The objectives of this study were to improve and reduce the cost of preservation of skin under humid condition (South Sudan), where the preservation by drying is a problem and the salt is rare and expensive. The effects of different levels of reused salt and added biocide on some physical characteristics of sheep leather were evaluated. Thirty six pieces of raw sheep skins were obtained from Alkadero slaughterhouse. According to the type of salt, level of added biocide and method of preservation used, the pieces of raw sheepskins were allocated into 9 groups. Three groups received dry salting without biocide viz, 30% (control), 25% dry salting and 30% dry reused salt. Six groups were wet salted in brine of 30% and 25% reused salt viz and 3 level of biocide (0.2%, 0.4% and 0.6%). All skins were cured, chrome tanned and the finished leathers were tested for the physical properties. The results showed that the leathers preserved by 25% brine of reused salt with 0.2% biocide gave the best results for thickness (1.4 mm), elongation (39.45%), tear strength (71.72 kg/cm) and grain crack strength (9.66 kg) compared to other treatments. The cost of curing per kilogram of raw skin was 0.30 SDG (0.06$) for the control and 0.19 SDG (0.04$) for the 25% brine of reused salt with 0.2% biocide. The study concluded that the method of 25% brine of reused salt with 0.2% biocide is a cheap alternative preservation method for skin curing under humid conditions.