

Guidelines for Storage, Processing, and Handling of Pool Sheets made of Polystone® P PG, P PGX and Polystone® G PG, G PGX

1. Purpose and Scope

This guideline for processing and machining pool sheets made of polypropylene (Polystone® P PG, P PGX) and polyethylene (Polystone® G PG, G PGX) describes the basic requirements and procedures for proper storage, processing, and machining.

2. Storage of sheets

2.1 General requirements

- **Storage location:** Boards should preferably be stored indoors until processing. Alternatively, outdoor storage is only permitted if effective protection against UV radiation and weather influences is ensured (e.g. by opaque tarpaulins).
- **Storage position:** The boards must be stored flat, without distortion and with low stress on level surfaces (e.g. wooden pallets with a continuous support surface).

2.2 Processing by batch

- It is essential to ensure that processing is only carried out in batches in order to avoid visual deviations (color differences).
 - Prompt processing after receipt of goods is recommended in order to avoid possible material changes due to storage influences (e.g. warping).
 - Prolonged dark storage (over 3 months) should be avoided, as the influence of phenolic antioxidants on PP and PE sheets can lead to discoloration (gas fading).
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3. Incoming goods inspection

Before the sheets are released for further processing, an incoming goods inspection must be carried out in accordance with the work instruction 'Incoming goods inspection for pool sheets`.

3a. Inspection before processing

In particular, the following must be checked:

- Visual inspection for deformations, scratches, cracks, soiling or other transport damage
 - Completeness of labelling (material type, dimensions, batch, manufacturer)
 - Comparison with the delivery documents (quantity, specification, batch)
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4. Welding process

Various welding processes are available for permanently and tightly joining the pool panels. The selection of the appropriate process depends on the component geometry, area of application and material.

4.1 Heating element butt welding (in accordance with DVS 2207-1 and 2207-11)

Heating element butt welding is a welding process in which the panel ends are heated by pressure against a heated heating element and then joined together in a force fit. Welding takes place in several phases: Heating, switching, joining and cooling.

Note: The exact welding parameters (heating temperature, joining time, pressure, etc.) must be determined and adhered to in accordance with the applicable DVS guidelines as well as manufacturer or process-specific requirements.

4.2 Extrusion welding

Extrusion welding is particularly suitable for weld seams and material thicknesses from approx. 6 mm.

Welding parameter according to DVS 2207-4

| Parameter | Polypropylen (PP-C) | Polyethylen (PE-HD) |
|----------------------|---------------------|---------------------|
| Mass temperature | 210 – 240 °C | 210 – 230 °C |
| Hot air temperature | 250 – 300 °C | 250 – 300 °C |
| Welding rod diameter | Ø 4 mm | Ø 4 mm |
| Welding speed | Device-dependent | Device-dependent |

It must always be ensured that the base material and the filler (welding rod) are identical in material. The weld surfaces must be preheated, clean, and free of grease.

4.3 Hot gas welding

Heating of the joint area with hot air while simultaneously applying the welding rod.

Welding parameters according to DVS 2207-3

| Parameter | PP-C | PE-HD |
|---------------------|---------------------------|---------------------------|
| Hot air temperature | 300 – 340 °C | 300 – 340 °C |
| Welding speed | 25 - 35 cm/min | 25 - 35 cm/min |
| Air volume | 50– 60 l/min | 55 – 60 l/min |
| Welding rod | Ø 3 – 4 mm, same material | Ø 3 – 4 mm, same material |

The joint surfaces must be thoroughly cleaned, mechanically roughened, and preheated. Consistent guidance of the weld bead is essential.

5. Mechanical machining

The machining of PP and PE sheets is performed by chip removal. Due to their thermoplastic properties, care must be taken to minimize heat generation during machining.

5.1 Sawing

- Machines: Panel saw, band saw, or table saw with suitable support
 - Saw blade: Carbide-tipped, fine-tooth pitch, negative to neutral rake angle
 - Cutting speed: 2000 – 3000 m/min
 - Feed rate: 10 – 30 m/min
 - Cooling: Not mandatory, but compressed air or extraction recommended
 - Note: Sheets must lie flat and be secured against vibrations
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5.2 Drilling

- **Tools:** Twist drills with point angle 60° – 90°
 - **Speed:** 1000 – 3000 rpm (depending on diameter)
 - **Feed rate:** 0.1 – 0.3 mm/rev
 - **Processing notes:**
 - Peck drilling for large diameters or sheet thicknesses
 - Deburring of the holes is necessary
 - No coolant or lubricant required
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6. Reference to Additional Documents

The following documents must be considered:

- Work instruction “*Incoming Goods Inspection Sheet Material*”
- Product information
- DVS welding guidelines

7. Safety and Qualification

- All welding work must be carried out by certified plastic welders according to DVS or equivalent qualification.
- Suitable personal protective equipment (PPE) must be worn for all work.
- Processing should ideally be carried out at ambient temperatures of at least 15 °C.