

Handling Procedures for Baking Pans with DuraShield® and OptiShield® Coatings

DuraShield and OptiShield coatings have excellent non-stick properties and resistance to corrosion. However, exposure to excess heat or moisture and contact with plant equipment or practices that cause abrasion of the coating can shorten the life of your pans. Following these handling requirements will minimize damage and maximize the life of your coated items. Neglecting to follow these guidelines will reduce the life of your pans and coatings.

Handling

- **Do not Scratch or Scrape Tins, Trays, or Lids** – Do not use metal utensils or other objects that could scratch the coating. Be extremely careful when handling pans to avoid scratches in the corners, main bake areas, or ends. Deep scratches may cause surface corrosion on the pan. Damage to the non-stick coating will cause the release mechanism in the coating to work improperly and cause unwanted sticking and, ultimately, premature failure of the coating.

Release Agents and Toppings

- **Use of Oil** – Oil or other release agents will not be necessary in most applications using DuraShield or OptiShield coatings. If a release agent is deemed necessary, please contact American Pan in advance for advice. Release agents can build-up on pans and may require pans to be cleaned and recoated to provide maximum life and release quality.
- **Use of Toppings** – Any debris or film left from liquid or dry toppings can affect the integrity and life of DuraShield or OptiShield coatings. If the coating fails to release as required, the pan should be cleaned according to the guidelines found in this document.

Conveyors and Indexers

- **Conveyor Friction** – Pans should not be static on moving metal conveyors as this will cause wear on the bottom of the pan and potentially weaken the pan material.
- **Pan Indexers** – Adjust pan indexing fingers to prevent scratching the coated surface or causing damage to the sheet, both of which will result in early coating failure. Padding the fingers with rubber will help reduce friction and wear.
- **Transfer Points** – Avoid pan stack transfer over uneven surfaces. Pan truck rollers or roller conveyors should be small in diameter (25mm) and closely spaced to distribute load. Pan stack heights should be as low as practical for the bakery.

Proofer and Oven

- **DuraShield Operating Temperatures** – DuraShield coatings are suitable for frozen products and is applicable at temperatures from -40°C through 240°C (-40°F through 464°F). The maximum recommended peak temperature is 260° Celsius (500° Fahrenheit).
- **OptiShield Operating Temperatures** – OptiShield coatings are suitable for frozen products and is applicable at temperatures from -40°C through 240°C (-40°F through 464°F). The maximum recommended peak temperature for intermittent ovens is 274°C (525°F) and 260° Celsius (500° Fahrenheit) for continuous ovens.
- **Moisture** – Coated items should not be allowed to sit wet or be exposed to high temperature water or

steam for a prolonged length of time. Exposure to too much moisture can cause the release mechanism in the coating to work improperly and cause unwanted sticking and, ultimately, premature failure of the coating.

- **Empty Pans or Moulds** – Empty tins, trays or lids should not be allowed in the oven as this can lead to a deterioration of the coating surface. If possible, shut off heat during oven stoppages to prevent long exposure to elevated temperatures.
- **Oven Heat** – Oven experts should check to ensure that oven heat flow is consistent throughout the oven and that there are not areas where the oven reaches temperatures above the maximum suggested for our coatings.

Depanning

- **Depan Products Quickly** - Baked products should be depanned whilst still hot or warm. If baked products are allowed to cool in the coated item, steam from the product will penetrate the coating and result in condensation and sweating of the baked item. Sweating may also cause the coating to lift, premature coating failure, and damage to the item's surface.
- **Air Release** – It is recommended that air nozzles or jets are used prior to the depanner with bun and roll type products. Air should be monitored to ensure it is strong enough to assist with depanning, but gentle enough not to damage the product or drive particulates into the coating.
- **Vertical Depanning** – For vertical depanning, adjust the depanner to lift the product out of the mould as straight as possible. Ensure that the depanner head and pan conveyer are traveling at the same speed.
- **Sweep Depanning** – For sweep depanning, make sure that the depanner has enough clearance from the moulds to ensure that the coating is never touched. A minimum clearance of five millimetres is suggested.

Stacking

- **Gentle Stacking** – Plant personnel must ensure that automatic/manual stacking or manual handling operations do not damage the tins, trays, lids or coating. Careless stacking, dropping, or throwing of pans should be avoided. In general, always maintain slow drop speeds and minimize the drop height and angle when stacking pans.
- **Magnetic Stackers** – Check the adjustment of the magnetic pick up on un-stackers to ensure no force is applied to the pan as this could damage the pan material.
- **Stack Heights** – Pans must not be stacked too high or they could get damaged no matter if they are stacked automatically or manually. Tall pan stacks also create worker safety issues when moved on pan trucks as the pans can become unstable and fall or cause other accidents. A common guide for proper pan stack height in the bakery is not more than 5 feet / 160 cm.

Cleaning

- **Clean Before First Use** – Wash and dry the coated tins, trays or lids thoroughly at a maximum temperature of 150°C (300°F) in the oven. All coated items are inspected and cleaned before packaging and shipping; however, due to the time and typical manner of transit, it is recommended to inspect and clean them before first use.
- **Thorough Cleaning** – Incomplete cleaning allows ingredients and product to gather on the coated surface and will cause a degradation of the non-stick properties. Avoid washing whenever possible.

- **Air Blowing** – The safest cleaning method is “air blowing”. Make sure the air pressure is low and controlled so that it cleans the pan but does not blast seeds, crumbs, cornmeal or other particles into the pan surface.
- **Brush Cleaning** – If brushes are used to clean pans, soft brushes are required to avoid scratching the coating. Scratches in the coating can lead to permeation and subsequent corrosion of the substrate and loss of release properties.
- **Steam Cleaning** – Pans should not be washed with high pressure steam and/or chemical solutions when cleaning unless previously approved. NOTE: Coated pans should not sit wet or be exposed to steam for a prolonged period. Exposure to too much moisture can cause the release mechanism in the coating to work improperly and cause unwanted sticking, and ultimately, premature failure of the coating. ***Please contact American Pan in advance to get approval of the process and/or chemical solutions.***
- **In-Line Washer** – It is possible to use detergents in low concentration if they do not contain aggressive substances. If detergents are used, the pans must be rinsed thoroughly with clean water after washing and dried completely by running through an empty oven for 10 minutes at 150°C (300°F). NOTE: Coated pans should not sit wet or be exposed to high temperature water a prolonged period. Exposure to too much moisture can cause the release mechanism in the coating to work improperly and result in unwanted sticking and premature failure of the coating. ***Please contact American Pan in advance to get approval of the process and/or detergent.***

Storage

- **Clean Coated Items Before Storing** – Long-term storage of items waiting to be put back into production should be avoided without prior cleaning as deposits are harder to remove over a long period of time.
- **Store Coated Items Upside Down** – Pans should be stored upside down unless they have been specifically designed for storage with baking surface up. ***Please contact American Pan if you are unsure of the best way to store your pans.***
- **Environment** – Coated tins, trays and lids should not be stored in a non-controlled environment and keep away from moist and humid storage environments. Never store items that are still wet. Coated items that are washed or become wet should be thoroughly dried and stored in a dry location.
- **Back to Production** – Coated items that have been stored in a cold environment should be allowed to warm to ambient temperature before being placed on the line. Condensation on cold metal can result in sticking due to excess moisture on the coated surface.