

Technical Data Sheet

Cap-off Additives: CA210.2 and CA340.2



Multichem's range of Cap-Off additives (**CA**) allow for alcohol-based permanent markers to be left uncapped for days if not weeks. The additives prevent the marker from drying out whilst maintaining full functionality over this period.

The **CAs** work by forming a soft skin on the surface of the marker nib which slows down evaporation of the solvent and prevents the marker from drying out. When the marker is used the skin is removed by friction and then the ink flows as per normal.

Reference	Appearance	Concentrate	Upper effective temperature	Recommended Addition Level
CA 210.2	Pales straw coloured oily wax		25°C	1 – 2%
CA 340.2	Pales straw coloured oily wax		35°C	0.5 - 1%

CA in Your Formulations

CAs must be thoroughly dispersed into the ink to achieve optimum cap-off performance. Trials should be conducted with different percentages of additive to determine the optimal level for any given ink system. A high shear or emulsifying mixer should be used to ensure complete dispersion of the additive.

Important – mixing should continue until the ink reaches a temperature of 40°C. This is in order to ensure the waxes have melted into the solution and will help with a uniform dispersion.

CA in Your Factory

Both products are gels containing 100% solids and are classed as non-hazardous for shipping purposes.

If you purchase this product in 200 L drums the product is best extracted by use of a heating jacket (or similar) to melt the waxes into a uniformed mixture. Once melted the additive can be poured directly into ink formulations and mixed in as normal.

CA Conformity

As with all Multichem products we understand the importance of conforming to specific regulations. As such all Multichem **CAs** come with the following:

- All raw materials used are REACH registered
- All ingredients can be found on the EPA TSCA Inventory
- RoHS Directive 2002/95/EC

Our products do not contain any Substances of Very High Concern (SVHC), Benzene, Toluene or Xylene. None of our **CA** products require labelling under Proposition 65 (assuming a maximum reservoir capacity of 12ml).

CA in the Environment

Multichem **Cap-off Additives** are formulated so as to be as environmentally friendly as possible. As such a minimum Multichem **CA's** contain a minimum of 68% materials which are renewably sourced



CA in Your Inks

Once the **CA** has been dispersed within your ink system it should remain like this for a period in excess of one month. It is recommended that once dispersed into an ink that said ink is immediately filled into markers

At colder temperatures (i.e. < 5°C) it has been known for the cap-off additive to precipitate out from the inks. If this is observed simply allow the inks to warm back up to room temperature which should see the waxes melt back into solution. If this fails then it is recommended that a second mixing dispersion is undertaken.

CA in Your Pens

Marker components play a large part in the overall cap-off performance of a marker system. Though not definitive below is a list of observations from multiple investigations into cap-off:

Nibs:

Should be preferably polyester rather than acrylic

Larger diameter nibs perform better than smaller diameter nibs

Bullet shaped nibs have been seen to perform better than chisel nibs

Reservoir:

A reservoir which promotes a high flow rate of ink has been observed to improve the cap-off functionality of a pen

Matching the densities of the nibs and reservoirs to optimise the ink flow is also advised

Ink Shot:

As this is linked to the overall inflow of a marker system a larger ink shot has been seen to have a beneficial effect on the overall cap-off time.

Solvent Choice:

Solvents which have a higher boiling point will lead to better cap-off times. This is simply due to the physical characteristics of the solvents i.e. evaporation rates.

Recommended solvents – n-propanol, ethanol, isopropanol

Avoid the use of protic solvents such as benzyl alcohol

Ink Formulation:

Resin content should be as low as possible

Fluorinated surfactants should be avoided

Do not exceed 6% if using nigrosine