

## Interpretation guideline on Dithiocarbamates in organic products

Dithiocarbamate is the generic term of a group of pesticides, which contain a carbon-sulphur ( $CS_2$ ) bond in their molecular structure. The fungicides Mancozeb, Maneb, Metiram, Propineb, Thiram and Ziram belong to this group. Dithiocarbamates are not permitted in organic agriculture.

Dithiocarbamates are determined indirectly as a total of the  $CS_2$  bonds found in the sample. This means that as a rule the individual substances cannot be determined.

In addition the analysis is affected when the plant contains natural sulphur or carbon-sulphur bonds, which may lead to false positive results. This is known to be the case for example with *Brassicaceae*-family (e.g. cabbage species, rape) and the *Allium* genus (onions and garlic). There are further specific anomalies that can occur in individual crops, which may also lead to false positive results. It is known that ripe papaya fruit which can produce carbon-sulphur as a result of strong enzyme activity (BUT it is also known that dithiocarbamates are applied in papaya production).

The information above is to be taken into consideration in a case by case assessment of analytical results showing the presence of dithiocarbamates in organic products.

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