ROHACELL®

Product Information

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 polymer will act as plasticizers, making ROHACELL® more ductile, particularly at elevated temperatures. 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.

Is it possible to "re-dry" ROHACELL®?

All ROHACELL® grades (except ROHACELL® HERO) can be re-dried. Unplanned moisture uptake after initial drying is often an easily reversible situation.

Most non-heat treated (non-HT) sheets, but not "shapes", can be dried again if they have been exposed to moisture. Re-drying sheet material restores original mechanical properties and, within limits, reverses some dimensional changes.

DRYING CONDITIONS FOR ROHACELL® SHEETS

Thickness	Recommended Drying Temperature	Approximate Drying Time
<25 mm / <1 in	130 °C ± 5 °C (266 °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 use 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)

Special instructions for ROHACELL® HERO

Re-drying ROHACELL® HERO sheets or shapes is not possible.

If unexpected exposure to moisture occurs, please do not attempt to re-dry the product and immediately contact your ROHACELL® representative for assistance and further instructions.

HEAT TREATMENT

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 information 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.

Heat treatment (HT) 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 is required and possible with ROHACELL® WF and XT.

HT CONDITIONS FOR ROHACELL® WF & XT*

Sheet Thickness	Recommended Drying Temperature	Approximate Drying Time
<25 mm / <1 in	130 °C ± 5 °C (266 °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

Heat treatment – Should begin immediately after drying at temperatures and duration shown below

Product Grade*	Recommended Heat Treatment Temperature	Approximate Heat Treatment Time
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)	20 ± 2 hours
	Then, 180 °C ± 5 °C (356 °F ± 9 °F)	28 ± 2 hours
71 – 110 XT	200 °C ± 5 °C (392 °F ± 9 °F)	48 ± 2 hours

* Heat treatment cycles for other products available by request.

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