CLRI team develops tanning agent sans toxic formaldehyde

WHAT'S NEW?

- Scientists at CLRI have developed chromium-melamine synthetic tanning agent free of formaldehyde
- Tanning agents are used to fill and tighten loose portions of cattle hide and give leather a uniform appearance
- Team has developed chromium III-melamine synthetic tanning agent and replaced formaldehyde with a patented relatively environment friendly chemical
- Chromium in the agent could be filtered during discharge using existing technology during tanning process

WHAT IS FORMALDEHYDE?

- Formaldehyde is a banned colourless, strong-smelling chemical usually used to crosslink or bond aromatic compounds in the synthetic tanning agents. When used in tanning agents, it leaves residue on the leather that can be harmful to humans

TIMES NEWS NETWORK

Chennai: A team of researchers from the CSIR-Central Leather Research Institute has developed a synthetic tanning agent without the toxic formaldehyde traditionally used to enhance leather quality. Formaldehyde, which is used to crosslink or bond two chemical compounds, leaves a residue on the leather. Long-term exposure to this colourless gas, which is also used as a preservative in seafood but banned in many countries, could be harmful to humans while its discharge is toxic to aquatic life.

A team led by K J Sreeram, director, CSIR-CLRI, and chief scientist J Raghava Rao has developed a chromium-melamine synthetic tanning agent, free of formaldehyde, for use after the primary tanning process to enhance leather quality. "We have used a combination of chromium, which gives strength, colour and thermal stability to the leather, with melamine to make the synthetic tanning agent. We have replaced formaldehyde with a patented eco-benign material," said Rao. "Our technology not only improves the leather quality but is also environmentally safe," he added.

After the primary chrome tanning process to convert hides and skins into leather, the leather undergoes a re-tanning process to make its surface smooth, fill the pores and tighten the material. For this, scientists said, traditionally phenol-formaldehyde resins or melamine formaldehyde are used. While phenol is an expensive petroleum byproduct, there was a challenge to find an alternative to formaldehyde, whose release and presence were banned.

"When you procure leather from different sources, the tanning technology usually varies. Re-chroming is done to bring a uniformity in the leather quality. Usually chromium and melamine are usually used separately in the process. Our new synthetic tanning agent has a combination of both," Rao said.

Scientists said besides meeting the current environmental stipulations, the newly developed agent also enhances leather by tightening the hide, leaving a fine grain effect, and good buff-ability with natural sheen.

The technology, which won CSIR Technology Award 2020, has been transferred to industry for commercial production.