

Processing fresh chilled hides

Introduction

Tanning centres are clustered in relatively few locations in India and receive raw hides and skins from slaughterhouses across the country. It is therefore imperative to ensure that they are preserved during transportation and while kept at the storage yards. The most common way to preserve raw hides and skins in India between the time they are flayed and subsequently processed in tanneries is by applying common salt. This process, which is called wet-salting, dehydrates the hide or skin as well as preserving it. The raw hides and skins are generally re-salted in small warehouses (mandis). An estimated 300 to 400 kg of common salt are used to preserve one tonne of raw material.

Most of the salt (about 80 percent) applied to raw hides and skins finds its way into effluent

streams, primarily from the soak liquor. Around 20 percent of this salt can be removed by desalting prior to soaking. The wet-salting process thus represents a major contribution to salinity in tannery effluents. This is especially the case when the tanneries are clustered and discharge large quantities of effluents, often making salinity in the tannery effluent difficult to manage. In some locations, this issue is addressed through the use of reverse osmosis and the evaporation of rejects, but this process is expensive and energy intensive.

Another option is to preserve the raw hides and skins by chilling them, without salting, until the hides are processed in tanneries, which significantly reduces salinity in the tannery effluent. However, chilling requires energy.

Chilling conditions

WITHIN THE SLAUGHTERHOUSE: After flaying, the hides are hung in the cold store at a temperature of about 4 degrees Celsius, preferably in a conveyor for easy handling.

DURING TRANSPORTATION: Refrigerated containers inside which the hides can be folded and stacked in chilled conditions are required during transportation to the tannery. Since there is risk of temperature buildup within the piles

of raw hides, it is generally not advised to store the hides in stacks for more than five days.

AT THE TANNERY: Upon arrival at the tannery, it is necessary to ensure that the hides continue to be stored in chilled conditions. It is generally advisable to process the hides directly on arrival. In any case, the hides should not be stored in a folded position for more than five days.

Processing details for chilled hides

The processing of chilled hides is similar to processing wet-salted hides. However, the following aspects should be considered when soaking fresh chilled hides:

- 1.** The weight of raw hides can be assumed to be the same as that of wet-salted hides – the weight loss due to dehydration is compensated for by the mass of salt;
- 2.** The hides will need to be soaked for about 4 to 5 hours in drums or paddles. The duration of this process may vary for wet-salted hides depending on the moisture content or dryness fraction. The primary purpose of soaking is to remove blood and other foreign unwanted materials on hides as well as to remove soluble proteins;
- 3.** In drum soaking, a float of about 70 percent is sufficient compared with 150 percent for wet-salted hides;
- 4.** Bactericide of about 0.1 percent is necessary to preserve the hides during soaking, which is a similar requirement when soaking wet-salted hides;
- 5.** A wetting agent of 0.5 percent is required to facilitate cleaning and washing;
- 6.** The addition of about 0.5 percent of sodium carbonate is recommended as a pre-treatment to increase the pH level of the hides, which are subjected to a much higher pH of up to 11 in the subsequent liming operation; and
- 7.** Liming can be continued according to the usual practice.

SALT FROM WET SALTED HIDES.



Energy requirement for chilling

The energy requirement for keeping the hides chilled inside the refrigerated 40 feet container is approximately 100 kWh per day. The electricity required to store 1,000 hides in a container is about 0.1 unit per day per hide, which is about Re. 1 per day per hide.

Benefits

The main benefit of the chilling technique is the environmental savings: the total dissolved solids (TDS) discharge in effluents is reduced by between 30 and 40 percent.

WET SALTED HIDES.



Cost comparison

The following cost is estimated for the storage of 1 tonne of raw buffalo hides for 15 days:

PARAMETER	CHILLING	WET-SALTING
Power requirement	50 units for chilling + 50 units for 15 days' storage in refrigerated container = 100 units	Nil
Salt requirement	Nil	300 kg
Cost for preservation	Rs. 800/tonne	Rs. 900/tonne
Labour cost	Rs. 30/tonne	Rs. 60/tonne
Capital expenditure	Chilling rooms, cold store and refrigerated containers	Floor space for applying salt
Number of days in storage	Limited to 15 days	About 60 days

The environmental cost is associated with the management of TDS through dilution with treated sewage or by desalination and evaporation of reject streams. The corresponding savings in

environment costs are about Rs.1260 / tonne of raw material in the case of dilution and Rs.4600 / tonne of raw material in the case of zero liquid discharge systems.

CHILLED HIDES IN COOLING BOX.

