great pride and care in manufacturing our products to the highest quality standards. The performance of our susceptors depends not only on the quality of our material and workmanship, but on how the products are handled and used by our customers. Therefore, in order to ensure that our customers can achieve the maximum operating life, we would like to make the following recommendations concerning handling, operating, and storage procedures:

■ Handling

SiC coated parts must be handled with clean room certified gloves. The coated carrier must not be touched with bare hands, as this will contaminate its surface. Avoid touching the part with any metal objects, as this may lead to premature failure due to pinholes.

■ Storage

Our parts are double bagged and vacuum sealed in clean room polyethylene bags. They will lose vacuum over time. Therefore, to keep moisture and other contaminants from seeping inside the bag, the part must be stored inside a clean room or nitrogen purged cabinet at all times. The cabinets should be constructed of plastic material to avoid contamination.

The parts should always be enclosed in polyethylene bags when not in-use or inside purged cabinets to protect against any airborne particulate

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SIGRAFINE® is the new brand name for our finegrain graphites, previously known under the names RINGSBORFF®, SIGRAFORM®, SIGRAGENT® and CRYSTA-SIL®.

The SiC coating is very brittle; therefore, if bumped against a hard surface, it may be damaged. We suggest that parts be placed on a foam padded surface whenever stored in polyethylene covered bags.

■ Cleaning

In case you find a spot or a blemish on the surface, it can be removed by rubbing a clean room wipe, moistened with de-ionized water. If this does not work, try using wipes moistened with high purity isopropyl alcohol.

■ Inspection

Upon receipt, please inspect the part immediately without taking it out of the plastic bag for any visible signs of shipping damage. Any damage must be reported within 10 days. Sometimes, you may find lumps on the plastic bags that appear like nodules on the surface. These lumps are likely just inclusions in the polyethylene bagging that can show as raised areas under vacuum. Please confirm that the bump is not in the bagging material before concluding that the part has a defect in the coating.

In case that damage is detected, please take a picture of the damaged part in the original packaging and send it to our customer service representative. Do not discard the original packaging including the polyethylene bags.

■ Returning part for analysis

In the event the customer wishes to return the part for analysis under SGL Group's complaint procedure, an RMA number must first be obtained from one of our Customer Service Representatives. This number must be marked on the outside of the return shipment and its accompanying paperwork. Please ensure that the surface of the part being returned has been etched and is free of any hazardous materials for safe handling. It is recommended that the part be shipped back in its original packaging to avoid damage during shipment. Also include with any returned part, a brief description of the complaint and any supporting performance data that may aid our internal investigation.

Factors impacting the life of the susceptor

■ Epi chamber

Please ensure that the Epi chamber is completely clean and free of any particles before each run.

■ Quality of HCl

Quality of process gas streams is very important. Moisture must be controlled to less than 1ppm level. Any impurities in HCl will reduce the susceptor's life.

■ Wafer substrate

Different supplier's silicon wafers react differently with the SiC surface. Some wafer substrates have a high impurity level that can break down the SiC surface over time. This can lead to pre-mature pinholing and high resistivity variation. Therefore, please ensure that the wafers meet the highest purity standards. The same comments hold for any quartz fixturing (part of the reactor setup) that may come in contact with the coated part surface.

■ Piping and plumbing

Users must ensure that piping used for gas delivery system in their reactor is free of any contamination.

■ Cleaning / etching

Customers normally follow their own procedures for cleaning susceptors before production runs to meet established SPV specifications. Generally, parts need to be etched with HCL for several hours to remove surface contamination to an acceptable level prior to running production Epitaxy cycles.

TDS SiC Coated Parts HX.02

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This information is based on our present state of knowledge and is intended to provide general notes on our products and their uses. It should therefore not be construed as guaranteeing specific properties of the products described or their suitability for a particular application. Any existing industrial property rights must be observed. The quality of our products is guaranteed under our "General Conditions of Sale".

08 2015/0 2NÄ Printed in Germany

Graphite Materials & Systems | SGL CARBON GmbH

Sales Europe/Middle East/Africa | coating-europe@sglgroup.com

Sales Americas | coating-americas@sglgroup.com

Sales Asia/Pacific | coating-asia@sglgroup.com

www.fine-grain-graphites.com | www.sglgroup.com/gms

