

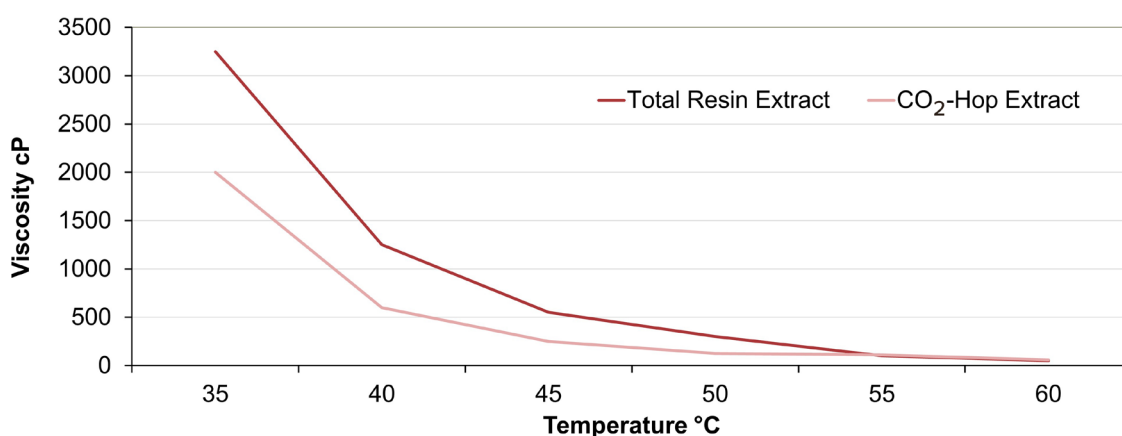


## VISCOSITY OF HOP EXTRACTS

Hop pellets, conventional hop extracts (using ethanol or CO<sub>2</sub>), isomerized kettle extracts (IKE, PIKE) and light stable kettle extracts (LSKE) are the products usually used in the brew house. Besides excellent storage stability, hop extracts are homogenous and therefore can be dosed precisely to add mainly bitterness to the beer.

Canned extracts do not need to be warmed up prior to dosage as they are directly put into the kettle. However, if automatic dosing units are used in the brewhouse the extract needs to be warmed up prior to pumping into the kettle. Thereby the viscosity is reduced and the extract becomes more fluid. The viscosity of hop extracts mainly depends on the temperature but hop variety, crop year, type of extract and hop oil content can also have an influence.

As an example please find the comparison between two conventional extracts of the same bitter variety:



The viscosity of Total Resin Extract, CO<sub>2</sub>-Hop Extract and isomerized kettle extracts at their recommended dosing temperatures is given in the following table:

	Recommended temperature °C	Viscosity cP
Total Resin Extract	45	400 - 1000
CO <sub>2</sub> -Hop Extract	40	300 - 900
IKE	30	100 - 500
PIKE	45	300 - 500
LSKE	55	200 - 700

All downstream products have a similar behaviour compared to water and therefore a viscosity of 1 cp at 20°C.

If you need further information please don't hesitate to contact our experts!