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## Chip storage and handling for aerospace products with silver backside

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### **Introduction**

Most STMicroelectronics aerospace products can be provided in die form with various quality levels. This document describes specific handling recommendations and instructions for products with a silver backside such as the Rad-Hard MOSFET series.

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## 1 Purpose

The purpose of this document is to provide general handling instruction for aerospace products with silver backside.

## 2 Definitions

1. Waffle pack: 1 tray (with 1 antistatic interleaf on each tray ) + 1 cover and fixed by 1 clip
2. Bulk: 4 waffle packs

## 3 Materials and tools

1. Waffle tray
2. Tray cover
3. Clip box
4. Antistatic bag
5. Clay desiccant
6. MSL (moisture sensitivity level) card

## 4 Packing form description

STMicroelectronics' aerospace packing procedure for products in die form is compliant with the standard packing and shipment rules summarized below.

1. Maximum tray number per shielding bag: 4
2. Traceability information related to die quality level is labeled outside the shielding bag.

### 4.1 Packing information

ST aerospace dice are packed in waffle packs inside a clean room (Class 100, ISO 5). Each bulk includes a maximum of 4 waffle packs for shipment.

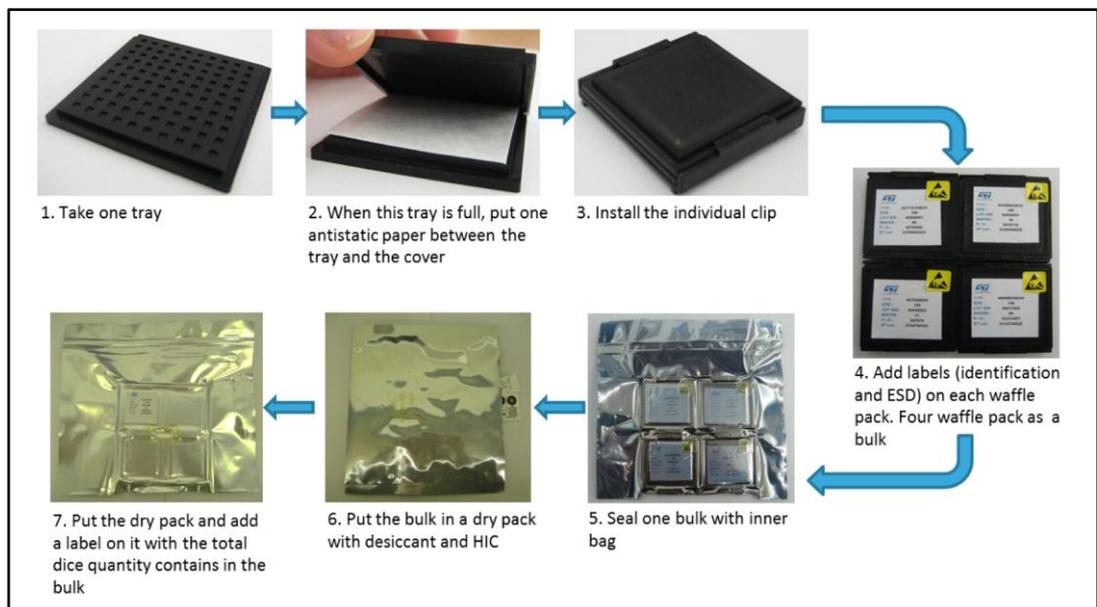
The waffle packs are placed in antistatic bags and vacuum sealed.

The detailed packing procedure for packing of products in die form is summarized below and illustrated in [Figure 1](#).

1. A white interleaf is placed above each tray.
2. A cover is positioned on the top of each tray.
3. A clip keeps the cover on the tray.
4. A label is placed on the tray cover.
5. Waffle packs are sealed under a vacuum in an inner antistatic bag (maximum 4 waffle packs per inner antistatic bag).
6. The whole package is placed in an outer antistatic bag (dry pack).
7. A bag of clay desiccant for dehumidification and an MSL card (as a humidity indicator) are placed on top side.
8. The antistatic bag is sealed in a vacuum sealer.

Any repacking should follow precisely the same procedure.

**Figure 1: Aerospace die packing procedure**



## 4.2 Clay desiccant dimensioning

Theoretical calculations and experimental tests show that there must be at least 2 grams of clay desiccant for 4 trays. Each bulk includes 4 trays = 1 bag of desiccant = 2 grams.

**In case an inner bag is opened, the quantity of desiccant should be increased to 4 grams to ensure the proper humidity level.**

## 5 Recommended storage instructions

ST aerospace die products are packed in a clean-room environment. It is recommended to store these products in a similar environment. The following key storage precautions should be observed:

- The die must be maintained in a filtered nitrogen atmosphere until removed for assembly.
- The moisture content of the storage facility must be maintained at 30 percent  $\pm$ 10 percent relative humidity.
- Electrostatic discharge (ESD) damage precautions are necessary during handling. The die must be in an ESD-protected environment at all times for inspection and assembly. Dice contained in waffle trays can remain in storage for up to one year under these conditions.

If a visual inspection is required, it is recommended to repack the dice immediately afterward, following the recommendations above, or to bond them immediately.

## 6 Quality requirements

Trays use for packing must not be damaged (i.e. cracked, broken or chipped.)

A change of the waffle pack is considered a minor change, which ST will only notify the customer about. ST standard rules on product change notifications (PCNs) apply only to changes affecting the die itself.

## 7 Revision history

Table 1: Document revision history

Date	Revision	Changes
22-Sep-2014	1	Initial release.
17-Apr-2015	2	First public release.

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