

Citrus waxes: Consideration for their use in 2011

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Introduction

Morpholine residues were detected on Chilean apples in September 2010 by Food Standards Agency (FSA), UK. Morpholine is used in fruit waxes as an emulsifier (carrier). FSA considered Morpholine as a food additive (not a processing aid) according to the European Union (EU) Food Additive legislation. The presence of Morpholine on fruit thus meant the sale of all implicated fruit onto the UK and EU market was deemed illegal. FSA consequently released a statement to that effect on 1st October 2010.

This notification had enormous implications for the South African citrus industry where approximately 100 000 tons of citrus treated with waxes containing Morpholine, estimated at between R350m-R420m (excluding the impact this incident might have had on other markets), was destined for the EU.

CGA/CRI engaged with FSA directly, Department of Agriculture, Fisheries and Forestry, SA Ambassador to the EU (acting at the time), UK High Commissioner, Fresh Produce Consortium (UK), Freshfel, retailers and traders over a two-week period to ensure a pragmatic approach was adopted that would see citrus in the export pipeline being sold onto the market in 2010.

FSA later released a communiqué indicating that fruits that are peeled (e.g. pineapples and citrus) would be treated differently to fruit where the skin is typically consumed and would not be prevented from being sold in the UK. The European Commission further endorsed this position and provided a date (19th November 2010) by which time citrus fruit must be sold out of the EU market.

As far as CGA are aware no fruit was ultimately withheld from the EU market in 2010 – an extremely favourable outcome given the scale of this incident.

In light of the recent Morpholine incident in the EU and subsequent clarification by regulatory authorities regarding the permissibility of waxes used on imported citrus this Cutting Edge seeks to summarize the wax requirements of trading partners and provide guidance about wax options for the 2011 citrus export season.

Wax regulations in major trading partner countries

The specific requirements per market are briefly explained in this section. CGA is able to provide the underlying documentation should this be required.

South Africa

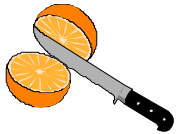
Currently there are no specific official fruit coating regulations or standards (except where claims of fungicidal properties are made) but rather a general adoption of the CODEX standards, as well as those of the EU, USA, and other major trading partners.

European Union

Relevant legislation: Directive 95/2/EC and Regulation EC/1333/2008 and subsequent updates¹. Unless a substance is listed under the above legislation as a Food Additive (obtaining an E-number) either for general use in all foodstuffs or for a specific crop, it must not be used on that food entering the EU. Substances listed as Food Additives for citrus include Beeswax (E901), Candelilla wax (E902), Carnuba wax (E903), Shellac (E904), Montan Acid ester (E912) and Oxidized Polyethylene wax (E914). Examples of some substances that are NOT specifically listed and therefore by implication NOT permitted (on their own or as part of permitted waxes) are Morpholine, N-Dimethylethanolamine, N-Diethylethanolamine, Aminomethylpropanol, Methoxypropylamine, Monoethanolamine, Diethanolamine, Triethanolamine **AND any other substance not specifically listed as a Food Additive.**²

¹ EC/1333/2008 is the most recent legislation for food additives in the EU; the Annexes to this regulation have not been published as of 7th December 2010. Therefore, the annexes to 95/2/EC and subsequent updates are still valid for approval of food additives.

² Polydimethylsiloxane and Dimethylpolysiloxane (E900) are identical chemicals and are listed in Annex V of 95/2/EC as glazing agents for fruit. Likewise Sorbitan monostearate (E491) is listed in the Annex V of 95/2/EC as a glazing agents for fruit.



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USA

Relevant legislation: US Code of Federal Regulations Title 21. Part 172.210 addresses specific substances approved for fresh citrus in addition to otherwise generally approved substances. Approved Food Additives for human consumption include Morpholine, as well as Shellac, Carnauba wax, Beeswax, Paraffin/Microcrystalline wax, and Oxidized Polyethylene wax. **Substances not approved as Food Additives may not be used.**

South Korea

Relevant legislation: Korea Food Additives Code. Approved Natural Additives are Carnauba, Shellac, Candelilla, Petroleum waxes such as Microcrystalline/Paraffin wax, and Beeswax. Morpholine is also permitted being a Synthetic Additive. **Substances not listed as Food Additives may not be used.**

Japan

Relevant legislation: Specifications and Standards for Foods, Food Additives... (2008, under the Food Sanitation Act), Food Safety Basic Law (Law No. 48 of 2003), and Food Sanitation Act (Act No. 233 of December 24, 1947). Approved Food Additives include Carnauba, Paraffin/Microcrystalline wax, Shellac wax and Morpholine. **Substances not listed as Food Additives may not be used.**

CODEX countries³ excluding Peoples Republic of China

Relevant legislation: CODEX General Standards for Food Additives (CODEX STAN 192-1995). Only the food additives listed herein are recognized as suitable for use in foods in conformance with the provisions of the Standard. Approved Food Additives include Candelilla wax (E902), Carnauba wax (E903), Shellac (E904), Microcrystalline wax, and Beeswax. Morpholine is not listed as a Food Additive.

³ **Africa** [Angola, Benin, Botswana, Congo (Republic of), Gabon, Kenya, Madagascar, Mali, Mauritius, Mauritania, Namibia, Senegal, Seychelles, Reunion, Sudan, Tanzania] **Asia** [Hong Kong, India, Indonesia, Malaysia, Philippines, Singapore, Taiwan, Viet Nam]

Peoples Republic of China

Relevant legislation: Hygienic Standards for the Use of Food Additives (GB 2760-2007). Approved Food Additives include Carnauba wax, Shellac wax (maximum residue level is 5 g/kg) and Morpholine. **Substances not listed as Food Additives may not be used.**

Canada

Relevant legislation: Food additives are regulated in Canada under the Food and Drug Regulations under the Food and Drug Act (1985). All permitted food additives and their conditions of use are listed in the tables in Division 16 of the Regulations. **Substances not listed as Food Additives may not be used.** A recent evaluation by Health Canada concluded that Morpholine, as currently used in the wax coating of fruits and vegetables, does not pose a risk to health. Carnauba and Shellac waxes are permitted Food Additives.

Other countries⁴

For countries that do not have specific wax requirements and do not apply the CODEX levels it is presumed these countries will apply the South African requirements.

From the above it is apparent that all trading partners will accept fruit treated with Carnauba and Shellac based waxes. It is also clear that fruit treated with waxes containing Morpholine may ONLY be exported to USA, South Korea, Japan, China and those countries that will adopt the South African position on waxes (see Other Countries above).

Fruit treated with waxes containing Morpholine may not be exported to the EU or countries that have accepted only the CODEX Food Additives Standards.

⁴ **Africa** [Burkina Faso, Cameroon, Cote D'ivoire, Malawi, Nigeria, Tunisia, Uganda] **Asia** [Bangladesh, Sri Lanka] **Middle East** [Azerbaijan, Bahrain, Iran, Jordan, Kuwait, Oman, Pakistan, Qatar, Saudi Arabia, , United Arab Emirates] **Other** [Russian Federation, Georgia]



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Waxing options for 2011

Wax suppliers have found, or are in the process of finding, suitable alternatives to Morpholine as an emulsifier in the waxes used on fruit.

CGA has approached wax suppliers seeking assurances from them that they are aware of the specific wax requirements for major trading partners and will be providing waxes that are compliant for these markets. Wax suppliers willing to give such assurances will be listed on the CGA website (www.cga.co.za).

Growers are advised to engage with their waxing suppliers to determine the best solution for the export markets they are targeting.

Growers may consider switching back and forth between Morpholine-free waxes and those that contain Morpholine depending on which citrus market is being targeted. At present there is no data available to CGA/CRI that provides assurance that waxes containing Morpholine will leave no residues in the application system that could then pass onto fruit at a later time when Morpholine-free waxes are being used. Anecdotally some packhouses have reported this to be a problem.

Until research has been concluded that will either confirm or refute this concern it would be prudent for growers to be cautious if they alternate between waxes with and without Morpholine. A thorough cleaning of the waxing system should in any event be undertaken when switching between waxes.

Waxing options beyond 2011

Interest from citrus growers in retaining the use of Morpholine has prompted investigation into the feasibility of having Morpholine listed as a Food Additive in the EU and possibly for CODEX countries. A successful application would be based on the availability of appropriate toxicological, residue and efficacy data. CGA is engaging with interested stakeholders at present to determine to what extent these data are available. If data gaps exist the question is whether these can be filled at reasonable cost.

The outcome of this feasibility exercise, which should be concluded by early 2011, will also provide a sense of the timelines involved in gaining approval as a Food Additive in the EU. An application process could take three or more years. Growers will need to rely on Morpholine free alternatives in the interim.