Technical section
Storage recommendation for polyamide products

Storage recommendation for polyamide products
Polyamide is widely and successfully used for products in the electrical and electronics industries. Thanks to its excellent mechanical and physical properties over a wide range of application temperatures and its very good weather resistance, polyamide can be used to make products for interior and external use that meet the most stringent of demands.

As a hydroscopic material, polyamide has the ability to absorb moisture in molecular form into the plastic matrix. As the moisture content goes up, product properties may change slightly. Absorbed water acts as a plasticiser reducing strengths and moduli and increasing the toughness of the polyamide.

Although at room temperature the stiffness and strength of PA6 is more reduced by the moisture uptake than those of PA66, this difference can be considered to be non-significant. PA6 absorbs more water than PA66, especially under high humidity conditions. But the resulting dimensional change is still of a similar order.

Figure 1 shows how the moisture content of polyamides comes into balance with the ambient air in a normal climate of 50% relative humidity and 23°C:

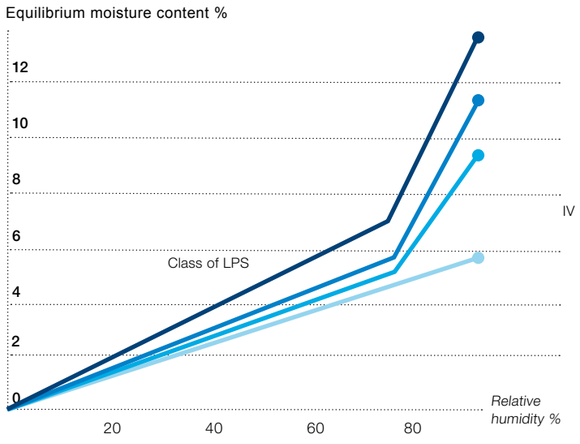
Material	**In air (23°C / 50% rh)**
Polyamide 6	3.0-3.5% by weight
Polyamide 66	2.5-3.0% by weight

To maintain balanced moisture content, Harnessflex recommends storing products under the following conditions:

Storage temp	**Processing temp.**	**Rel. humidity**
18°C to 30°C	>18°C	>30%

At lower processing temperatures and in particular when subjected to unnatural drying, corrugated pipes display increased flexural rigidity.

Figure 1. Moisture content of polyamides



In the very dry winter months the moisture balance may go down slightly as the material releases moisture to the environment (owing to lower relative humidity). Compared to natural outdoor conditions* at around 0°C (40... 80% rh), the humidity in heated rooms may drop by half to below 20% rh if no humidification is present. (Even extremely dry regions such as the Sahara Desert record average humidity of 20% to 60% rh) (*Central European climate).

If products from an outside environment are brought into a heated processing area, the change in climate may suddenly cause temporary de-moisturisation around the edges. After one or two days in the processing area a natural balance will be restored.

Observing this storage recommendation ensures optimum processability and material properties.

Technical section
IP ratings & fitting characteristics

IP Ratings
IP suitability ratings are a system for classifying the degree of protection provided by enclosures of electrical equipment.

Protection against Solid Bodies
Degree of protection for persons against access to hazardous parts inside the enclosure and/or against the ingress of solid foreign objects.

0	No protection
1	Objects greater than 50 mm, accidental touch by hands
2	Objects greater than 12 mm, accidental touch by fingers
3	Objects greater than 2.5 mm, e.g. tools/wires
4	Objects greater than 1 mm, e.g. tools/wires/small wires
5	Protected against dust - limited ingress (no harmful deposits)
6	Totally protected against dust (Dust-tight)

Protection against Water
Degree of protection of equipment inside enclosures against damage from the ingress of water.

0	No protection
1	Protected against vertically falling drops of water
2	Protected against direct sprays of water up to 15° from vertical
3	Protected against sprays of water to 60° from vertical
4	Protected against water sprayed from all directions - limited ingress permitted
5	Protected against low pressure jets of water from all directions - limited ingress permitted
6	Protected against strong pressure jets of water, heavy seas - limited ingress permitted
7	Protection against the effects of immersion between 15cm - 1 m
8	Protection against long periods of immersion under a quoted pressure, e.g. 2 bar at 24 hours
9	IP69k Automotive standard DIN40050 and signifies resistance to high pressure jets of water (up to 80bar) from any angle

IP Ratings
The higher the number, the greater the degree of protection; they apply ONLY to properly installed equipment. The numerals stand for the following: