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DRAPER'S SUPER BEE APIARIES, INC.

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Physical and chemical properties of beeswax

Beeswax is classified as an organic compound made up primarily of carbon, hydrogen and oxygen atoms. Chemical analysis reveals that there are over 300 individual components in beeswax, most of them in trace amounts and some which may be contaminants. While beeswax varies from sample to sample, Bisson, Vansell and Dye (1940) found that virgin beeswax, as collected directly from the wax glands of honey' bees, is very consistent chemically and physically, and that most changes resulted from the beeswax's contact with other materials in the hive and during its processing.

Chemical profile

The average chemical profile for a large number of beeswax samples from European honey bees (Apis mellifera) was found by Tulloch (1980) to contain the following:

35% monoesters
14% diesters
14% hydrocarbons
12% free acids
8% hydroxy polyesters
4% hydroxy monoesters
3% triesters
2% acid polyesters
1% acid esters
1% free alcohols
6% unidentified

The esters, alcohols and fatty acids are made up of long-chain hydrocarbons which contribute to three major characteristics of beeswax. Hydrocarbons are not digestible by most organisms, they are chemically inert and insoluble in water and they are solid at hive temperatures providing mechanical stability.

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