

PURITY CONCEPT Systems

Inspection and analysis of plastic pellets and samples
Systems for quality control in laboratory use



PURITY CONCEPT Systems

Inspection and analysis of plastic pellets and samples

Strong technologies for the highest material quality

With the groundbreaking models of the PURITY CONCEPT Systems, SIKORA offers the versatile potential of its systems for offline inspection, analysis and evaluation of plastic materials in the area of Non Destructive Testing (NDT). Equipped with X-ray technology (X) or optical camera (V), the systems are to be used, depending on the application, for process control, offline sample testing as well as incoming goods inspection. The PURITY CONCEPT Systems detect contamination down to a size of 50 µm. Regarding the integrated technologies, SIKORA draws on several decades of experience in the cable as well as hose and tube industry.

Innovative measuring principle

For the inspection of small quantities, the test material is spread on a sample tray, moved to the inspection area and automatically inspected by the respective camera system within seconds. A projector highlights contaminated material in color directly on the sample tray (here in blue). Pellets with a contaminant are simultaneously shown on the monitor, including the size of the contamination, and marked (blue squares). Individual pellets with a contaminant can be selected and zoomed in (red square in color camera image). At the same time, they are optically visualized on the sample tray by the cross hairs.

A clear allocation of the contamination and follow-up inspection are possible at any time and do not have to be done manually by the operator. Thus, the system contributes significantly to quality control and process optimization.

Visualization and analysis of measuring values

PURITY LAB is an analysis software for the visualization and detailed evaluation of detected contamination. The data provides the users with comprehensive information about the process and the material quality.

The PURITY LAB software includes the following features:

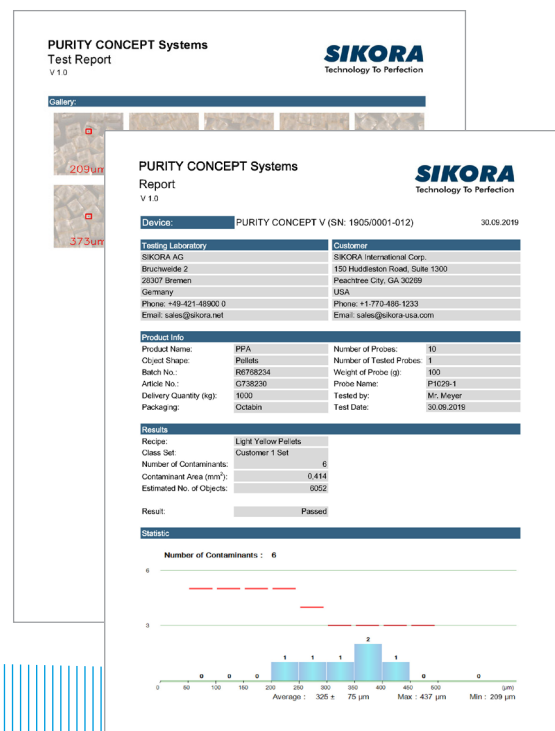
- Image gallery with all detected contamination
- Statistics regarding size, area and number of the detected contamination
- Import function of previously recorded image material for follow-up analysis
- Comprehensive export functions (images, parameters and statistics)

Your benefits

- Detection of all optical or metallic contamination at pellets, flakes and sample test sheets
- Easy, quick use / test duration ~ 30 sec.
- Reproducible optical laboratory testing with automatic analysis and statistics (1x testing, several evaluation possibilities)
- Test certificate
- Non Destructive Testing (NDT)

Integrated test certificate for material release

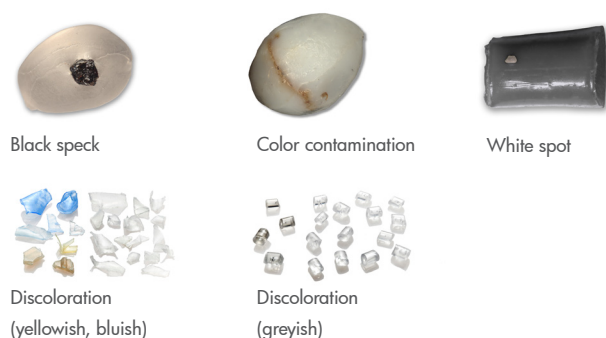
The PURITY CONCEPT Systems provide a test certificate with all information about the inspected pellets as well as a summarization of the test results. Thus, they provide the prerequisite for material release and delivery to the customer.



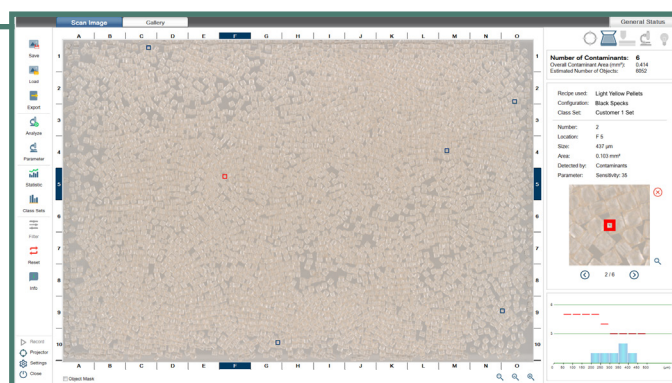
PURITY CONCEPT V

The PURITY CONCEPT V combines the advantages of a light table with an automatic offline material control. With an optical camera, the PURITY CONCEPT V inspects and analyzes any colored and transparent plastic test samples, like e.g. pellets, flakes and sample test sheets. In transparent material, contamination can also be detected inside the sample.

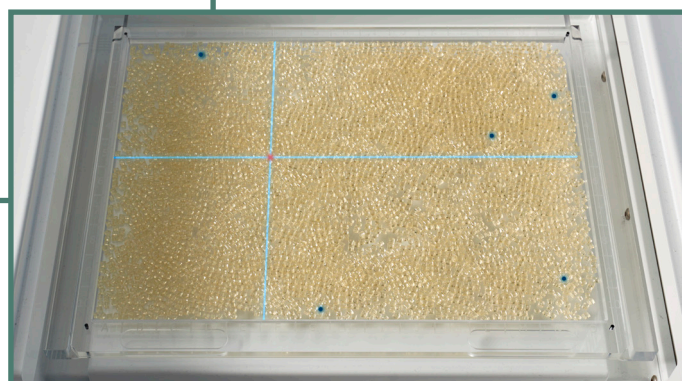
Examples of detected contamination by means of optical technology:



PURITY CONCEPT V



Color camera image of pellets on monitor (PURITY CONCEPT V)

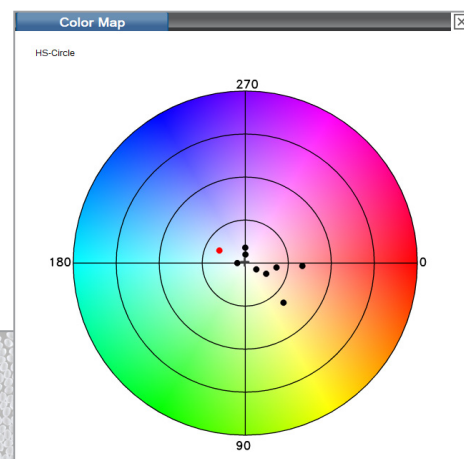
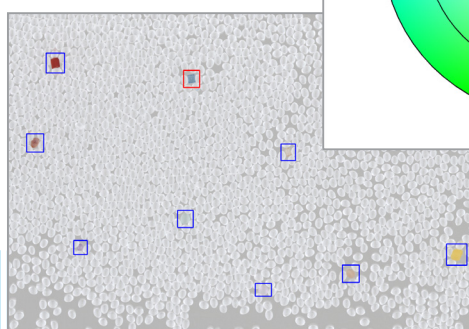


Sample tray with material samples (here pellets)

Detection of color deviations

In addition to classic black specks, smallest color deviations are also detected by the PURITY CONCEPT V. For this, adaptive detection algorithms analyze the inspected material. For example, color deviations due to cross contamination are optionally displayed and evaluated on the monitor. This way, the operator receives besides the information about number, area and size also findings about the color spectrum of the inspected sample.

Scan image with detected color deviations

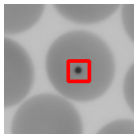


Classification of detected color deviations in color space

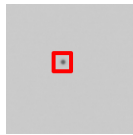
PURITY CONCEPT X

The PURITY CONCEPT X, based on X-ray technology, detects and analyzes for example metallic contamination both on the surface and inside of pellets and sample test sheets.

Examples of detected metallic contamination by means of X-ray technology:



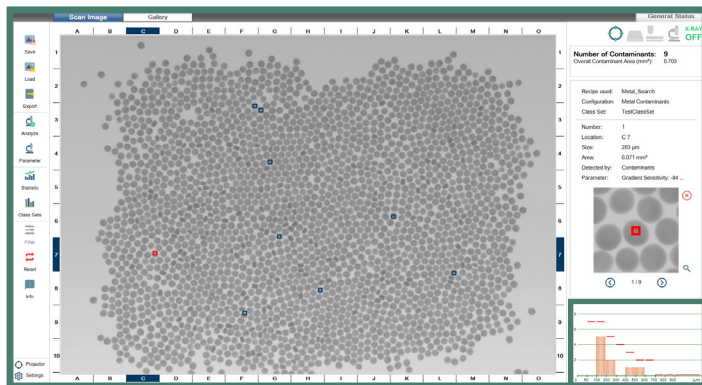
Pellets



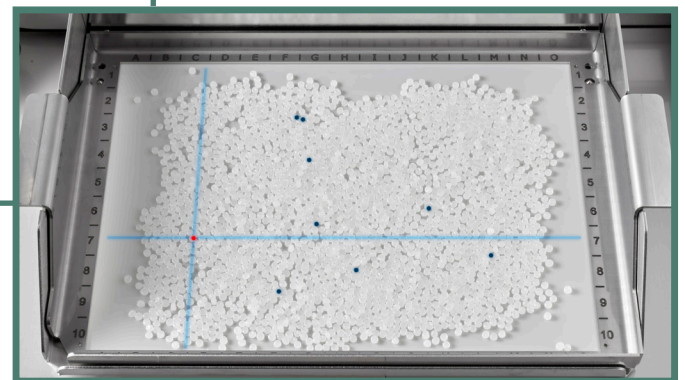
Sample test sheet



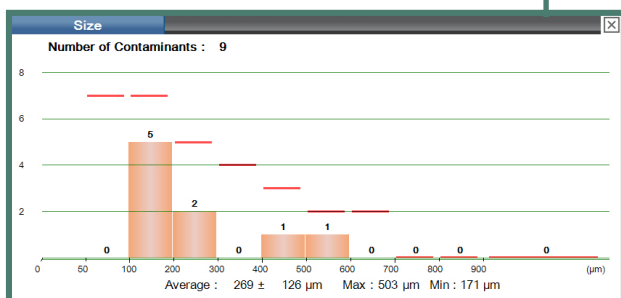
PURITY CONCEPT X



X-ray camera image of pellets on monitor (PURITY CONCEPT X)



Sample tray with material samples (here pellets)



Size class statistics of contaminated pellets (PURITY CONCEPT X)

Perfectly combined: Online inspection and sorting as well as offline inspection und analysis of pellets

For comprehensive inspection and analysis of pellets, SIKORA recommends the combination of the PURITY SCANNER ADVANCED and PURITY CONCEPT Systems. After the PURITY SCANNER ADVANCED has detected and automatically sorted out contamination online, the contaminated pellets are analyzed offline by a model of the PURITY CONCEPT Systems.

This perfect interplay of online and offline inspection, sorting and analysis allows for a comprehensive control of the material purity and provides information for avoiding future contamination. At the same time, the cleaned good fraction can also be examined for quality control in order to document the new goodness of the product. Thus, there is nothing to stand in the way of a material release and delivery.

Example:



Production process



Online inspection and sorting
(PURITY SCANNER ADVANCED)

Ejected
pellets

Pure
material



First analysis and identification
of contaminated pellets



Offline inspection and analysis
(PURITY CONCEPT Systems)



If desired, additional
quality control



Problem analysis for
contaminated pellets in
laboratory



Material approval and
delivery to customer

Technical Data

PURITY CONCEPT Systems

Measuring Principle
PURITY CONCEPT X: X-ray technology PURITY CONCEPT V: optical CMOS Line Scan color camera
Application
Pellets, flakes and sample test sheetss
Detectable Contamination
PURITY CONCEPT X: metallic contamination, inhomogeneities, cavities PURITY CONCEPT V: contamination and black specks in transparent material, respectively, on the surface of translucent and colored material
Smallest Detectable Contamination Size
X-ray: 50 µm (cube 3D), 50 x 50 x 50 µm Optical: 50 µm (square 2D), 50 x 50 µm
Permissible Environmental Temperature/Pellet Temperature
+ 10 to + 40 °C
Interfaces
USB Optional: LAN
Power Supply
PURITY CONCEPT X: 230 V AC (alternatively 100 V AC or 115 V AC) ± 10 %, 50/60 Hz PURITY CONCEPT V: 100 - 240 V AC ± 10 %, 50/60 Hz
Dimensions
PURITY CONCEPT X: 1,309 x 831 x 1,882 mm PURITY CONCEPT V: 1,090 x 575 x 921 mm (width x depth x height)

Technical data is subject to change

Company Profile SIKORA AG

SIKORA is a manufacturer and global supplier of innovative measuring, control and testing devices for the wire and cable, hose and tube, sheets as well as optical fiber industries. Furthermore, SIKORA produces and provides inspection, analysis and sorting systems for the plastics industry. The product range includes X-ray and laser devices for the measurement of diameter, eccentricity, ovality and wall thickness, spark testers for the detection of insulation faults, lump detectors for the detection of faults on the product surface, and capacity measuring systems as well as devices for temperature control.

The measuring and control devices as well as the inspection, analysis and sorting systems for plastic materials are exclusively manufactured at the headquarters in Bremen, Germany. With around 400 employees worldwide, 13 operating international subsidiaries and more than 30 regional representatives, SIKORA provides customers with innovative product solutions and individual service. Innovation, product quality and customer satisfaction define the daily activities at SIKORA.



Certified according to
DIN EN ISO 9001

SIKORA AG (Headquarters) Bruchweide 2 28307 Bremen Germany Ph.: +49 421 48900 0 email: sales@sikora.net www.sikora.net	BRAZIL sales@sikora-brazil.com CHINA sales@sikora-china.com FRANCE sales@sikora-france.com	INDIA sales@sikora-india.com ITALY sales@sikora-italia.com JAPAN sales@sikora-japan.com	KOREA sales@sikora-korea.com MALAYSIA sales@sikora-sea.com MEXICO sales@sikora-mexico.com	POLAND sales@sikora-poland.com TURKEY sales@sikora-turkey.com UNITED ARAB EMIRATES sales@sikora-uae.com	USA sales@sikora-usa.com
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