EXECUTIVE SUMMARY

This application is submitted by Winemakers' Federation Australia (WFA) to amend Standard 4.5.1 to permit pectins and carrageenan as fining agents for wine treatment.

The intention of this application is to allow pectins and carrageenan as additives to wine *via* amendment of Standard 4.5.1. Pectin and carrageenans are polysaccharides that may be used as a processing aid to facilitate the removal of heat unstable wine proteins from wine. The application is related to Wine production requirements (Australia only) and is to address to the information requirements for Section 3.1 (General Requirements) and Sub section 3.3.2 (Processing Aids).

Pectins (INS 440) and Carrageenan (INS 407) are approved under Schedule 2 of Standard 1.3.1 as *Miscellaneous additives permitted in accordance with GMP in Processed Foods specified in Schedule 1* and therefore a permitted processing aid in food (Clause 3 of Standard 1.3.3).

The proposal provides an alternative to using bentonite to heat stabilise wine. This process is required in white or rose wines because grape proteins that are present in the wine post-vinification can precipitate slowly post bottling to form an unsightly haze if the bottle of wine becomes heated during transportation or storage. To remove the protein and prevent haze formation, most winemakers use bentonite fining. While bentonite itself is effective, this step in the winemaking process is not selective, as it removes all proteins, not just those that contribute to a haze. It also increases the time wines spend in tank; it can lead to loss of volume and quality; and it creates waste disposal challenges and costs. A recent study estimated the hidden cost of bentonite fining to be around $1 billion worldwide. These issues and costs have led researchers around the world to try to find an alternative

Advantages of using pectin or carrageenan over bentonite are that these polysaccharides can be used to heat stabilise at natural separation points and could reduce the number of wine production processing steps. Sensory testing completed with expert winemaking panels indicates that any sensory impacts in using pectin and carrageenan are not unfavorable; thereby process efficiency will be improved without any negative quality impacts.

Pectin and carrageenan are plant-based materials and can therefore be sourced through sustainable agricultural practices as plants are a renewable bioresource.

Any sensory impact from the use of pectin and carrageenan has been assessed as favorable or acceptable by wine experts.

The use of pectins and carrageenan as wine fining agents are consistent with the increasing consumer expectations of achieving more sustainable industry practices and providing producers with a more sustainable alternative to bentonite. The use of pectin and carrageenan as fining agents and as alternatives to bentonite by wineries will provide the producer with the opportunity to strengthen their sustainability credentials and increase markets and potential price as a result.

There will be no increased regulatory or enforcement costs for the government and no impact on imported wines as pectins and carageenans are already permitted processing aids (under Standard 1.3.3) (see section 3.1.3).

Information Related to the Safety of a chemical processing aid

Pectin and carrageenans have been used as processing aids in the production of alcoholic fermentable beverages such as beer, lager, ale and cider. Purpose for this use include removal of calcium, tannins and proteins.

Pectin occurs naturally in the grape berry. During ripening, pectin is hydrolyzed by naturally occurring pectolytic enzymes, which renders the berry softer as it ripens. In winemaking as juice is extracted from the grape berry, the pectin causes cloudiness by holding the particles of grape pulp in suspension. To allow the suspended solids to settle and clarify the juice, commercial preparations of pectolytic enzymes are often used. Pectin is traditionally used as a gelling agent in a wide range of fruit-based products, such as jams, marmalades, jellies, fruit preparations for yoghurts and desserts and fruit fillings for bakery products.

Carrageenans are widely used in the food industry, for their gelling, thickening, and stabilizing properties. Main applications of carrageenan in food are in dairy and meat products, due to their strong binding to food proteins. Common examples of their use in foods include as gelling agents in, ice cream, cream, milkshakes, salad dressings, sweetened condensed milks, and sauces to increase product viscosity.

Safety Assessment of Pectin as a food additive in other countries

Pectin (E440 (i)) and Amidated Pectin (E440 (ii)) have both been given an ADI "not specified" by the Scientific Committee for Food. Specifications are listed in Commission Regulation (EU) 231/2012 of 9th March 2012. Pectins may be used under "quantum satis" conditions in most foods in accordance with Regulation (EC) 1333/2008 of the European Parliament and of the Council of 16th December 2008 on food additives.

The FDA recognizes pectin as GRAS (generally recognized as safe). It may be used in all non-standardized foods. The pectin specification of the Food Chemical Codex is updated on a regular basis; the effective version can be found in the current edition.

Safety Assessment of Carrageenan as a food additive in other countries

European Union
The European Union also approved carrageenan for food use in 1995 (E-407 as noted in Directive 95/2/EC and amendments).

United States
Carrageenan was approved for use in foods by the U.S. Food and Drug Administration (FDA) in 1961; the FDA published amendments to its approval in 1995 (21 CFR 172.620).

Information Related to the Dietary Exposure to the Processing Aid.

Following addition of the fining agent to the wine the beverage is racked off the lees and then filtered prior to bottling. Both the racking and filtration will reduce the pectin and carrageenan levels to undetectable.

Pectin can be degraded by pectinase enzymes. This is a current practice in winemaking producing sugar- based metabolites.

Research has been conducted and published on the use of carrageenan and pectin to heat stabilise wine and it is predicted that up 2 g/L of fining agent may be required to heat stabilise wine varieties with very high levels of proteins. For use in juice and wine these pectin and carrageenan shall be substances that are added to a food for their purpose of removing heat unstable proteins in the processing but due to racking of lees solids or other form of separation shall be present in the finished food at insignificant levels and do not have any technical or functional effect in the wine.

Pectin and carrageenan are permitted food additives in many international markets. Both pectin and carrageenan are also naturally occurring in a wide range of foods and may be added to an extensive range of processed foods in international markets. The range and scope of use for these polysaccharides are extensive and limited by their achieving the desirable gelling and stability properties.

Pectins and Carrageenans have been given an acceptable daily Intake (ADI) of "not specified" by the FAO/WHO Joint Expert Committee on Food Additives (JECFA), and are listed on that basis in the Codex General Standard for Food Additives.