

Portable NIR measuring gun spectrometer for quick plastic detection

Technology by **IoSys** – Europe's Leading Specialist for Plastic Detection

With the Infrared spectrometry (NIR) of the IoSys units it is possible to identify plastics of the household-, engineering electronics and automotive application field. It enables direct and quick analysis of non-dark-colored plastic parts (films, foils, granules, solid, foamed) as well as other materials like carpets and textiles.



The measuring principle is the diffuse near infrared reflection spectroscopy where the characteristic absorption patterns of different polymer types in a typical spectral region are used. The polymer sample is radiated with infrared light and the reflected light of the measuring spot is analyzed by a near infrared detector array. For transparent materials a white ceramic must be placed behind the sample as a reflection mirror.

For plastic identification the measuring pistol is simply held onto the analysis sample. The measurement begins by pressing the start button on the handle. An integrated Colour-Touchscreen shows the recognized polymer and its typical spectral curve within a second. The **miRoGun 2.0** is running on rechargeable and exchangeable Li-Ion batteries and can be operated with one hand only. The device includes the spectrometer optics and the computer.

The operation of the unit like model selection, parameter setting etc. can be effected by the Colour-Touchscreen of the computer.

The portable unit can be operated also as a desktop unit with an external 5 VDC-power supply by direct switching from battery to external power supply and with the connection of a keyboard and external bigger monitor.

Alternatively the data and results can be transferred via USB cable or WLAN dongle to an external computer. Also tele-maintenance is possible with this new system.

The identification of different plastic types is the result of a trained pattern recognition with a specially developed neural network inside a database with several counterchecking. The result of the calculation is a list of the most probable polymer type identified within a probability between 0 and 100 %. This comparison is necessary, since – contrary to metals – plastics have no norms and no standardizations!

The software allows detailed spectra viewing, loading, saving and comparing. Also an individual database can be built by the customer himself with his specific plastics.



With the **miRoGun 2.0** it is possible to identify the following plastics and their mixtures independently of surface structure and contamination within 1 second:

PA6/PA66	PS	PC+ABS	ABS+PVC	PLA
PA12	PPO	PBT	PVC	Cellulose
PE	SAN	PET	PE+PA	
PP	PC+PET	PMMA	PE+PET	
ABS	PC	POM	PP+PET	

Technical Data:

- Dimensions:	260 x 125/250 x 52 mm
- Weight:	1,3 kg
- Power Supply:	100 - 230 VAC, 50/60 Hz

Optional Accessories:

- External VGA screen or touchscreen for bigger display and operation of the unit

Specifics of the unit:

- Identification of plastics from household- and electronics waste as well as carpets and textiles
- On site analysis e.g. in disassembling areas
- Non-destroying one hand measurement
- Less than 1 sec. measuring and indication time
- Easy operation by Colour Touchscreen
- Measurement of films, foils and granulates possible
- Detailed spectra overview for easy evaluation
- Own individual database can be built up additionally
- Operation by rechargeable and exchangeable Li-Ion batteries or by external power supply
- 10h operation time with one load of Li-Ion batteries
- Transfer, storage and display of results by USB or WLAN to an external computer or tablet
- Remote Maintenance possible
- SPI-Bus connection possible

