

Factory Standard - Precision Cleaning Products

Manufacture, cleaning and packaging of components



UPDATE / CHANGE STATUS

Change Control

- This document is currently not subject to change control.
- QM System maintains an update service for this document.
- The latest version of this document is available on the ecoNet.

Update status

Document version: 4.0 from 10.07.2024

The development of the previous versions is listed below:

Version	Date	Name	Change/reason
1.0	09.09.2021	SRE	New version
2.0	06.09.2022	SRE	Additions to last section 4. Chapter
3.0	07.08.2023	MOI	General revision of the document
4.0	10.07.2024	JH	General revision of the document

1. Purpose

The purpose of this factory standard is to define and ensure all necessary quality requirements for the manufacture, cleaning and packaging of components.

2. Applicability

This standard is to be applied if the technical drawing refers to it.

- Annex I is to be applied only if the technical drawing explicitly specifies a surface finish or processing quality (in the form of category identifiers A/B/C 1/2).

If the technical drawing or the purchase order include requirements that deviate from this standard, the requirements stipulated in the purchase order and drawing shall override the information provided in this factory standard.

3. Production of components

The following points need to be observed for the manufacture of components:

- Stainless steel components must be manufactured separately from components made from carbon steel (ferritic materials). Contamination with carbon steel material will the manufactured components to corrode over time. This is absolutely unacceptable.
- During manufacture, no tools may be used which have previously been in contact with carbon steel. Only use tools suitable for stainless steel. Otherwise the risk of corrosion is too high.
- If cut-outs are to be made in the film of film-coated sheet metal, the film must be cut in such a way that no residues will stick to the sheet metal when the film is pulled off. Cutting the film may not result in any damage to the metal surface.
- If the drawing states that components must have ground/brushed surfaces, a protective film must be applied to all such components to prevent scratches and contamination Caution: note direction of grind!
- Components, especially metal sheets, must be completely deburred

4. Cleanliness specifications

In their state 'as-received at Ecoclean, the components must fulfil following requirements:

- Free of hard particles (chips, welding beads, dust, dirt, etc.)
- Free of oil and grease
- Absolutely free of silicone
- Free of any adhesives
- Free of traces of draining liquids and residues of processing and cleaning agents, including pickling and electropolishing fluids
- No discoloration and/or tarnishing
- No fingerprints may be present on ground, brushed or electropolished surfaces
- No manual finishing work such as grinding, polishing (with additive), etc. may be carried out on electropolished surfaces

Pickled and/or electropolished components must be cleaned so that no residue escapes from narrow gaps even after a long period of time. Narrow gaps and drill holes must be thoroughly rinsed out. Threaded inserts should only be fitted later as this would otherwise increase the cleaning time significantly.

Important: When removing dirt, ensure that the surface is not scratched during cleaning.

5. Prohibited substances

5.1 Prohibited materials

Prohibited substances (see list below) may not be used in the entire system:

- Silicone or outgassing silicone compounds
- Outgassing halogen compounds (F, Cl, Br, J)
- Indium
- Manganese compounds
- Lead compounds
- Rust-prone components

5.2 Critical materials

Critical materials (see list below) may not be used in the media-carrying area or transport area of the cleaned goods.

Suppliers must draw attention to the use of these substances in their components and use alternatives where possible.

- Zinc
- Tin
- Non-ferrous metals
- Teflon grease
- Greases/oils
- Organophosphorus compounds

6. Packaging/transport

Packaging must be designed so that the component properties are not altered during transport/handling. In particular, contamination and scratching of surfaces as well as other potential damage in transit must be avoided. We recommend wrapping each component separately in film.

Process tanks and pumps must be delivered with sealed openings (plugs or sealed with foil)

All flanges and joints on components must be sealed.

All components must be marked with the material number, order number and order item number. Note that the requisite stickers may not be affixed directly to the components. The components may be marked directly on their packaging or using tags that are not glued on.

7. Deviations/ special approvals

Any deviations from specifications must be agreed with the relevant Ecoclean representative before the product is delivered. For this purpose, contact can be established with the technical department via Ecoclean Procurement.

If special approval is requested for a product, the respective deviation must be clearly and unambiguously documented.

A. Annex I – components subject to special requirements

Processing and surface finish of units subject to special requirements

When manufacturing components, always take care to observe the specified category of surface finish and processing quality (surface finish and processing quality A1, B2, etc.). Refer to the drawing for the respective category. If no category is specified in the drawing, but a special text with requirements is noted instead, these requirements have to be implemented.

Specifications for thin-walled sheet metal parts (process tanks, hot air dryers HAD, small containers, air ducts)

apply to sheet thicknesses up to and including 6 mm

Surface quality A1: (basic specifications)

- Scratch-free sheet metal installed without pre-treatment in cold-rolled 2B
- Weld seams as per drawing but min. A dimension 0.5x smallest material thickness
- All weld seams must be seal-welded on the inside and outside and free of blowholes, cracks and notches etc. inside the process tanks/chambers. Note: No capillary action may occur
- Pipework must be formed
- Component must be completely pickled and passivated

Surface quality B1:

- Sheet metal installed without pre-treatment in cold-rolled 2B
- Weld seams as per drawing but min. A dimension 0.5x smallest material thickness
- All weld seams must be seal-welded on the inside and outside as well as fettled inside the tanks and chambers and free of blowholes, cracks and notches etc. No capillary action may occur
- Pipework must be formed
- Component interior completely e-polished free of shadows and passivated

Surface quality C1:

- Sheet metal installed without pre-treatment in cold-rolled 2B
- Weld seams as per drawing but min. A dimension 0.5x smallest material thickness
- All weld seams must be seal-welded on the inside and outside as well as fettled inside the tanks and chambers and free of blowholes, cracks and notches etc. No capillary action may occur
- Pipework must be formed
- Component interior completely e-polished free of shadows with mirror finish and passivated
- All interior component surfaces $R_a < 0.8$, after e-polishing and passivation

Surface quality C2:

- Sheet metal installed without pre-treatment in cold-rolled 2B
- Weld seams as per drawing but min. A dimension 0.5x smallest material thickness
- All weld seams must be seal-welded on the inside and outside as well as fettled inside the tanks and chambers and free of blowholes, cracks and notches etc. No capillary action may occur
- Pipework must be formed
- Component interior completely e-polished free of shadows with a mirror finish and passivated
- All interior component surfaces after e-polishing and passivation $R_a < 0.8$,
- Interior weld seams must be completely smooth (large irregularities must be smoothed by grinding), corner seams must be avoided. The minimum A-dimension of the weld seams may not be undercut)

Specifications for thick-walled sheet metal parts (PulsePressureCleaning PPC, vacuum hot air dryers VWSLT and vacuum dryers VT)

apply to sheet thicknesses > 6mm

Surface quality A1: (basic specifications)

- Sheet metal installed without pre-treatment, e.g. hot-rolled sheet metal
- Vacuum chamber completely pickled and passivated inside and out
- No tarnishing from welding present on the component
- Weld seams carried out as specified in the drawing
- Pipework must be formed
- All weld seams must be seal-welded on the inside and outside as well as fettled inside the tanks and chambers and free of blowholes, cracks and notches etc. No capillary action may occur

Surface quality B1:

- Sheet metal installed without pre-treatment, e.g. hot-rolled sheet metal
- Vacuum chamber interior e-polished free of shadows and exterior pickled and passivated, no tarnishing present
- PPC spill-over tank and VWLT extraction channels must be e-polished where possible, but no tarnishing or pickling residues may be present
- Weld seams carried out as specified in the drawing
- Pipework must be formed
- All weld seams must be seal-welded on the inside and outside as well as fettled inside the tanks and chambers and free of blowholes, cracks and notches etc. No capillary action may occur

Surface quality C1:

- Hot-rolled sheets > 6mm must be pre-ground to Ra < 0.8 prior to welding
- Vacuum chamber interior e-polished free of shadows and exterior pickled and passivated, no tarnishing present
- PPC spill-over tank and VWLT extraction channels must be e-polished where possible, but no tarnishing or pickling residues may be present
- After e-polishing, all sheet metal surfaces inside the process tanks must have Ra < 0.8
- Sheet metal surface must be e-polished free of shadows with a mirror finish. (looks like cold-rolled sheet metal, e-polished)
- Pipework must be formed
- All weld seams must be seal-welded on the inside and outside as well as fettled inside the tanks and chambers and free of blowholes, cracks and notches etc. No capillary action may occur

Surface quality C2:

- Hot-rolled sheets > 6mm must be pre-ground to Ra < 0.8 prior to welding
- After welding, all weld seams inside chambers must be ground to Ra < 0.8
- After grinding, the weld seams must still have the required weld seam properties specified in the drawing
- Vacuum chamber interior e-polished free of shadows and exterior pickled and passivated, no tarnishing present
- PPC spill-over tank and VWLT extraction channels must be e-polished where possible, but no tarnishing or pickling residues may be present
- After e-polishing, all sheet metal surfaces inside the process tanks must have Ra < 0.8
- Sheet metal surface must be e-polished free of shadows with a mirror finish. (looks like cold-rolled sheet metal, e-polished)
- In addition to complying with category '1', all interior weld seams must be smooth. The typical welding bead may no longer be visible or palpable

- All weld seams must be seal-welded on the inside and outside as well as fettled inside the tanks and chambers and free of blowholes, cracks and notches etc. No capillary action may occur
- Pipework must be formed

Specifications for sheet metal parts/mechanics in general

- Component only pickled and passivated at the welding sites (tarnish removed)
- A1 Component completely pickled and passivated
- B1 Component e-polished free of shadows
- C1 Component e-polished free of shadows with mirror finish, Ra < 0.8
- C2 Component free of shadows with mirror finish, Ra < 0.8 and smooth weld seams
- B1 Machined and e-polished
- C1 Machined and e-polished free of shadows, Ra < 0.8
- C2 Machined and e-polished free of shadows, Ra < 0.8 and smooth weld seams

Example of typical specifications in a drawing:

! IMPORTANT !
 The product must be manufactured according to the current technical guideline and precision cleaning guideline.
 This guideline can be transferred by our purchase.
 For missing data and dimensions, please reference the 3D model.
 A step model for details to create unfoldings or cutting templates are available.

Oberflächengüte & Verarbeitungsqualität: C2

Art	Druck / Part	Name	Abmessung / Dimension	Material	Werkstoff	Abmessung	Abmessung	Abmessung
SOLID WORKS	Druck / Part	Name	Abmessung / Dimension	Material	Werkstoff	Abmessung	Abmessung	Abmessung
Druck / Part	Druck / Part	Name	Abmessung / Dimension	Material	Werkstoff	Abmessung	Abmessung	Abmessung
Druck / Part	Druck / Part	Name	Abmessung / Dimension	Material	Werkstoff	Abmessung	Abmessung	Abmessung

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Technische Zeichnung / Drawing / Zeichnung
 Blatt / Sheet / Blatt