



### Product Description

Beer is produced for human consumption, and includes alcoholic beverages made from malted (sprouted) barley grains and hops boiled and fermented with yeast.

### Mission

The mission of The Sustainability Consortium (TSC) is to improve the sustainability of products when they are made, purchased, and used, with a focus on manufacturers and the retail buyers who decide what products to carry in stores. The information in this document is drawn from our detailed research on known and potential social and environmental impacts across product life cycles. TSC acknowledges that other issues exist, but we have included here those that are most relevant to the decision making of retail buying teams and manufacturers. The topics are listed alphabetically for ease of reading; the order does not represent prioritization or other criteria.

### Sustainability Insights



#### Managing the Supply Chain

##### Fertilizer and Nutrients

Improper management and use of fertilizers can lead to local water pollution and release greenhouse gases during production. Growers should use a nutrient management plan to improve the efficiency of fertilizer and manure use for production. Producers can use precision agriculture, which applies only the amount of fertilizer needed. Where appropriate, growers can plant vegetative buffer zones around streams to help prevent water pollution via nutrient runoff.

##### Land and Soil

Improper soil management can remove nutrients, release greenhouse gases, and cause soil loss, while clearing land for agriculture can lead to deforestation. Growers should use efficient soil management practices, including reduced soil tilling when applicable and prevention of soil erosion. Manufacturers should use sourcing policies that monitor progress on zero deforestation commitments. Sourcing policies should also promote protection of high conservation value forest habitats, which have unique plants and animals. This reduces the risk of biodiversity loss, diminished ecosystem quality, and increased greenhouse gas emissions that can occur when forests are cleared for agriculture.

##### Pesticides

Improper use of pesticides can impact workers and nearby ecosystems and communities. If growers use pesticides, they should read the label and follow usage directions exactly. Workers should be trained and provided with protective gear to prevent exposure to themselves and the environment during handling or application. Consultation with experts can help determine the appropriate selections, forms, timing, and amounts of pesticides for pest problems.

## Supply Chain Transparency

Addressing many of the environmental and social challenges within an agriculture supply chain requires cooperation among companies at different stages of the supply chain. Manufacturers should determine the locations of farms that produce their grain supply and engage in initiatives that improve transparency, communication, and data sharing. Suppliers can work together to address common issues, such as energy use, water availability and quality, chemical use, worker health and safety, and labor rights.



## Use of Resources

### Climate and Energy

Farming and final product manufacturing require significant amounts of energy. The burning of fossil fuels to produce this energy, as well as the production and use of fertilizers, result in greenhouse gas emissions. Manufacturers and growers can reduce these impacts by measuring and tracking energy use, performing preventative maintenance on equipment, and replacing inefficient equipment. Additionally, growers can implement nutrient management plans, and use precision agriculture or low-energy irrigation to reduce this impact.

### Packaging

Packaging design should be optimized to ensure that packaging performs its essential functions of containment and protection while minimizing use of materials, energy resources, and environmental impacts across the life cycle of the packaged product. Under-packaging and over-packaging can both lead to increased impacts. These impacts may be mitigated by using energy-efficient manufacturing, creating packaging materials from renewable resources, designing packaging to be recyclable, and encouraging consumer recycling.

### Water

Farming can use a significant amount of water and contribute to freshwater depletion, which is problematic in water-stressed regions. Growers can measure and track water use, and use methods such as precision agriculture, which applies only the amount of water needed, or irrigation water management to improve water efficiency.



## Workers and Communities

### Workers

Workers may be exposed to dust, chemicals, or other industrial hazards. To help ensure worker health and safety and labor rights, manufacturers should have a documented health and safety management plan, including a chemical management plan where needed, and provide safety training and personal protective equipment to workers in their facilities. Manufacturers should procure materials from suppliers that transparently address worker health and safety and labor rights during grain farming and perform audits when needed.