

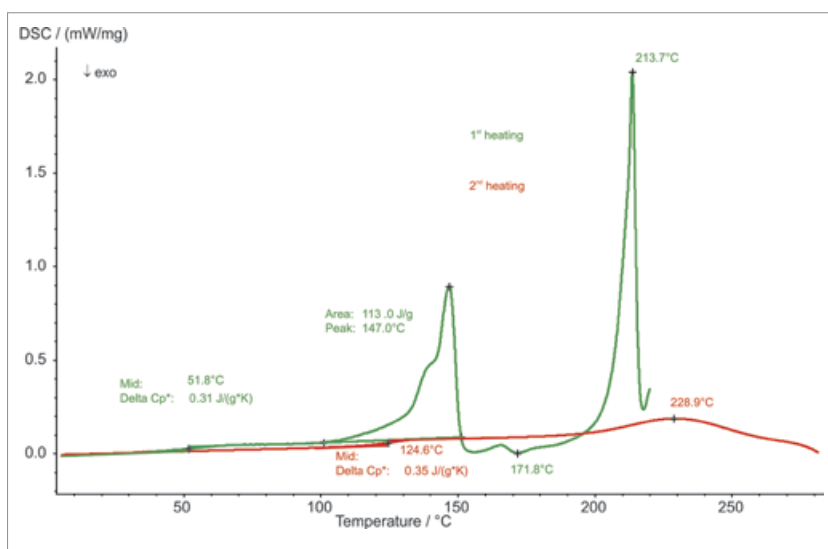
# APPLICATION SHEET

ORGANICS – FOOD

## LACTOSE

Lactose is a disaccharide that consists of b-D-galactose and b-D-glucose molecules bonded through a b1-4 glycosidic linkage. Lactose makes up around 2-8% of the solid con-

tent in milk. The name comes from the Latin word for milk, plus the -ose ending used to name sugars.



### Instrument

DSC 204 **F1** Phoenix®

### Test Conditions

|                   |                              |
|-------------------|------------------------------|
| Temperature range | -50 ... 220 ... -50 .. 300°C |
| Heating rate      | 5 K/min                      |
| Atmosphere        | Nitrogen at 20 ml/min        |
| Sample mass       | 4.96 mg                      |
| Crucible          | Al, pierced lid              |

### Results

The endothermic change in specific heat-flow rate detected at 51.8°C (midpoint) during the 1st heating is due to the glass transition of the sample. Lactose dehydrates at 147°C (peak temperature) and then crystallizes at 171.8°C (peak temperature). Lactose anhydrate melts at 213.7°C (peak temperature). During the controlled cooling, lactose does not crystallize. Therefore, the sample is amorphous and shows only a glass transition at 124.6°C during the second heating. The exothermic trend above 229°C results from the degradation of lactose.