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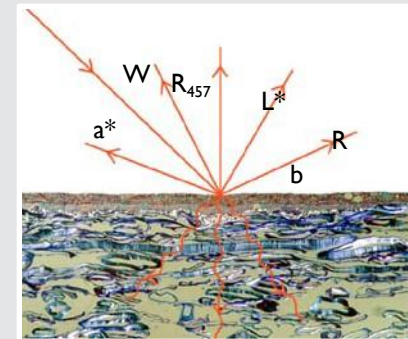


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*Make sure that your measurement results are reliable  
and that you report them in the same way as the rest of the business  
– use reference standards from the Optical Calibration Laboratory.  
Contact us to find out more!*

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## RELIABLE RESULTS WITH ISO CALIBRATION



**RISE Research Institutes of Sweden  
Optical Calibration Laboratory**

## ISO reference standards – IR3

Reference standards enabling you to obtain correct measurement results  
for optical properties (whiteness, brightness and reflectance)  
of pulp and paper!

## Calibration – why?

### CORRECT AND COMPARABLE RESULTS

You know the properties of your product, but your customer does not get the same result – who is right? And how can you prove it?

The idea of calibration is to make sure that measurements give correct results. The purpose of ISO calibration is to standardize the measurement procedures in order to make the measurement results comparable. This is why ISO calibration is essential for anyone who wants to communicate or compare measurement results for

- Product control
- Communication within a company
- External communication
- Trade specifications

### ISO REQUIREMENTS

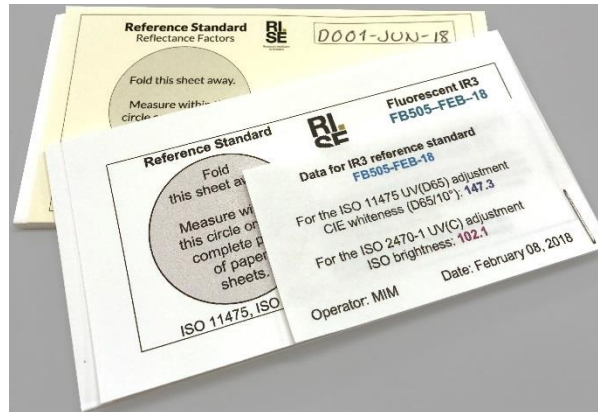
ISO has issued several Standards dealing with the measurement of the optical properties of pulp and paper. These methods require the calibration to be performed with an IR3 reference standard from an Authorized Laboratory, in addition to a black cavity and working standards. Our Optical Calibration Laboratory is authorized by ISO and can provide all the reference standards you need.

The exact measurement and calibration procedures are described in the following ISO standards:

ISO 2469	Radiance factor
ISO 2470-1	ISO Brightness (illuminant C)
ISO 2470-2	D65 Brightness (illuminant D65)
ISO 22754	Effective residual ink concentration
ISO 2471	Opacity
ISO 5631-1	Colour (C/2°)
ISO 5631-2	Colour (D65/10°)
ISO 5631-3	Colour (D50/2°)
ISO 11475	CIE whiteness
ISO 11476	Indoor whiteness
ISO 9416	Light scattering and absorption coefficients

### COST SAVINGS

Calibration is not only a question of being correct and complying with standards, it is definitely also an economic question. If your brightness level measurement were to show too low a value due to incorrect calibration, you would use more expensive chemicals than necessary. Note that even an error as small as 0.1 % may lead to significant costs.



## Reference standards

Each of our reference standards consists of an opaque pad of highly stable paper. The data needed for calibration are easily accessible on a label attached to the pad. A calibration certificate is also delivered free of charge.

We offer our customers a subscription where a standard is delivered on a monthly basis, so you do not risk forgetting the need for regular calibration.

As our customer you receive instructive documents and newsletters with up-to-date information about our laboratory and products. Our service also includes technical support relating to the use of our products.

We provide two types of reference standards for calibration of optical instruments:

### NON-FLUORESCENT IR3 STANDARDS

for calibration of the reflectance factor: For compliance with ISO standard methods, the reflectance factor scale must always be calibrated with a non-fluorescent IR3 standard.

- Choose spectral data for a spectrophotometer or colorimetric data for a filter instrument.

### FLUORESCENT IR3 STANDARDS

for UV filter adjustments:

Adjustment of the UV filter with a fluorescent IR3 standard is necessary when fluorescent samples are to be measured.

- Choose to adjust the UV level to illuminant D65 for CIE whiteness or to illuminant C for ISO brightness, or a combination of the two.

## The Optical Calibration Laboratory

- Authorized by ISO/TC6 among only five laboratories in the world
- Accredited by SWEDAC\* as a Calibration Laboratory
- Part of RISE AB
- Established more than 35 years ago
- Satisfied customers all over the world
- Also offers courses, training, measurement contract work and consultancy regarding optical properties of pulp and paper



\*) Swedish Board for Accreditation and Conformity Assessment