

CHI-C2-NIR

NIR Test for the Detection and Sorting Performance of Packaging

Version 3.0

This CHI test method was developed by cyclos-HTP for the NIR detection and sorting performance of packaging samples and includes the following steps.

Principle of the test method, page 2.

Measurement setup

- High-resolution operational NIR camera, Full-spectral analysis
- Accelerator belt with 1 m width and speed range of 0.5 – 3.0 m/s
- Valve block with low nozzle distance and up to 8 bar air pressure
- Operational classifiers for all sorting fractions
- Software for reading out the measured spectra and for visualising the NIR image

Sample preparation

- Statistical evaluation of measurable surfaces (probability of different positions)
- Evaluation of test samples (including determination of all relevant components, all relevant states e.g. lidding film)
- The package samples must be emptied before the test is performed. Any residual amount should reflect the realistic situation when the pack is used and disposed of by the consumer.
- Specimen size: 10 pieces (per article)

Before conducting (before every measuring)

- The test equipment must be calibrated before start of a new test series (e.g. white balance) according to the recommendations of the equipment supplier.

NIR-spectrometric measurement details and assessment

Step 1 | Identification of the structure

1. Sample scan:
NIR-spectrometric detail imaging / Visual evaluation of the detected materials at 0.5 m/s
2. Recording of results (intensity image, classification image, result image)
3. Evaluation/Plausibility check of images (repeat, if necessary)
4. Expert evaluation of the test result

Step 2 | Practical transfer and testing of the discharge behaviour

5. Verification test with operational classifier
6. Determination of the discharge behaviour (suitable program selection):
min. 10 samples of each variant up to 3 m/s
7. Evaluation of NIR results

Discharge behaviour	Result
≥ 80%	sorting test passed ✓
> 30% to < 80%	limited sorting performance
≤ 30%	sorting test failed ✗

Principle of the test method:

