

Drying and Heat Treatment



The creep compression resistance behavior of ROHACELL® can be improved by drying and heat treating sheets prior to processing (CNC milling, thermoforming, face sheet curing, etc.). However, the specific drying and heat treatment process used will depend upon several variables and the application manufacturing process.

Your ROHACELL® representative is an excellent resource to assist you in determining the optimal preparation and processing required for all ROHACELL® products.

Should I dry ROHACELL®?

Similar to other organic materials, ROHACELL® absorbs moisture from the environment. Even though it is a closed cell foam, a small amount of moisture absorption occurs through diffusion that is heavily dependent upon ambient temperature and atmospheric humidity.

Any moisture uptake can cause small dimensional changes to occur and may adversely affect creep behavior. This is because water molecules that attach to the foam cells will act as plasticizers, making ROHACELL® more ductile. Additionally, steam can form during processing if temperatures exceed 100 °C (212 °F) – potentially affecting bonding of the skin to the foam core.

Drying is especially important when processing temperatures will be above 100 °C (212 °F), depending on the process pressure.

Drying conditions for ROHACELL® sheets

Thickness	Recommended Drying Temperature	Approximate Drying Time
<25 mm / <1 in	125 °C ± 5 °C (257 °F ± 9 °F)	4 hours
25–50 mm / 1–2 in		6 hours
50–75 mm / 2–3 in		8 hours
70–100 mm / 3–4 in		10 hours
>100 mm / > 4 in		12 hours

Important drying guidelines:

- Dry sheets in an air-circulating oven between heating plates, or using infrared heaters if sheet thickness is less than 6 mm (1/4”).
- Separate each foam panel from adjacent foam panels by no less than 25 mm (1 inch). This will ensure constant airflow around all sheets.
- All precautions regarding foam panel placement and accurate temperature control must be strictly followed.
- Drying time is determined by sheet thickness. (refer to the above table)

Is it possible to “re-dry” ROHACELL®?

Yes. Unplanned moisture uptake by ROHACELL® after initial drying is an easily reversible situation. Both “Standard” and “Pre-Dried” sheets can be dried again if they are exposed to moisture.

Re-drying the material restores original mechanical properties and, within certain limits, reverses dimensional changes.

Heat treating process for ROHACELL® WF & XT

To improve the creep resistance for demanding processing conditions (temperatures up to 190 °C / 374 °F) and pressure up to 0.7 MPa / 100 psi), a heat treatment process prior to processing ROHACELL® is required.

Important heat treatment (HT) guidelines:

- All precautions regarding placement of the sheets and accurate temperature control of the oven should be strictly followed.
- Sheets must be loaded with perforated metal plates to prevent warping of the ROHACELL® sheet.
- Both drying and heat treating can cause surface deterioration and a decrease in panel volume. Final shaping must be performed after heat treatment at a temperature of >180 °C (356 °F).
- Heat-treated ROHACELL® sheets must be processed within a certain period of time (out-time) depending upon the storage climate, sheet thickness, manufacturing parameters and density. Please consult with your ROHACELL® representative for more detailed infor-

mation and to confirm your specific ROHACELL® product's recommended "out-time".

- If the established out-time is exceeded, heat treatment can be repeated for un-shaped cores. Net-shaped cores cannot be heat treated again since re-heating will change the dimensions and the surface quality.
- Heat-treated sheets and shapes can be stored in water- and vapor-proof bags (e.g. according to MIL-spec.) if necessary.

Conditions (for ROHACELL® WF and XT)

	Recommended Temperature	Approximate Time
Drying	125 °C ± 5 °C (257 °F ± 9 °F)	Min. 4 hours
Heat treatment - Should begin immediately after drying		
51 - 200 WF	190 °C ± 5 °C (374 °F ± 9 °F)	48 ± 2 hours
Option for 200 WF	First, 160 °C ± 5 °C (320 °F ± 9 °F) Then, 180 °C ± 5 °C (356 °F ± 9 °F)	20 ± 2 hours 28 ± 2 hours
71 - 110 XT	200 °C ± 5 °C (392 °F ± 9 °F)	48 ± 2 hours

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