3-1

Visual Assessment of Organically Coated Decorative Surfaces

QIB
Qualitätsgemeinschaft
Industriebeschichtung

Visual Assessment of Organically Coated Decorative Surfaces

Contence

1. General

In general, the common standards and basic rules for the assessment of the surface only describe viewing distance, type of acceptable surface phenomenon and lighting.
The quality regulations of QIB already contain more detailed descriptions, which, however, in case of high requirements make additional minimum requirements concerning the optical appearance necessary.

It is recommended that the following procedure be carried out when assessing visible surfaces:

The viewing of a complete component for the detection of surface defects should be based on the intended use (installation position).

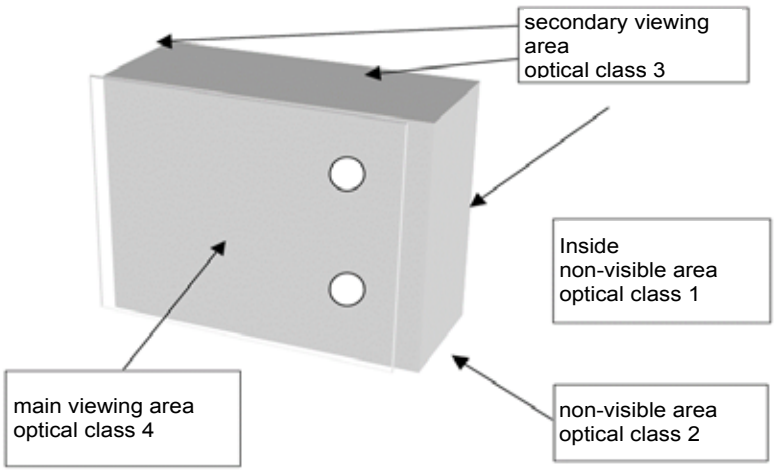
A detailed examination by means of a test foil (see the following sample) takes place when potential defects have been found during the overall view. The square test field is used to record the amount of surface phenomena to be evaluated. With the so-called defect sizes below, it is possible to make a differentiated classification and determine whether the defect sizes are still within tolerance range of the optical class or are outside the tolerance range.

In general, the following viewing conditions should be determined for detailed viewing:

- max. 10 sec. per viewing (square test field)
- no directed light, akin to daylight
- Viewing angle as a rule 90° max. 45° to the side
- Illumination 400 - 800 LUX

Deviating quality requirements must be processed separately.

As a rule, offers are calculated according to optical class 2. The additional expenditure for a higher optical class must be known already for the calculation. The desired optical class must also be defined in writing prior to the placement of the order. Optical class 2 is standard class. Before starting to process the order, the main and side viewing surfaces at the work pieces must be defined together with the ordering party. It is also recommended to define non-viewing surfaces and an optical class each.



As you can see from the example, it is recommendable to define the requirements in detail and to adjust the requirements exactly to the work piece together with the customer (end customer).

2. Test Foil


www.qib-online.de
Optik - Prüffläche 100 cm²
Fehlergrößen Vergleichsschablone
1,5 mm²
1,0 mm²
0,75 mm²
0,5 mm²
0,25 mm²
Qualitätsgemeinschaft Industriebeschichtung e.V.
QIB
Qualitätsgemeinschaft Industriebeschichtung
Alexander-von-Humboldt-Straße 19
D-73529 Schwäbisch Gmünd (Germany)
fon. +49 - (0) 71 71 - 10 40 8-33
fax. +49 - (0) 71 71 - 10 40 8-50
Email: info@qib-online.com
© QIB e.V., Juli 2020
MUSTER

3. Type of Surface Characteristics

●●●● Surfaces with exceptionally high requirements (e.g. bathroom fittings, control panels for electric appliances, medical engineering), viewing distance at least 0.5 m; 10 seconds.

●●● Surfaces with high requirements (e.g. furniture industry), viewing distance at least 0.8 m; 5 seconds.

●● Standard class with usual requirements (e.g. housing parts for switching cabinets etc.), viewing distance at least 1.5 m; 3 seconds.

● Surfaces with low requirements (e.g. steel components – not visible without demand on optical appearance, e.g. fencing posts, storage racks etc.), viewing distance at least 3 m; 3 seconds.

Assessment criteria, characteristics and level			Minimum requirements
3.2.1	Craters, bubbles and inclusions	●●●●	max. 5 pcs. ≤0,5mm² per m² ; max. 2 pcs. ≤0,5mm² per100 cm²
		●●●	max. 15 pcs. ≤1,0mm² per m²; max. 5 pcs. ≤1,0mm² per 100 cm²
		●●	max. 30 pcs. ≤1,0mm² per m²; max. 8 pcs. ≤1,0mm² per 100 cm² max. 5 pcs. ≤1,5mm² per m²; max. 3 pcs. ≤1,5mm² per 100 cm²
		●	without requirements
3.2.2	Paint runs and accumulations	●●●●	Not permitted; prior to serial start limiting samples must be defined and available for coater and ordering party
		●●●	Permitted, if not noticeable
		●●	Permitted and max. threefold coating thickness partially allowed
		●	without requirements
3.2.3	Orange peel (not applicable for structured coating)	●●●●	Finely structured – permitted!
		●●●	Roughly structured also permitted, if coating thickness > 120 µm due to construction or order specifications.
		●●	without requirements
		●	–
3.2.4	Gloss differences	●●●● ●●● ●●	Permitted, if within the following tolerances.
		●	without requirements
			In case of metrological evaluations of industrial coatings by reflectometry according to DIN EN ISO 2813 (60° measuring geometry) usually the following tolerances apply to: *- glossy surface: 71 up to 100 E (± 10 E)* *- satin-glossy surface: 31 up to 70 E (± 7 E)* *- mat surface: 0 up to 30 E (±5 E)*

Assessment criteria, characteristics and level			Minimum requirements
3.2.5	Colour deviations	●●●● ●●● ●● ●	Permitted, if not noticeable, day light serves as reference lighting (Observe viewing distance according to explanations). without requirements The metrological evaluation is carried out according to DIN 6175 table 1 with stated tolerance limit of max. 1.5 times of the values of the permitted colour deviation. *The numerical value of the metamerism-index (according to DIN 6172) of subsequent deliveries compared to already existing coating orders should not exceed the numerical value of the colour distance ΔEab when tested by testing light type A (D 65). If one order is delivered in different delivery batches, the possibly arising colour shade differences should not exceed more than the double value of the tolerances defined in DIN 6175 table 1. If components of several painting batches are added, the already mentioned double tolerance may be doubled in case of shocks, mitres, corugation, decorative strips, cavities or similar.*
3.2.6	Grinding grooves	●●●● ●●● ●● ●	Cannot be influenced by the coater (is not included in the work scope of the coater); will usually be covered by conventional powder coating systems of a max. roughness of Rmax <9µm (corresponds to grinding paper with a grain size of 180 with orbital sander).
3.2.7	Substrate quality (e.g. pulling stripes, welding seam, imprints, structures, mechanical damages caused by production, dints, bumps, scratches	●●●● ●●● ●● ●	Cannot be influenced by the coater. *Note: Irregularities may only become apparent after coating.*

4. Conversion for smaller components

For smaller components (less than 1 m²) a mathematical conversion of the permissible craters, bubbles and inclusions can be carried out in the respective optical class. Thus the following number of craters, bubbles and inclusionsn would be allowed:

Area	Optical class ●●●●	Optical class ●●●	Optical class ●●
0,8m²	max. 4 pcs. ≤0,5mm²	max. 12 pcs. ≤1,0mm²	max. 24 pcs. ≤1,0mm, max. 4 pcs. ≤1,5mm²
0,6m²	max. 3 pcs. ≤0,5mm²	max. 9 pcs. ≤1,0mm²	max. 18 pcs. ≤1,0mm, max. 3 pcs. ≤1,5mm²
0,4m²	max. 2 pcs. ≤0,5mm²	max. 6 pcs. ≤1,0mm²	max. 12 pcs. ≤1,0mm, max. 2 pcs. ≤1,5mm²
0,2m²	max. 1 pcs. ≤0,5mm²	max. 3 pcs. ≤1,0mm²	max. 6 pcs. ≤1,0mm, max. 1 pcs. ≤1,5mm²

For smaller areas, a mathematical conversion is no longer purposeful, otherwise the permissible number of craters, bubbles and inclusions can increase massively. In such cases, it is recommended to agree on a scrap quota between the contracting authority and the coater.

Based on QIB experience, the following committee rates have proven their worth:

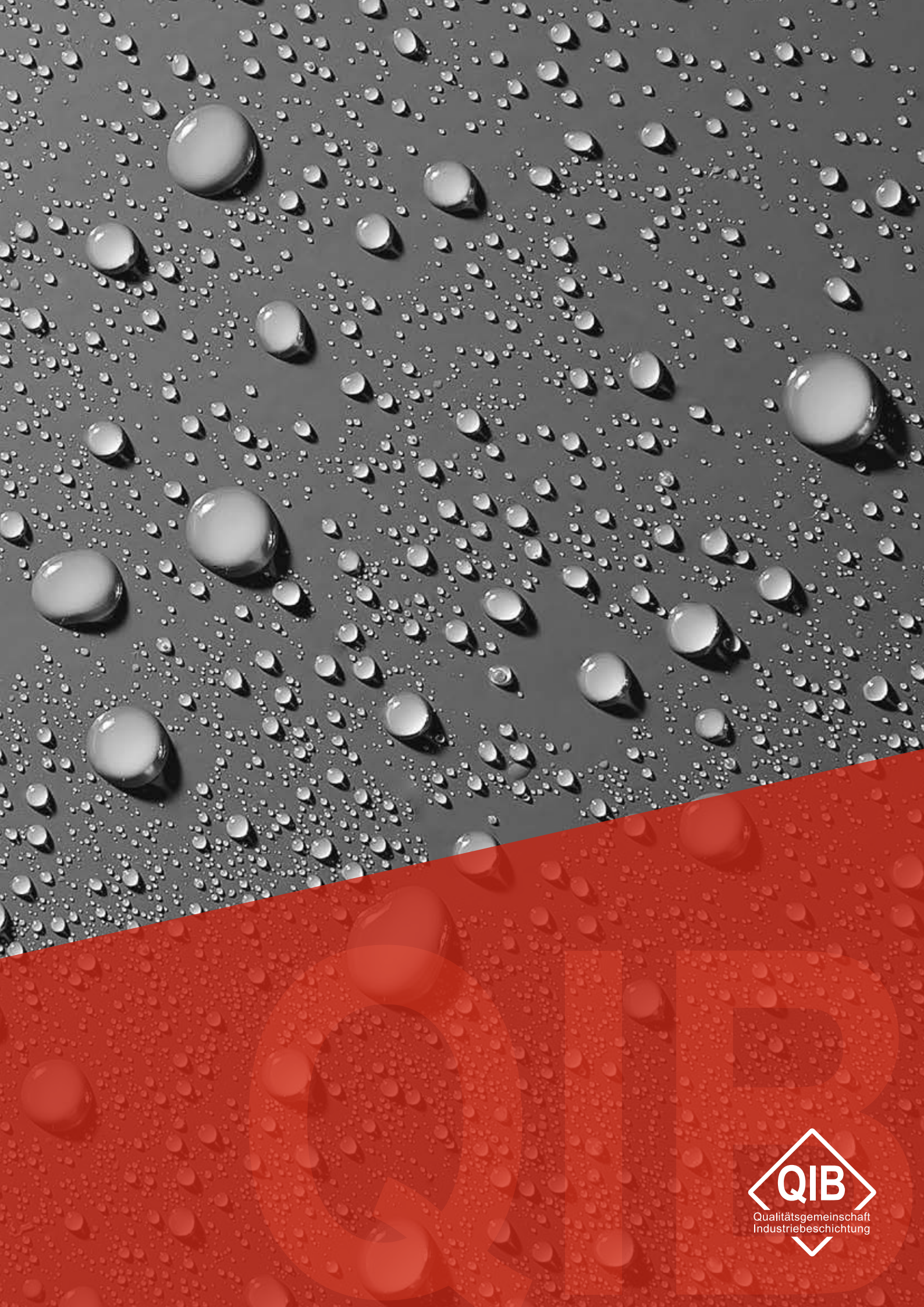
Optical class ●●: 3%

Optical class ●●●: 5%

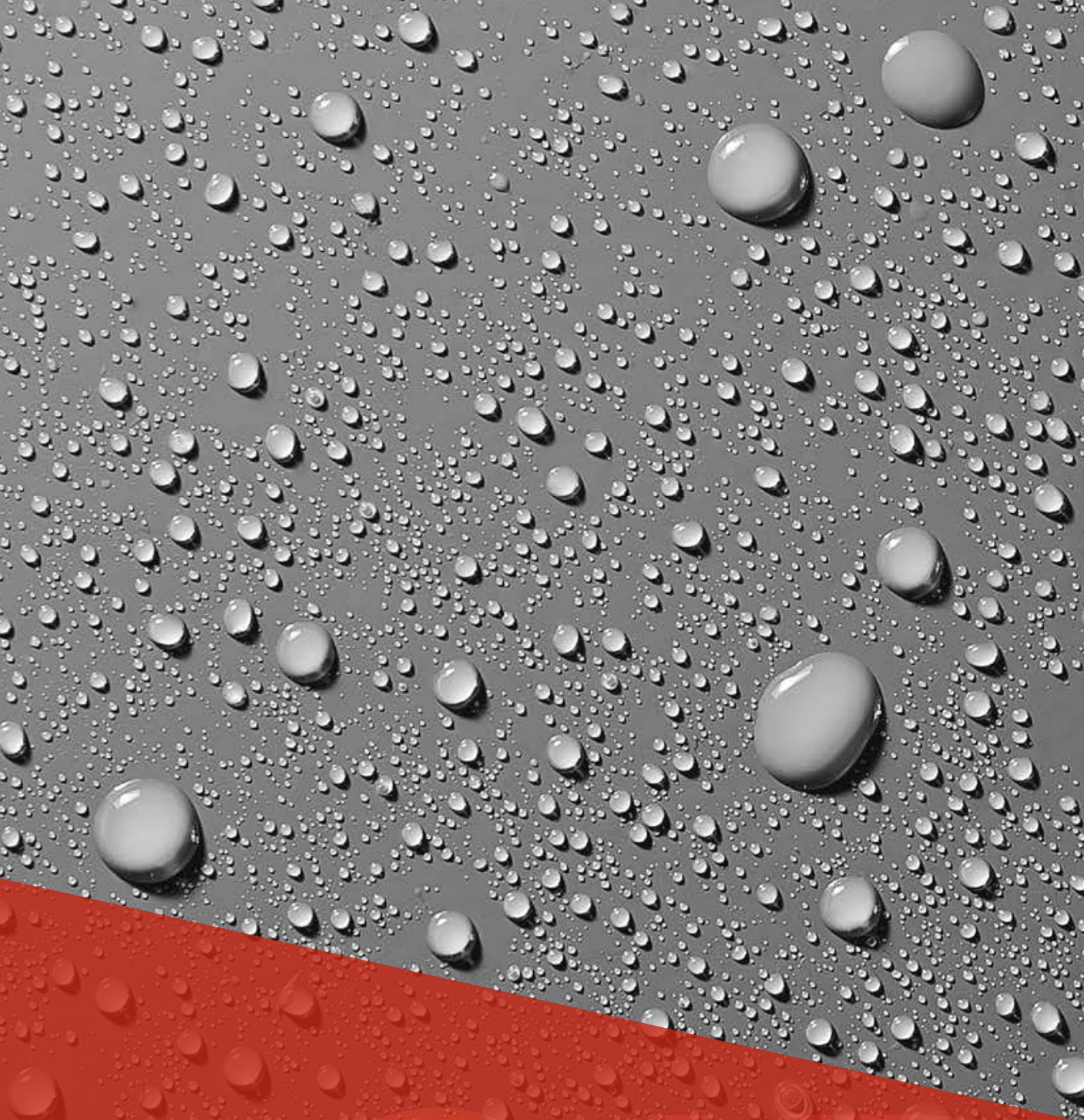
Optical class ●●●●: 10%

Depending on the component (base material, geometry, etc.), however, lower and higher scrap quota may also arise. The agreement on such a scrap quota means that the defined number of parts do not have to meet the specified requirements and therefore either have to be reworked or disposed of for a fee.

Further information on the associationofa committee quota can be found in the Information Sheet 3-2 „Richtig Bestellen“



QIB
Qualitätsgemeinschaft
Industriebeschichtung



Editor:

Qualitätsgemeinschaft Industriebeschichtung e.V.
Alexander-von-Humboldt-Straße 19
73529 Schwäbisch Gmünd

Phone: 07171/10408-33
Fax: 07171/10408-50
www.qib-online.de
info@qib-online.com