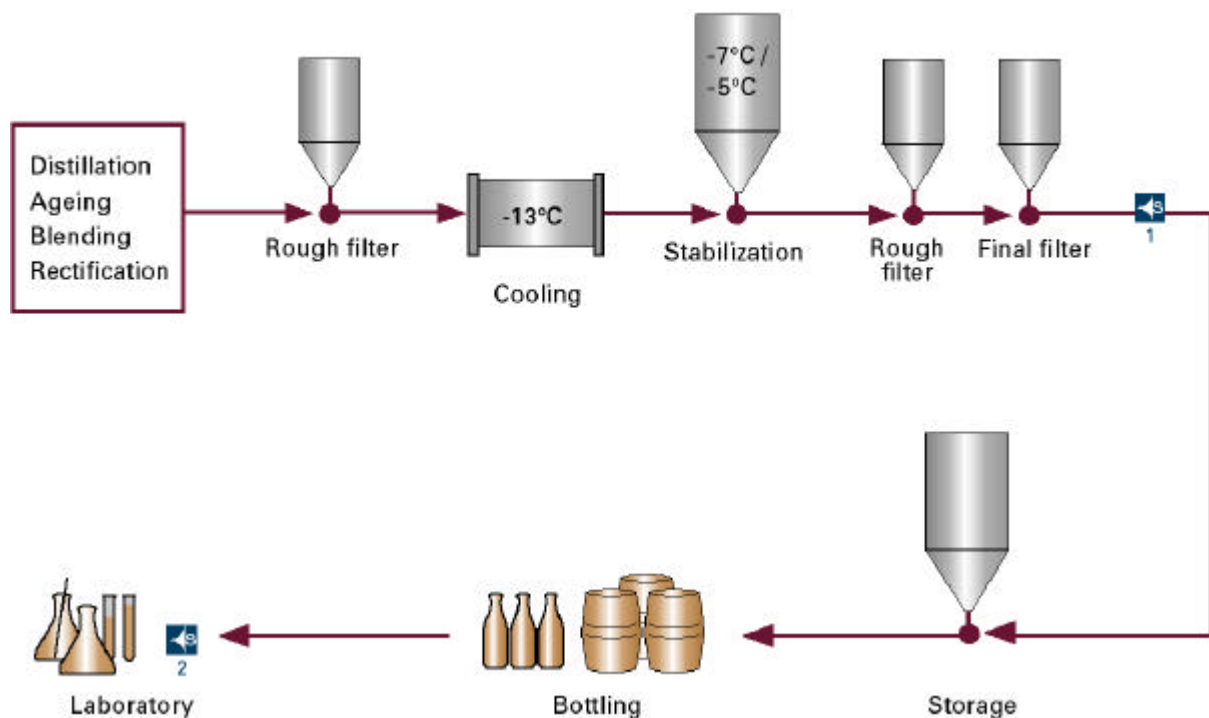


Alcoholic Beverages: Distillation and Filtration monitoring with SIGRIST turbidimeter DualScat

Process

When distilling fermented fruits (cherries, pears etc.), small particles can be carried over and produce an undesired haze in the distillate.

Moreover, other alcoholic beverages such as whisky, cognac, etc., also contain small amounts of fatty acids that are dissolved at normal ambient temperatures and therefore do not cause any turbidity. But when the spirits are cooled (during transport, or storage in a fridge), the fatty acids precipitate and cause slight turbidity and dregs at the bottom of the bottle, which consumers find unacceptable. In the presence of calcium salts the precipitation is irreversible, and the turbidity remains even when the product warms up again to room temperature. To prevent these undesirable phenomena, the spirits are cooled and filtered prior to filling.



The process shown in the above sketch is the cooling and filtration of cognac. After years of ageing in oaken casks, the cognac is blended and standardized, prefiltered and cooled. This is followed by stabilization at -5° .. -7°C in stainless tanks to let the fatty acids settle out. The acids are then eliminated by filtration in two stages (roughing and fine filtration). After a brief period of storage at room temperature, the cognac is bottled.

Application

Distillation as well as filtration are monitored by the DualScat turbidimeter right in the main pipe.

During filtration, the following turbidity pattern can be observed. The solids content normally drops slightly during the filtration phase, but it starts rising again as filter particles are released. This signals the end of the filter's capacity. In the event of a defect (such as sloppy assembly of the filter), the turbidity rises sharply and trips an alarm when the preset limit is exceeded.

In the distilling business, everything possible is done to achieve the highest quality.

- So the most important benefit of turbidity monitoring is the guarantee of purity it provides.
- Continuous measurement provides permanent evidence of the course of each filtration batch.
- Turbidity detection permits optimal utilization of the filters. The filters can be replaced at just the right moment, i.e. when they are really used up – and not after some preestablished period of duty that has to be set too short to stay on the safe side in the absence of monitoring. So turbidity detection cuts running costs while still guaranteeing the all-important quality.

Detection conditions

Sample temperature: -10° .. $+80^{\circ}\text{C}$

Sample pressure: 10 bar

Equipment specification

**DualScat 2-angle turbidimeter 90°/25° with SIREL2 control unit,
Ref. 901770**

**DualScat 1-angle turbidimeter 90° with SIREL Control Unit,
Ref. 901771**

Options:

- Tuchenhagen in-line housing DN40 to DN125
(to be specified, Ref. 901812 .. 901816)
- Calibration unit with solid reference, Ref. 901773