

**KOHL'S**  
**Anti-Mold, Anti-Mildew Guidelines**  
**For Footwear Factories**  
**(Best Practice)**

## ANTI-MOLD, ANTI-MILDEW GUIDELINES FOR FOOTWEAR FACTORIES

The critical period (in China & SE Asia) for mold & mildew is April 1st – September 30<sup>th</sup>. However it is KOHL'S recommendation to follow the anti-mold protocol below all year.

### BUILDINGS

- Ensure that roofs and walls (including windows & doors) do not leak.
- Twice a year thoroughly clean all warehouse and production areas, including walls, floors, ceilings, fans & equipment (inside & out.). The first cleaning occurs within 2 weeks before Chinese New Year or within 3 weeks after, and the second at the beginning of May. A thorough cleaning is also required after any factory flooding.
  - \* Scrub discolored walls & repaint if needed. Note: anti-microbial paint is recommended for use in warehouses.

### PRE-PRODUCTION – INCOMING WAREHOUSE

- **Use a moisture meter to check the moisture content of incoming materials (especially textiles, coated textiles, & leather) and packaging (shoeboxes, tissue, dividers, & cartons).** Materials with a reading of 15% or higher should be rejected.
- All materials, components, hardware, **and packaging** are on pallets or racks, 12 cm above the cement floor, 60 cm from exterior walls, and 150 cm away from outside windows or doors.
- All materials are covered or sealed against dust exposure.
- Have adequate, functioning fans for good air circulation & ventilation, or dehumidifiers, in order to maintain a relative humidity of 50-60%. A humidity gauge and thermometer should be present so temperature & humidity can be monitored & recorded daily.
- Control materials inventory with FIFO (first in, first out) system.

### MATERIALS LAMINATION/ PROCESS

- Add anti-mildew agent into the acetic acid resin during materials lamination to backings.
- Post a chart in laminating room showing the correct time & temperature needed to laminate different combinations of materials.
- Cut laminated materials within 1-2 days of the combining process.
- Control materials inventory with FIFO (first in, first out) system.
- **All material rolls are on pallets 12 cm above the cement floor, 60 cm from exterior walls, and 150 cm away from outside windows or doors.**

### PRODUCTION - GENERAL

- Clean production and packing area floors, conveyors, & packing surfaces daily with chlorine (5% chlorine bleaching powder & 95% water) & then wipe them dry with clean cloths.
- Spray all floors and wall corners monthly with chlorine (5% chlorine bleaching powder & 95% water.)
- Have adequate, functioning fans for good air circulation & ventilation.

### PRODUCTION - CUTTING

- Cut pieces should be stored in plastic bags prior to stitching. Cut pieces should go into stitching 1-2 days after cutting.

### PRODUCTION - STITCHING

- **All finished uppers should be stored in non-breathable polybags. A paper tissue with 1 drop of Wasaouro oil on it should also be placed inside of each bag... The finished upper storage room should have a relative humidity of 50-60%. The use of dehumidifiers, a humidity gauge, & thermometer, and daily record keeping of humidity & temperature are strongly recommended.**
- **Finished uppers stitched outside of the factory should be inspected for mold when received at the main factory. The moisture content of an upper in each bag should be checked with a moisture meter. If the reading over 15%, the uppers should be run through a dryer and the moisture content rechecked, until it is 15% or less.**

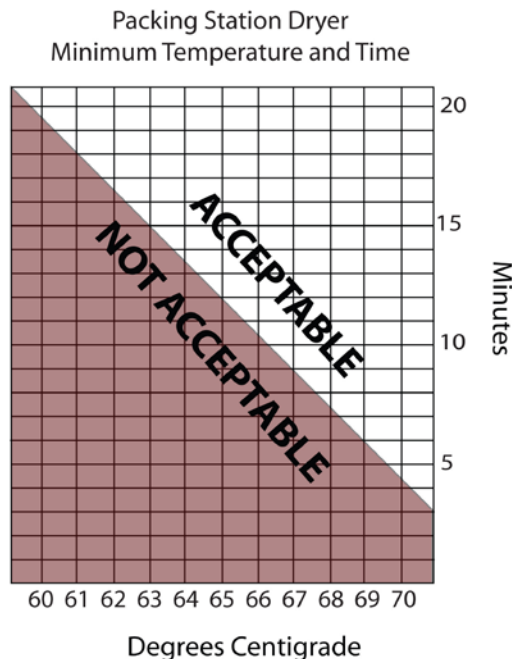
### PRODUCTION – LASTING

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- Have a clean, dry stationary wipe positioned at the end of conveyors to remove dust from the belt. Replace daily.
- Use fans instead of air conditioning during the cooling process of lasted uppers to minimize moisture if the relative humidity is higher than 60%. If refrigerated cooling must be used, open tunnel doors at the end of the day for good ventilation, allowing the tunnel to dry overnight. Do not allow standing water in or around the cooling tunnel.

### PRODUCTION - PACKING

- Packing line workers should have clean uniforms or aprons, & should not wear gloves. They should wash their hands with soap & water to remove grease & oil before returning to the line.
- **Check moisture content of the shoeboxes, tissue & paperboard divider using moisture meter. If the moisture content is higher than 15%, do not use the packaging.**
- Before packaging the footwear, spray inside of each shoe (lining) with an anti-mold agent like Aegis AEM-5700 following the anti-mold agent supplier's instructions.
- Ensure that the packing line dryer temperature & time is high enough & long enough to dry out shoe linings.
- Run shoes & packaging through a heated dryer at 70C for a minimum of 4 minutes (average temp. & time) to remove any moisture. *If a lower dryer temperature is needed to preserve shape & adhesion, reference the dryer time & temperature chart below.* Check the tunnel thermometer's temperature hourly. Make sure that appearance and adhesion aren't affected by the settings.



- At the end of the dryer, run the shoes & packaging under an ultra-violet sterilizer to remove any bacteria. This is the last step in the packing process before folding the tissue over the shoes and closing the shoebox lid.
- Attach Micro-Pak® anti-microbial chip to the inside of each shoebox lid, 1 per shoebox lid for most footwear, and 2 per shoebox lid for most mid & tall shaft boots. Insert Micro-Pak® enhanced PE sheets with polybagged footwear. [Chip location inside box lid](#) illustrations are in "Kohl's Minimum Packaging & Presentation Standards for Footwear" at [www.connection.kohls.com](http://www.connection.kohls.com)
- Micro-Pak anti-microbial chips used in production should be kept inside of an enclosed dispenser to minimize exposure to air until they are used.

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- Unused Micro-Pak® anti-microbial chips & enhanced PE sheets should be sealed inside of a polybag until their next use.
- **Make sure factories are purchasing their anti-microbial packaging components from the actual suppliers/manufacturers. Counterfeit anti-microbial packaging components are being passed off & sold as the real thing, but do not provide protection from bacteria/fungus. Vendors/Agents should compare quantities on Micro-Pak invoices to production quantities placed with the factory(s). Discrepancies should be investigated.**
- Do not use silica gel packs. They are ineffective.

### FINISHED GOODS

- Keep shipping cartons dry. Do not use damaged or wet cartons. **Check moisture content using a moisture meter. If the moisture content is higher than 15%, do not use the cartons.**
- Pack shoes into shipping cartons as soon as possible after being removed from the dryer and shoe box lids are closed. Place a tissue w/ Wasaouro® oil in the shipping carton following supplier's (Chifa) instruction:  
*WASAURO Oil Instructions for Shipping Cartons*
  - > Apply 3~9 drops (varies with carton size) of Wasaouro® on a tissue paper.
  - > Put the tissue with Wasaouro® oil in a center or mid-level position (ideal location) in the shipping carton, as the shoe boxes are packed inside
  - > Seal open edges of the carton with plastic tape (center seam & ends of carton flaps)Example: When packing 12 pairs of shoes in the carton, place the first 6 shoeboxes into the carton. Place the tissue with Wasaouro® oil into the carton, and then pack the remaining 6 shoeboxes. Completely seal all open carton seams with plastic tape, including center seam and ends of the carton flaps. Any holes in the corrugated should also be sealed. 2 layers of tape recommended.
- Stack packed finished goods on pallets. Keep cartons 12 cm. above the cement floor, 60 cm. from exterior walls, and 150 cm. away from outside windows or doors.
- Have adequate, functioning fans and or dehumidifiers providing air ventilation in order to maintain a relative humidity of < 60%. A humidity gauge and thermometer should be present so temperature & humidity can be monitored & recorded daily.
- Control finished goods inventory with FIFO (first in, first out) system.
- Re-inspect shoes not shipped within 7 days of the vendor's/agent's final warehouse audit. The re-inspection is only to ensure that the shipping condition of the order is mold free, it is not to re-evaluate quality or workmanship.  
*NOTE: If a carton is opened for inspection, please replace the tissue with Wasaouro® oil to insure fungicide effect.*
- Containers & closed trucks must be undamaged, dry, mold free & sealed.
- If an open truck has to be used, the canvas truck tarp must be completely covered with a second, heavy plastic tarp to avoid wet cartons.

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**MICRO-PAK CONTACT INFORMATION:**

**Micro-Pak Ltd. – Hong Kong**

**Martin Berman**

Website <http://www.micropakltd.com>

Tel: (852) 2956 2991

Fax: (852) 2956 0790

E-mail: [martin.berman@micropakltd.com](mailto:martin.berman@micropakltd.com)

**Micro-Pak, USA, Inc**

8215 SW Tualatin Sherwood Rd.

Suite 200

Tualatin, OR 97062

**Sal Cesario** - USA Sales and Marketing Manager

tel: 503-680-6400

email: [sal.cesario@micropakltd.com](mailto:sal.cesario@micropakltd.com)

**Victor Ceserani** - USA Operations Manager

tel: 503-799-9909

email: [victor.ceserani@micropakltd.com](mailto:victor.ceserani@micropakltd.com)

Sal Cesario tel: - 503-680-6400 [sal.cesario@micropakltd.com](mailto:sal.cesario@micropakltd.com)

**WASAOURO CONTACT INFORMATION:**

**Taipei Office:**

15F-3, No. 109, Section 1, JhongShan Road

SinJhuang City, Taipei County, Taiwan.

Contact: **Ms. Ame Chen**

Tel: 886-2-85227111 Ext. 208

Fax: 886-2-85227011

Email: [ame@chifa.com.tw](mailto:ame@chifa.com.tw)

**Taichung Office:**

No. 66-6, Hsing An Road

ShaLu Chen, Taichung County, Taiwan.

Contact: **Mr. Max Lin**

Cell: 886-921-615651

Fax: 886-4-26657856

Email: [max@chifa.com.tw](mailto:max@chifa.com.tw)

**China Office:**

8/F., YuanLong Commerical Bldg.

HouJie Town, DongGuan City, GuangTong Province, China.

Contact: **Mr. Tony Fang**

Cell: 86-13580888058

Tel: 86-769-85965081/85039219

Fax: 86-769-85039219

Email: [tony@chifa-auto.com](mailto:tony@chifa-auto.com)