

# **Study on Free-pickling and High Exhaustion Chrome: Tanning Process of Organic Assistant Agent**

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**Abstract:** Chrome tanning is widely applied in leather industry. It is irreplaceable and it is not necessary to be replaced by other method. Take the point view of problems that brought from conventional chrome tanning technology, how to enhance the utilization rate of absorption, reduce the pollution of the chrome and neutral salt, and simplify the process is becoming an important issue for tannery workers. Therein, the method of high exhaustion chrome is one of the main research directions. In this paper, the application of a novel high exhaustion chrome tanning auxiliary agent made by our laboratory and corresponding chrome tanning process were studied. The pH of tanning bath, the change of the skin collagen fibre structure after modified by the organic assistant agent, the shrinkage temperature, tensile strength, tearing strength of the wet blue, and the chrome concentration of tannery effluent were studied. The optimized free-pickling chrome process based on the organic assistant-tanning agent is following: Weight (kg) delimed pelt, then Wash with 300% water at 30 °C for 15mins for two times, then drain, then rinsing for 10 mins, later on balting by adding 100% water and 1.2 % Ng enzyme at 34 °C, returning for 60mins, still 30mins and left in drum for 8 hours, then Wash with 300% water at 30 °C for 10mins, then rinsing for 10 mins, without pickling then pretreating with assistant-tanning agent 70% ,then followed with 0.2%HCOOH mixed with 4% assistant-tanning agent, drumming 40min, chrome tanning by adding 8% chrome powder , drumming 3h, Next day , drumming 30mins, drain and rinsing , horse up. The results indicated that, compared with normal traditional chromium tanning process, by using this assistant agent for pretreatment, the neutral salts content in discharged water decreased greatly, needn't pickling, the dosage of chrome tanning agent is decreased one third compared with that of conventional chrome tanning process; the property of finished leather is the same with that of the finished leather of conventional chrome tanning process; and the chrome absorptivity can be more than 90%.

**Key words:** organic assistant tanning agent; high exhaustion; collagen; chrome tanning