Quality requirements and properties of foam

1. Area of application

These company standards define the following physical and chemical testing methods
for parts made of PU foam (flexible foam, integral skin foam):

- Compressive strength
- Density
- Surface quality
- Components
- Emissions

2. Normative references
   - DIN 53579
   - European ordinance on the prohibition of chemicals (REACH)

3. Requirements

The requirements for individual parts can be found in the drawings.

4. Testing methods

4.1 Compressive strength

The compressive strength is determined in line with the specifications of DIN 53579. Cure time after manufacture ≥ 24 h;
Subsequent climatisation at 20°C and 60% humidity ≥ 14 h;
Note: retesting only after 24 h and renewed climatisation.

Application of force

Midpoint of foam part surface (for each foam sample, target point and size of indenter platen are specified on drawing).
Indenter platen I - Ø 202 mm or indenter platen II - Ø 112 mm Load cycles up to 70% of foam sample thickness[1]; n = 3
Measuring cycle - speed v = 50 mm/min Pre-load Fv = 5 N
Recording of curve up to 70% of foam sample thickness[1]

[1] Foam sample thickness is measured at the midpoint of the contact surface of the indenter platen, max. permissible deviation ± 7.5% (in regard to compression value F* of specimen).
* at 40% of indentation depth with regard to thickness of foam sample

4.2 Indentation depth

Cure time after manufacture **≥ 24 h;**
Subsequent climatisation at 20°C and 60% humidity **≥ 14 h**;
Note: retesting only after 24 h and renewed climatisation.
Determination of indentation depth after 30 s at load of 10 kg (using an indenter platen with Ø 100 mm)
Application of force
Midpoint of foam sample surface (for each foam sample, location and size of indenter platen are defined on drawing).
Max. permissible deviation ± 2 mm (in regard to the indentation depth of release sample)

4.3 Density

The density is obtained using a sample block.

4.4 Surface quality

For visual inspection, see part-specific testing plan.

- Visible plastic inserts must be foam-free.
- Bore holes in plastic inserts must be foam-free.
- Parting edges of flexible foam parts may not be hardened.
- Parting edges of integral skin foam parts must be neatened and smoothed.
- Air pockets, blowholes and protuberances are unacceptable.

4.5 Components

All materials must satisfy the European ordinance on the prohibition of chemicals and the requirements of the RAL-UZ 117 guideline* (Blue Angel).
The following components should be specifically avoided:

- HCFC
- HFC (for flexible foam parts)
- Diisobutylphthalate
- Polycyclic aromatic hydrocarbons (PAH)

4.6 Emissions

Foam parts must fulfil the requirements of the RAL-UZ 117 guideline * (Blue Angel).

4.7 Fire safety requirements

If the foam is described in the drawing as ‘flame-retardant’, it fulfils the requirements of the ‘Furniture and Furnishings Fire Safety Regulations’.

*This rule does not apply to integral skin foam and flame-retardant flexible foam. However, meeting the afforementioned requirements is to be pursued.