



**SOUTH AFRICAN WINE AND SPIRIT BOARD**

**Scheme for Integrated Production of Wine**

**Integrated Production of Wine:  
Guidelines for Wineries and Bottling Facilities**

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The inherent quality of grapes determined by the genetic characteristics of the cultivars and the application of the IPW guidelines for the farm can be negated by the wrong harvesting, wine making and bottling procedures. Successful wine making and handling requires large capital inputs and high quality manpower. Incorrect application of equipment and chemicals, wasteful use of water and electricity and the dumping of waste products in nature have a negative effect on the environment and on the image of wine. These processes must therefore carry the principles of IPW through to the final product.

The winery and its immediate environment should project an image of environmentally friendly and food safe production. Wine production will be evaluated according to the following guidelines to determine if wines qualify as IPW-wines. Evaluation starts with harvesting of grapes. **For a wine to qualify for the IPW seal, only grapes and/or bulk wine that qualify for IPW may be used. In addition, the wine should be made and bottled in an IPW certified winery/wineries and bottling facility** and all prescribed records must be kept.

## 1 IPW TRAINING

To implement IPW successfully and effectively requires thorough knowledge of the principles involved.

- It is therefore compulsory that at least one representative of a winery that wants to participate in the IPW scheme attends an IPW training course. This person must be in direct control of production or wine making.
- All course attendants will receive a certificate **(valid for three years)** to certify that they have attended an accredited IPW course. **A refreshment course should be attended every three years thereafter to ensure effective management of IPW in the winery.**
- **Additional to the certificate, a thorough knowledge of the IPW principles should be demonstrated by the person responsible for IPW in the winery.**

## 2 ZONING, REGISTRATION AND ANALYSIS OF INCOMING WATER

**The winery should have the following documentation available as confirmation:**

- **A Zoning Certificate to confirm that the land on which the winery is situated, is zoned as Agri-Industrial / Industrial land. Where wineries are situated on farms, the applicable land should be rezoned from Agricultural land (Agriculture I) to Agri-Industrial land (Agriculture II). Wineries situated in Industrial areas of towns, should provide evidence (Zoning Certificate) that it indeed is an Industrial area. Zoning certificates are issued by the local Municipality.**
- **A Certificate of Acceptability for Food Premises (Regulation 918) should be available as indicated in the Government Notice No. R. 723 of 12 July 2002. A Certificate of Acceptability for Food Premises is issued by the local Municipality.**
- **Evidence must be provided to confirm that the water used in the winery, is registered at the relevant authority for the applicable use (Agri-Industrial). Boreholes, river abstractions, spring abstractions, etc. must be registered at the Department of Water Affairs (DWA). Should Municipal water be used, evidence should be available in the form of Municipal bills.**
- **A recent complete chemical and microbial analysis of the water used in the winery should be available. Analyses must be conducted at least once every twelve months by an accredited laboratory to determine whether the water quality conforms to the SABS 241 drinking water standards. Refer to Annexure 1 of the *Drinking Water Quality Management Guide for Water Services Authorities* as published on <http://www.dwaf.gov.za/Documents/Other/DWQM/DWQMWSAGuideSept05.pdf>.**

### 3 QUALITY & TEMPERATURE OF INCOMING GRAPES

Rotting or diseased grapes may not be used to make IPW wines, except in the case of Botrytis infection for production of Special Late Harvest and Noble Late Harvest wines. Certain diseases result in the formation of substances which give wines a bad taste. The more rotten grapes are taken in, the more energy as well as sulphur must be used to ensure that quality wines can still be produced. Less than 5% rotten grapes is considered well, but more than 20% rotten grapes is rated poor.

During hand and mechanical harvesting maximum care must be taken not to damage grapes and compromise quality. To preserve quality, grapes should be harvested at the lowest possible temperatures and standing time should be reduced to a minimum. In the case of mechanical harvesting the machine should be set so that damage to grapes is limited and the loss of juice and inclusion of material other than grapes is limited to a minimum. Grapes that have to be transported over long distances should be transported under an inert gas such as nitrogen to limit oxidation. During transportation to the winery, grapes must not come into contact with substances not registered for use on grapes in an IPW programme (e.g. pesticides) or any other substances that may contaminate grapes (e.g. fertiliser, oils, lubricants). Decks of trailers or trucks should be of food grade material or coated in an acceptable manner. The winery must keep records of grape temperature for all grape loads taken into the winery. Should all grape loads for winemaking purposes arrive at the winery at degrees under 25°C, it is evaluated as good. Should grape load temperature exceed 30°C, it is evaluated as bad. If grapes are cooled at the winery before it is processed, the temperate applicable to this guideline should be taken before grapes are cooled.

### 4 ENERGY USE AND CARBON EMISSIONS

Climate change is probably the most important environmental aspect currently under investigation in the world. Global warming and its long-term effect on the agricultural industry will impact each and everyone. It fundamentally results from the emission of green house gases including carbon dioxide (CO<sub>2</sub>) and methane into the atmosphere. For reporting purposes all green house gas emissions are expressed in CO<sub>2</sub> equivalent emissions.

Wineries contribute to greenhouse gas emissions/CO<sub>2</sub> equivalents during various activities in the winery of which the largest contribution is made by the combustion of fossil fuels which is directly used for transport and indirectly by using ESKOM for electricity generation. To ensure that wineries continuously decrease CO<sub>2</sub> equivalent emissions, various records should be kept to benchmark each winery before setting objectives for continual improvement in future.

#### 4.1 Carbon Emissions

The winery (including the farm where applicable and if it is preferred) must keep record of monthly energy usage applicable to winery operations (including transport of grapes to the winery). These records should be summarised in table form to indicate the amount of each energy source used per month for each calendar year or financial year if preferred. To measure continual improvement of energy use, the following records are regarded as the most important:

- Electricity usage (kWh)
- Diesel usage (Liters)
- Petrol usage (Liters)
- Liquid Petroleum Gas (LPG) usage (kg)
- Any other fuels (e.g. coal, furnace oil, etc.) (kg or Liters)

This guideline is current evaluated based on availability of records and not based on amount of energy used. Above-mentioned records must also be available at smaller wineries.

From the international market, there is increasing pressure to also include the impact on the environment resulting from the production of wine. The main aspect that is

focused on is the impact of wine making on global warming and the international market will also consider this impact when wine is sourced.

#### **4.2 Bonus points: Calculation of carbon footprint**

The calculation of the carbon dioxide equivalent emissions of the winery (including the farm where applicable and if it is preferred) is not a legal requirement at present and is consequently not required for IPW at the moment. Wineries or bottlers are encouraged to calculate their carbon emissions by using the internationally accepted protocol and calculator that is available from the website [www.climatefruitandwine.co.za](http://www.climatefruitandwine.co.za). If this calculation has been done, bonus points can be awarded. To make this calculation possible, record keeping is essential. The carbon footprint should preferably be calculated for at least two consecutive years for comparison purposes. It can then be established whether the entity's energy consumption has decreased or at least remained constant. Either calendar years or financial years can be used. If an increase in energy consumption was observed, it should be motivated. Every farm and/or winery is compared with itself and industry norms are not yet available. The best measurement to determine whether the carbon footprint has improved or not, is to look at the intensity of the emissions by determining the emissions per liter wine produced per annum. By using this method, an increase in production and the associated increase in energy consumption can be taken into account.

### **5 IMPLEMENTING & MAINTAINING INFRASTRUCTURE AND EQUIPMENT**

- Equipment must be covered with inert materials or be made of stainless steel or other inert material to prevent contamination of wine and to facilitate easy cleaning (e.g. free from cracks).
- Only food grade lubricants may be used.
- Floors should allow free draining, free from cracks and readily cleaned.
- Packaging and storage areas should be maintained to avoid rodent or pest access and a pest control program should be in place. Pest control baits must be clearly marked.
- Toilet facilities with wash basins, soap and hot water (55°C) should be available for use by all staff. These facilities should be well ventilated.
- The winery and storage areas must be well ventilated to avoid undesirable conditions (e.g. humidity, heat build-up, etc.)
- Efficient lighting must ensure safe operation of all equipment and to assist with cleaning.
- Thermometers used in tanks must not contain any mercury. Alcohol or digital types are preferred.
- All pipes, transfer lines and hoses must be stored to allow self draining. They must be flushed with potable water prior to use. Annual analyses of incoming water should provide evidence of its quality and to prove conformance with international standards.
- An equipment and infrastructure maintenance schedule must be in place to ensure the integrity of all equipment and calibrations to avoid any food safety hazards. Small wineries can use invoices for repairs and services as proof.

### **6 SO<sub>2</sub> LEVELS**

SO<sub>2</sub>-applications are common to ensure that wines are preserved. The total SO<sub>2</sub> levels of packed wines are evaluated according to Appendix 5A. Since additions and/or blends can still be made after bulk wines are delivered, the winery/facility which will bottle the final product, will be held responsible for the total SO<sub>2</sub>-level of the wine (and not the initial producer of the bulk wine).

### **7 HANDLING OF FOOD GRADE CHEMICALS**

#### **7.1 Substances added to wines**

Use natural precipitants, filter materials, fining agents and other wine additives, free from Genetically Modified Organisms (GMO) and which are environmentally friendly.

Certificates to prove that all relevant substances added to the wine are GMO-free, should be available on file. Only compounds listed in Appendix 5B may be used.

#### **7.1.1 Products which may contain GMO's**

Certificates to confirm that all relevant products are GMO free, must be available. Only products listed in Appendix 5B may be used. Also refer to Guideline 7.1.1 in the IPW Manual.

#### **7.1.2 All other wine additives**

Only products listed in the "Liquor Products Act 60 of 1989" may be used. Also refer to Guideline 7.1.2 in the IPW Manual.

#### **7.1.3 Filtration of wine**

Also refer to Guideline 7.1.3 in the IPW Manual.

### **7.2 Storage and record keeping of chemicals**

#### **7.2.1 Chemical stores**

Wine additives and cleaning chemicals should be stored in separate stores which comply with the same basic requirements set out in the *Guidelines for the Responsible Use of Crop Protection and Animal Health Products* from AVCASA. These include good ventilation, storage on pallets (plastic pallets or wooden pallets covered with a plastic layer) and doors with locks.

#### **7.2.2 Traceability**

Records as proof of balance between usage and purchasing of all products should be available. Wineries must keep record of lot codes on chemicals added to wine for traceability purposes. The Certificate of Analysis (COA) of all products should also be available.

### **8 COOLING**

Cooling is evaluated according to the type of refrigerant used. Cooling systems should not contain substances/gasses that are harmful to the atmosphere and environment - see Appendix 5C.

### **9 WASTEWATER MANAGEMENT**

Wastewater is defined as all water used and generated in the winery during processes like the cleaning of tanks, winery equipment and floors, as well as winemaking processes (e.g. filtration, etc.), bleeding of cooling tower water and possibly laboratory wastewater.

- Where wineries dispose of its wastewater directly into Municipal sewers for treatment, a formal agreement should be provided as evidence to be able to obtain maximum points for Guidelines 9.1 to 9.4. Where wastewater is stored in tanks for removal by the Municipality, removal records should confirm that winery wastewater (and not sewerage, or together with sewerage) has indeed been removed. In this case the winery should also be able to confirm that all generated wastewater has been removed (i.e. volume of water used should correspond with volume of wastewater removed).
- Where small wineries dispose less than 1 cubic meter (1 m<sup>3</sup> / 1 kL / 1 000 liter) wastewater into a septic tank and soak away system on any given day, the maximum points may be obtained for Guidelines 9.1 to 9.4. However, the winery should meet the requirements of Guideline 9.1 (preferably daily water meter readings should be recorded) to confirm that the disposed volume is indeed less than 1 m<sup>3</sup> per day.

All other wineries should score points according to the following guidelines.

#### **9.1 Monitoring amount of wastewater (see Appendix 5D)**

- According to legislation wineries should monitor the volumes of wastewater generated on a weekly basis and keep records for auditing purposes. Where other facilities and/or processes also contribute to the wastewater volume, these volume monitoring records should also be available. It is therefore important to use an effective water meter(s). In most cases it is allowed to install an effective water meter into the incoming line (not on the wastewater line). This action can be motivated by saying that the volume of water coming into the winery, must also go out again. DWA may also require of the winery to monitor the volumes of wastewater that are irrigated.
- It is also important to attempt to separate rain and storm water from wastewater in order to limit the volume of contaminated water. At smaller wineries (generating < 20 ML wastewater per annum) this can ensure that the quantity of wastewater that is contained, qualify to apply for a General Authorisation only, and not for a water license, demanding stricter regulations or requirements.

### 9.2 Monitoring quality of wastewater (see Appendix 5D)

Prior to disposal, most wineries store and/or pre-treat their wastewater to re-use/irrigate it or to reduce extreme variations in composition. The following procedures should be used for taking representative wastewater samples:

- Sample the wastewater monthly at the point of disposal/irrigation. DWA also usually required that should the wastewater enters an irrigation dam, wastewater quality should also be monitored monthly before it enters the irrigation dam.
- Take a composite sample (instead of a single sample) composed of equal quantities of at least 5 samples taken.
- Sample at least 1.5 L wastewater in a glass container and store below 4°C, or as suggested by the chemical laboratory doing the analysis. The sample should be analysed within 48 hours from sampling.
- Avoid sampling at times when the inflows are very low, or when rainwater has a diluting effect.
- Keep record of winery activities at the time when sampling takes place, especially when the total volume at the point of collection, is dominated by one or two processes only.

The chemical composition of wastewater gives an indication of the potential environmental and/or social impacts when wastewater is irrigated or disposed in the environment. Juice, wine and lees which are also sources of organic carbon and inorganic components such as salts, acids and solids can also enter the wastewater stream and lead to further contamination. Wastewater should be analysed for the following parameters by a SANAS accredited laboratory”

- The electrical conductivity (EC)
- pH
- Sodium adsorption ratio (SAR)
- Chemical oxygen demand (COD)
- Potassium (K)
- Fecal coliforms

Should DWA require analyses of additional parameters, the winery should also include it.

Where wastewater is legally disposed into a soak away system and it can be confirmed that less than 1 m<sup>3</sup> of wastewater is disposed per day, the monitoring of wastewater quality is not compulsory.

### 9.3 Storing wastewater (see Appendix 5D)

- If more than 1 000 m<sup>3</sup> of wastewater is to be stored for disposal purposes on any given day (up to a maximum of 10 000 m<sup>3</sup>/property or up to 50 000 m<sup>3</sup>/wastewater dam system) the water user must register with the Department of Water Affairs.

- If more than 500 m<sup>3</sup> is to be stored on any given day for recycling purposes, it should also be registered (maximum of 5 000 m<sup>3</sup> will be allowed). If more than 50 m<sup>3</sup> wastewater is disposed of in an evaporation pan or wastewater dam system on any given day, it must also be registered (maximum of 1 000 m<sup>3</sup> per day will be allowed).
- The wastewater catchment dams and disposal terrains both have to be situated away from a watercourse, above the 100-year flood line or alternatively further than 100 m from the edge of a water resource or borehole used for drinking water or animal water hole.
- Any dam (including evaporation pans) with a capacity greater than 50 000 m<sup>3</sup> and with a wall that has a vertical height of more than 5 m, is declared as a dam with a safety risk. Such a dam must be registered with the Department of Water Affairs and various control measures exist for the erection and maintenance of such a dam.

A scientific study should be compiled to investigate all relevant aspects involving wastewater, soil, climate and environment to ensure a sustainable wastewater end-use as well as compliance with legislation. This study will assist the cellar master/winemaker to ensure the following:

- Wastewater must be separated from storm and rain water.
- Pipelines for conducting wastewater must be able to handle the maximum volume at any time and must be made of quality material to prevent leakages.
- Catchment dams for wastewater must be able to handle the maximum volume of wastewater at any one time and enough space should be allowed for possible unexpected volumes of wastewater.
- Catchment dams should be large enough so that sufficient time may lapse for the solids to be deposited and breaking down of organic matter may take place before the water is released or used for irrigation.
- Catchment dams should be of adequate size to ensure that all wastewater generated during rainy spells can be contained. Irrigation may not take place during wet spells to ensure that a potential environmental risk is not created due to over-irrigation. It should also be taken into consideration that the evaporation may then be less than the sum of the rainfall and the generated winery wastewater.
- Catchment dams should be situated in such a way that there is no contact with storm and rain water.
- Irrigation systems must be designed in such a way that leakages do not occur.
- Soil samples should be taken from the wastewater irrigated soils on at least an annual basis, as well as a control soil sample. These samples should be analysed by an accredited laboratory to determine whether the wastewater irrigated soils deteriorated due to wastewater irrigation.

Where wastewater is legally disposed into a soak away system and it can be confirmed that less than 1 m<sup>3</sup> of wastewater is disposed per day, a scientific study is not compulsory.

#### **9.4 Disposal of wastewater (see Appendix 5D)**

- Since untreated wastewater of wineries does not qualify for disposal into natural water resources, wastewater must either be treated or irrigated.
- If on any given day a person wants to irrigate wastewater originating from the production activities in a wineries, he/she must register as a water user and up to 500 m<sup>3</sup> per day of this wastewater may be irrigated (for crop production, including grazing), provided that:
  - The electrical conductivity on any given day is less than 200 milli Siemens per meter (mS/m)
  - The pH is between 6 and 9
  - Sodium adsorption ratio (SAR) is less than 5
  - Chemical oxygen demand (COD) is less than 400 mg/l
  - Fecal coliforms < 100 000 counts/100ml
- If the COD value is higher than 400 mg/l but less than 5 000 mg/l, however,

irrigation after registration (without a license ,but subject to a General Authorisation) may only be up to 50 m<sup>3</sup> on any given day.

- The registered water user may then only irrigate above the 100 year flood line, or further than 100 m from the edge of a water resource or borehole used for drinking water or animal water-hole, while no groundwater or surface water may be contaminated. **Irrigation may not take place during the rainy season.**
- The registered user must measure the quantity of water irrigated on a weekly, and the quality on a monthly basis at the point just before irrigation. Written records must be kept for inspection by the responsible authority.
- The area of irrigation must be demarcated on a 1: 50 000 topographic map and details provided of the crops under irrigation, irrigation techniques and details of emergency procedures.
- Water logging or damaging of soil, occurrence of flies and mosquitoes, bad odours, secondary pollution, penetration of any surface resources and unauthorised use of water by members of the public must be prevented at all times.
- Solid particles must be removed **from the wastewater as soon as possible after contamination (before irrigation) by implementing effective screens and disposed of efficiently and responsibly.**
- Storm and rain water originating from the irrigation area must be collected to prevent contamination of clean water.
- Water for cooling and cleaning of tanks and other apparatus must be recycled, purified and re-used as far as possible.
- Water may only be treated with environment friendly chemicals.

**Wastewater volumes should also be registered at the Department of Water Affairs according the Water User Registration forms that have been made available by DWA during 2009. Please note that these registration forms do not form part of the application for a General Authorisation (GA) for the end-use (e.g. irrigation) of wastewater. It is two separate processes.**

**If 2 000 m<sup>3</sup> to 15 000 m<sup>3</sup> wastewater or sewerage is annually treated, the winery/farm should have a Basic Assessment conducted as part of the process to obtain a waste license. If more than 15 000 m<sup>3</sup> of wastewater or sewerage is treated annual, the winery/farm should have a Environmental Impact Assesment (EIA) conducted as part of the process to obtain a waste license (refer to Government Notice 718 (GG 32368 of 3 July 2009). The application for a Waste Management License is a separate process than the application for a GA and is required by the Department of Environmental Affairs.**

**Where wastewater is legally disposed into a soak away system and it can be confirmed that less than 1 m<sup>3</sup> of wastewater is disposed per day, the winery does not have to formally apply for a GA and registration of wastewater at the Department of Water Affairs.**

## 10 DISINFECTANTS AND CLEANING AGENTS

The winery and bottling plant must maintain a high standard of housekeeping and only environment friendly and food-safe cleaning agents should be used - see Appendix 5E.

## 11 MANAGEMENT OF SOLID WASTE

### 11.1 Disposal and recycling

#### **11.1.1 *Disposal of solid waste (including household waste and packaging material) (see Appendix 5F)***

Packaging material of “dry” stock, excess apparatus and equipment, paint, oils, lubricants and solvents must be recycled or disposed of in an environment friendly way and in accordance to legislative requirements (refer to Guideline 11.1.3 that follows).

- Waste bins must be used to collect and sort all waste of the winery (e.g. non-recyclable waste, glass, plastic, paper/carton, metal and used light bulbs).

- Empty cleaning chemical containers and other chemical containers should be disposed by an environmentally responsible method. The applicable records must be available. If empty containers are taken back by the supplying company, records of this practice should also be available.
- If solid waste is removed by a service provider, a copy of the applicable disposal permits of the service provider should be obtained. Removal records should also be available for audit purposes.
- If solid waste is removed by the Municipality and/or disposed at the Municipal waste disposal site, the applicable approval should be obtained from the Municipality for the removal and/or disposal of general waste. The necessary removal records and/or invoices should also be available for audit purposes.
- It is now illegal to burn any type of waste according to the *National Environmental Management: Waste Act, 2008 (Act 59 of 2008)*. No waste (including household waste or hazardous waste) may be incinerated/burnt without an Environmental Authorisation. According to the Government Notice 718 (GG 32368 of 3 July 2009) the construction of any incinerator or the burning of any waste (whether it takes place in an incinerator or not), requires an Environmental Impact Assessment as part of a waste license.
- Take note that in terms of Government Notice 718 (GG 32368 of 3 July 2009), the disposal of general waste to land covering an area in excess of 50 m<sup>2</sup> or capacity exceeding 25 000 tons is defined as a "listed activity" and anyone who wishes to dispose of any general waste to land covering 50 m<sup>2</sup> to 200 m<sup>2</sup> or capacity exceeding 25 000 tons, must conduct a Basic Assessment as part of a Waste Management License Application. Should general waste be disposed of to land covering an area in excess of 200 m<sup>2</sup> an EIA should be conducted as part of a Waste Management License Application. Where the disposal of general waste to land is less than 50 m<sup>2</sup>, the following requirements must be complied with:
  - The site is situated outside a water resource and above the 1:50 year flood line.
  - The site is adequately fenced locked and marked with relevant signs to restrict animals and unauthorised entry.
  - The site does not overlie an area with shallow or emergent water tables.
  - The waste does not cause any nuisance conditions due to the breeding of flies or other vermin.
  - Locate sites in previously disturbed areas, not in natural vegetation.
  - Recycle where possible (formal records of external removal must be available).
  - Educate farm workers and their families on waste management and recycling.
  - The minimum requirements of Department of Water Affairs also include that the disposal site should be covered with a layer of soil after disposal.
- Note that a Basic Assessment should be done as part of the process to obtain a Waste Management License if household waste (not exceeding 500 kg per month) is disposed on areas that does not fall inside the Municipal service areas.

#### **11.1.2 Grape wastes, lees and filter rests**

- Skins, stems, pips and lees must be heaped on an impenetrable layer (such as cement, plastic or suitable clay layer) and covered against rain, to prevent organic acids from seeping out and having negative effects on soil and soil water before having broken down sufficiently to serve as compost. In cases where this waste is disposed on compacted clay soil or on a low risk site, proof must be provided (e.g. soil study, orthophoto's, etc.).
- If no storage space is available, it should rather be used as animal feed or alternatively be supplied to an external company which can process it to compost or re-use it.
- This waste, as well as used sedimentation substances (e.g. diatomaceous earth and bentonite clay) and filtration material, must be stored temporarily before being

removed to prevent bad odors' in the adjacent vicinity.

- Used filtration material and bentonite should be made available for the recovery of alcohol or tartaric acid where possible to prevent soil and water pollution (which occurs when these substances are exposed to the soil too quickly).
- If used filtration material is not sent for recycling, the waste should be taken to a suitable disposal site to be destroyed as soon as possible, to prevent it from becoming a nuisance (e.g. foul odor). It can also be composted if it can be confirmed that it does not lead to pollution.
- If synthetic tartaric acid is used, a system for the effective disposal thereof must be in place.
- If any of the waste materials are removed by external companies, the necessary documentation should be available during audits as confirmation (e.g. contracts, removal records, letters, etc.). The external companies should dispose/re-use the material in a responsible manner.
- Composting: The biological, physical or physico-chemical treatment of general waste at a facility that has the capacity to process in excess of 10 tons per day is defined as a "listed activity" in terms of the Waste Act and a Basic Assessment is required as part of a Waste License application. Should the facility fall within legal limits it is important that cognisance should be taken of your "Duty of care" towards the environment as stipulated by the NEMA. This means that in terms of specifically the composting activities one should ensure that the potential risk of ground and or surface water contamination is avoided. This can be done by ensuring that composting takes place further than 100 m from any water resource on an impenetrable layer (e.g. clay, concrete or plastic), to ensure that the leachate generated from the composting activities cannot contaminate groundwater, natural streams or rivers, and is contained and either re-used on the composting site or treated to DWA standards for river disposal. Other nuisance factors related to composting activities such as flies, rodents and odors should be managed so that it does not cause a health risk or nuisance to the neighboring properties. The storage, treatment and processing of animal manure at a facility with a storage capacity in excess of one ton per day is defined as a "listed activity" and requires a Basic Assessment as part of a Waste License Application.

### **11.1.3 Recycling of solid waste**

- Waste bins must be used to collect and sort all waste of the winery (e.g. non-recyclable waste, glass, plastic, paper/carton, metal and used light bulbs).
- Where possible, material should be re-used (e.g. bottles and carton).
- The recycling company that removes/receives the waste, should confirm per letter that waste material from the relevant winery or bottling company is received by the recycling company and that it is responsibly handled further and recycled. Records should be kept as confirmation that recycling takes place.

### **11.2 Cleaning of wastewater dams, pipes and other equipment (see Appendix 5F)**

- Wastewater dams, pipes and other equipment should be cleaned annually as large volumes of sludge are collected in this way. This sludge may only be applied to the soil once the chemical composition thereof has been determined, indicating that it may indeed be applied to a specific piece of land. It can also be composted if it can be confirmed that it does not lead to pollution.
- If the sludge contains high concentrations of certain elements, it may influence the soil, water sources and plant performance.
- An attempt should be made to conduct the cleaning operation in the summer months to allow rapid breakdown, thus minimising bad odours.
- The winery must develop a formal procedure for cleaning wastewater dams and screens and the procedure should also include where sludge is discarded. Where sludge is removed by the Municipality, the necessary approval should be obtained from the Municipality and removal records must be available.

**11 AMBIENT NOISE**

Noise from pumps, compressors, cooling apparatus and vehicles may cause a nuisance or disturbance to neighbors or neighboring communities. The specific noise limits for different areas, e.g. urban, suburban or rural, may differ and are also influenced by the time of day when the noise occurs. Noise levels should, therefore, also be determined outside the winery at the point/-s where noise can cause problems. For this reason, for example, if the noise level of equipment or vehicles outside the winery exceeds 45 dB, these equipment or vehicles may only be used between 7h00 and 20h00.

**13 PACKAGING MATERIALS & BOTTLING FACILITIES**

- Material must be constituted and treated in such a way that it is safe for humans and environmentally friendly.
- Material must be inert.
- Should preferably be made of recycled material, and should also be recyclable or biodegradable.
- A summary should be available to indicate from which materials and where closures, capsules, labels, bottles, cartons and carton dividers are manufactured. The summary should also indicate whether the product has been made of recycled material and if the product is recyclable or biodegradable.

**14 BOTTLING FACILITIES (not applicable where only bulk wines are produced)**

Procedures to address the following should be in place:

- Glass breakages in all pallets and cartons should be monitored and recorded during bottling. Effective glass removal practices must be implemented to ensure that no glass can be present in the final product. Air or water blasting is not allowed during clean up during bottling.
- Broken glass should be collected and recycled as far as possible.
- Bottle breakages on bottling lines must be managed to avoid any contamination and an acceptable bottle breakage clean up procedure should be in place.
- Staff working in bottling areas is not allowed to wear any loose jewelry or accessories. Only clean clothes are allowed. No open footwear is allowed and appropriate protective clothing should be worn.
- Lights in areas where wine can be contaminated need to be covered with Perspex.

**15 BONUS POINTS: RESPONSIBILITY TOWARDS ENVIRONMENT**

Bonus points may be awarded by the auditor based on environmental responsible initiatives implemented by the winery to reduce its carbon footprint.

**NOTE: The auditor is authorised to award bonus points for additional practices followed by the winery or bottling company based on his/her own discretion and the required evidence. No facility, irrespective of size, is however entitled to these bonus points.**

*Applicable legislation:*

*Health Act, No. 63 of 1977*

*Wet op die Bewaring van Landbouhulpbronne, Nr. 43 van 1983*

*Wet op Drankprodukte, Nr. 60 van 1989*

*Wet op Beroepsgesondheid en -Veiligheid, Nr. 85 van 1993*

*National Water Act, No. 36 of 1998*

*National Environmental Management Act, 1998 (Act 107 of 1998)\**

*National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004)\**

*National Environmental Management: Waste Act, 2008 (Act 59 of 2008)\**

**F. IPW EVALUATION AND CERTIFICATION: WINERY****1. REGISTRATION FOR IPW**

Proof of registration is supplied when the annual IPW registration fees are paid.

**2. IPW CERTIFICATE**

An IPW Certificate is issued annually, subject to the following provisions:

- 2.1 All evaluation forms must be completed and handed in, as prescribed.
- 2.2 The qualifying score of **60%** or more must be attained.
- 2.3 The following criteria must be complied with:
  - Grapes must be produced according to IPW.
  - No non-permitted residues may be present in the wine.
  - Prescribed record keeping must be up to date.
  - Winery must have all required written permission/permits/licenses for solid waste and waste water management.
- 2.4 If any of the criteria under 2.3 are not complied with, an acceptable action plan describing the steps to be taken to ensure compliance during the following season, must be submitted with the evaluation forms. The IPW certificate does not guarantee that the winery complies with all IPW requirements, but that an acceptable action plan is in place to achieve qualification in the near future.

**NOTE: Completion of Appendix 4**

- \* Each winery must complete Appendix 4 fully.
- \* Wineries, which only make wine and sell it before bottling, only complete items marked with W.
- \* Wineries who do not bottle themselves, must complete points 12 and 13 in conjunction with their bottler and ensure that the bottler is registered for IPW.
- \* Bottlers only complete items marked with B. Wineries who do their own bottling only need to complete one copy of Appendix 4.

Evaluation per item according to guidelines		Score	Good 5	Avg 3-2	Poor 0	Total
1 IPW Training	W, B	5				
2 Zoning, registration and analysis of incoming water	W,B	5				
3. Quality and temperature of incoming grapes	W	5				
4. Energy use & Carbon Emissions						
4.1 Carbon Emissions	[X2] W, B	10				
4.2 <b>Bonus points:</b> CO <sub>2</sub> Calculation	W, B	5				
5 Implementing & maintaining Infrastructure & Equipment	[X2] W, B	10				
6 SO <sub>2</sub> -levels (Appendix 5A)	[X2] B	10				
7 Substances added to wine (Appendix 5B)						
7.1.1 Products possibly containing GMO's	W, B	5				
7.1.2 All other additives	W, B	5				
7.1.3 Filtration of wines	W, B	5				
7.2 Storage and record keeping of chemicals						
7.2.1 Chemical store	W, B	5				
7.2.2 Traceability	W, B	5				
8 Cooling (Appendix 5C)	W, B	5				
9 Management of waste water (Appendix. 5D)						
9.1 Monitoring waste water quantity	[X2] W,B	10				
9.2 Monitoring waste water quality	[X2] W,B	10				
9.3 Storing waste water	[X2] W,B	10				
9.4 Disposal of waste water	[X2] W,B	10				
10 Disinfectants & cleaning agents (App. 5E)	W,B	5				

Appendix continues....

...Appendix 4 continued	Score	Good 5	Avg 2-3	Poor 0	Total
<b>11 Management of solid waste (Appendix 5F)</b>					
11.1.1 Disposal of solid waste W, B	5				
11.1.2 Grape wastes, lees and filter rests W, B	5				
11.1.3 Recycling of solid waste W, B	5				
11.2 Cleaning of waste water dams, pipes and other equipment W, B	5				
12 Ambient noise W, B	5				
<b>13 Packaging material</b> B	5				
14 Bottling B	5				
15 Bonus points (Responsibility towards environment)	10				
<b>TOTAL</b>					

Qualifying score for winery that make wine and bottle (W, B): Total of **93** points or more out of **155**  
 Qualifying score for winery that only make wine (W): Total of **84** points or more out of **135**  
 Qualifying score for bottlers (B): Total of **90** points or more out of **150**

Hereby is confirmed that the evaluation forms were completed and submitted as prescribed, together with any action plans required, if any of the criteria to qualify for an IPW certificate under 2.3 of Section F were not complied with. It is also confirmed that all evaluation forms and action plans from producers have been submitted to the winery.

_____	_____
Name of winery/bottling facility	Telephone number
_____	_____
Responsible person	Signature
_____	_____
Date	SAWIS Producer nr

EVALUATION REGARDING TOTAL SO<sub>2</sub>-LEVELS (MG/L)

## APPENDIX 5A

Wine type	Good	Average	Poor
Natural dry wine (< 5g/l sugar)	<100	100 - 120	>120
Natural wine (> 5 g/l sugar)	<100	100 - 130	>130
Bottle-fermented sparkling wine	< 60	60 - 80	>80
Fortified wines	<130	130 - 150	>150
Noble Late Harvest	<200	200 - 240	>240

**EVALUATION OF SUBSTANCES ADDED TO WINE BASED ON NEGATIVE ENVIRONMENTAL IMPACT  
APPENDIX 5B**

Least	Less	Most
	<b>Precipitants &amp; fining agents</b>	
Egg albumen	Bentonite (Calsium/Sodium)	
Gelatin	Activated animal/plant charcoal	
Tannin	Polyvinyl-polypyrrolidone (PVPP)	
Pectolytic enzymes <sup>1</sup>	Silicasol	
Ideal milk		
Fish collagen (Isinglass)		
Milk		
Rubigum / Arabic gum		
Casein		
	<b>Filter materials</b>	
Cellulose	Perlite	Diatomaceous earth
	<b>Other</b>	
Malolactic bacteria <sup>1</sup>	Erithorbic acid	Ammonium phosphate
Malic acid	Di-ammonium phosphate	Ion-exchanging resins
Dessert wine	Dimethyl dicarbonate (Velcorin)	Potassium ferro cyanide
Concentrated must	Sulphur dioxide gas –see App. 5A	Potassium sorbate
Wood	Potassium carbonate	Copper sulphate
Caramel	Liquid ammonia	Ammonium bisulfite
Carbon dioxide	Calcium carbonate	Sodium carbonate
Lysozyme <sup>1</sup>	Potassium bicarbonate	Sodium metabisulfite
Must	Calcium alginate	Pimarizine
Sweet reserve	Potassium alginate	Potassium metabisulfite
Grape spirits		Ammonium sulfite
Nitrogen gas		Sorbic acid
Cane or grain sugar <sup>*</sup>		Gold flakes
Tiamine		Calcium hydroxide
Oxygen		Meta tartaric acid
Ascorbic acid		Sodium alginate

...Appendix 5B continued		
Potassium bitartrate		Hydrogen peroxide
Colour extracting enzymes <sup>1</sup>		
Citric acid		
Argon		
Yeasts <sup>1</sup>		
Yeast nutrients (except di-ammonium phosphate)		
Tartaric acid <sup>**</sup>		

\* Only for making of sparkling wine.

\*\* See 10.1

<sup>1</sup> GMO-free certificate must be on file

## EVALUATION OF COOLING SYSTEMS

## APPENDIX 5C

Good	Average	Poor
Ammonia <sup>1</sup> R134a (CH <sub>2</sub> FCF <sub>3</sub> ) R143a (CH <sub>3</sub> CF <sub>3</sub> ) R404A R407C R410A R507A Propylene-glycol	R22 <sup>2</sup> = Freon 22 (CHClF <sub>2</sub> ) MP 39 <sup>3</sup> R409A	R11 (CCl <sub>3</sub> F) Freon = R12 (CCl <sub>2</sub> F <sub>2</sub> ) Diethylene-glycol <sup>4</sup>

1 Highly toxic - must remain in a closed system (not harmful to the atmosphere).

2 Interim product which will be phased out in time.

3 A drop-in blend which will be phased out over time.

4 Highly toxic and should not be used near food or drink for human consumption.

5 Illegal

## WASTEWATER MANAGEMENT\*

## APPENDIX 5D

Action	Good (5)	Poor (0)
<b>Monitoring waste water quantity<sup>1</sup></b>	<ul style="list-style-type: none"> <li>- Effective water meter in use.</li> <li>- Weekly with confirming records.</li> </ul>	- Poor monitoring or no records.
<b>Monitoring waste water quality<sup>2</sup></b>	<ul style="list-style-type: none"> <li>- Monthly determination of EC, pH, NAV and COD, K and fecal coliforms at accredited laboratory with confirming records.</li> <li>- Representative sampling just before disposal/irrigation.</li> </ul>	- Longer than monthly or no monitoring.
<b>Storing of wastewater<sup>3</sup></b>	<ul style="list-style-type: none"> <li>- Scientific proof needed that containment dam large enough.</li> <li>- Soil study as proof of suitability of soil and that irrigation area is large enough.</li> <li>- Soil analyses of areas under wastewater irrigation (as well as control)</li> <li>- The necessary registrations of wastewater dams if applicable.</li> </ul>	- If any of the requirements under "Good" are not complied with.
<b>Disposal of wastewater<sup>4</sup></b>	<ul style="list-style-type: none"> <li>- Formal agreement with Municipality in place for wastewater removal and/or disposal and compliance</li> <li>- General Authorization from Water Affairs in place and compliance.</li> <li>- Registration of wastewater volumes at the Department of Water Affairs.</li> </ul>	- If any of the requirements under "Good" are not complied with.

<sup>1</sup> Where monitoring occurred, but not on a weekly basis, the auditor could decide to award points for average score (2 or 3).

<sup>2</sup> Where monitoring occurred, but not on a monthly basis, the auditor could decide to award points for average score (2 or 3). Quality monitoring is not required if wastewater is legally removed by the Municipality or directly disposed (legally) into Municipal sewer, unless required by the Municipality. Quality monitoring is also not required if less than 1 m<sup>3</sup> of wastewater per day is legally disposed into a soak away system.

<sup>3</sup> Where the scientific proof is not available, but according to the auditor highly unlikely that the size of the area and/or the wastewater containment dam is too small, the auditor could decide to award points for average score (2 or 3). A scientific report is not required if wastewater is legally removed by the Municipality or directly disposed (legally) into Municipal sewer, unless required by the Municipality. If the wastewater is removed by the Municipality, the volume of water removed should correspond with the volume of water used in the winery. A scientific report is also not required if less than 1 m<sup>3</sup> of wastewater per day is legally disposed into a soak away system.

<sup>4</sup> Where a formal and complete application for General Authorization has been submitted and the winery conforms to all legal requirements, the auditor may decide to award 4 points. Where an application has not been submitted but a formal agreement and commitment to address wastewater management has been submitted to Water Affairs, 2 points can be awarded. The same is also applicable for the application of authorisation for the disposal and/or removal of wastewater by the Municipality.

#### EVALUATION OF DISINFECTANTS AND CLEANING AGENTS

#### APPENDIX 5E

Good	Average	Poor
	<b>Disinfectants &amp; Cleaning Agents</b>	
Anionic and non-ionic		Chlorine compounds
Iodophores		Sodium hypochloride
Peroxy-acetic acid		Sodium formulated
Hydrogen peroxide		Chlorinated alkaline products
Acid anionic compounds		Organic acid formulated (e.g. citric acid)
Calcium- or Potassium hydroxide formulated		
Inorganic acid formulated (e.g. phosphoric acid)		
Ozone		
Quaternary ammonium compounds		

**NOTE:** Ask the supplier or manufacturer of disinfectants and cleaning agents into which of the above chemical categories the product you obtain from them falls. A particular chemical formulation is often marketed under various brand names. Therefore the Material Safety Data Sheets (MSDS) and Certificates of Analysis/Conformance (COA/COC) indicating the chemical composition must be available for all disinfectants and cleaning agents.

#### SOLID WASTE MANAGEMENT

#### APPENDIX 5F

Action	Good (5)	Poor (0)
<b>Waste management</b> <sup>1</sup>	<ul style="list-style-type: none"> <li>- Skins, stems, pips and lees diatomaceous earth, bentonite, spent filter material, sludge from catchment dams etc., must be heaped on an impenetrable layer (such as cement or plastic) and covered against rain. Proof of compaction/impenetrable characteristics of site is necessary.</li> <li>- Recovery of alcohol or tartaric acid where possible.</li> <li>- Determination of chemical composition before applied to soil.</li> </ul>	<ul style="list-style-type: none"> <li>- If any of the requirements under "Good" are not complied with, when it was possible.</li> </ul>

<sup>1</sup> The auditor can decide to award 3 points if storage are is a low risk area