

Handling guideline for semi-finished parts

Plastics from Ensinger are used as the raw material for a wide range of high-quality components and end products in fields such as the food industry and medical technology, as well as mechanical and automotive engineering, semi-conductor technology and in the aerospace industry. In order to safeguard the quality and functionality of our materials over long periods, the recommendations for transport and storage of semi-finished products must be observed. This can prevent external influences exerting a significant impact on the material properties.

In the case of finished parts, the manufacturer or user is required to submit an individual confirmation of this, as conditions can differ considerably depending on the storage or utilization period.

1. Storage and handling should take place in such a way that the material designations and product numbers (batch number) are clearly recognizable on the semi-finished products and can be maintained. Clear identification and traceability of products simplifies the process of determining the root causes of faults in the event of a complaint.
2. Weathering effects can impact on the properties of plastics. As result of the impact of solar radiation (UV radiation), atmospheric oxygen and moisture (precipitation, humidity) can exert a lasting negative impact on material characteristics. These influences can result in colour changes, oxidation of surfaces, swelling, warping, brittleness or even a change in mechanical properties. For this reason, semi-finished products should not be exposed to direct sunlight or the effects of weather over protracted periods. Ideally, the semi-finished products should be stored in closed rooms under normal climatic conditions (23 °C / 50 %rH).

The following materials in particular should be protected against the influence of the weather:

TECAPEEK (PEEK)*
TECATRON (PPS)*
TECASON P (PPSU)*
TECASON S (PSU)*
TECASON E (PES)*
TECAFORM AH, AD (POM-C, POM-H)**
TECAPET (PET)**
TECAMID 6, 66, 11, 12, 46 (PA 6, 66, 11, 12, 46)**
TECAST (PA 6G)**
TECAFINE (PE, PP)**
TECARAN ABS (ABS)*

* All variations should be generally protected

** Variants not dyed black should be protected

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3. Wherever possible, plastics should not be exposed to low temperatures over long periods. However, particular care should be taken to avoid excessive fluctuations in temperature. These lead to brittleness and to warping of the semi-finished products. The materials must also be protected from heavy impacts, and should never be thrown, as collisions will result in spalling and fracture damage. In addition, semi-finished products stored in cold conditions should be allowed sufficient time to reach room temperature before processing. This will prevent debris, cavities and other defects during processing. This also compensates for any shrinkage or expansion which occurs in plastics due to their high coefficient of thermal expansion.
4. Semi-finished products made of plastic should consequently always be stored flat or on a suitable support (in the case of rods and tubes) and with the greatest possible surface contact in order to avoid deformation through their own intrinsic weight.
5. When handling plastic semi-finished products, ensure that suitable warehousing equipment is used. This includes stable slinging equipment and secure hoists. Semi-finished products must be stacked so as to prevent any possibility of tilting or falling. Bear in mind here that plastics often have a low coefficient of friction and are consequently easily able to slip out of load suspension devices, with the possibility of serious injury to staff members.
6. Avoid the effects of high-energy radiation. The molecular degradation caused by gamma and X rays can result in microstructure damage.
7. Keep semi-finished products away from all kinds of chemicals and also water. Depending on the material, any such contact can result in chemical decomposition, tension crack formation or swelling through the absorption of moisture.
8. As organic substances, plastics are combustible. The combustion or decomposition products may have a toxic or corrosive effect. If correctly stored, plastics themselves do not pose a fire risk. However, they should not be stored together with other combustible substances. On this subject, observe the product handling information sheets for the individual materials.
9. Under normal conditions, plastic semi-finished or finished products do not release any toxic constituents and permit risk-free surface contact. Tobacco products should not be allowed in the vicinity when handling and machining plastics, as particles of some plastics (in particular fluoropolymers) can release strong toxic gases in some cases during pyrolyzation of the smouldering tobacco.

In respect of health protection, please also note the product handling information sheets for the individual materials.

10. If the above recommendations are adhered to, it may be assumed that no significant changes to typical plastic properties will occur during the storage period. Due to environmental influences, it is possible that minimal surface discolouration may occur. However, this does not represent any significant deterioration of material properties, as the surface is generally only affected down to a few microns in depth
11. Plastic waste and chips can be processed and recycled by professional recycling companies. However, it is also possible to send the waste for thermal processing to

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generate energy by a professional company in a combustion plant with a suitable emission control in place. This applies in particular to applications where the plastic waste produced is contaminated, e.g. in the case of machining chips contaminated with oil.

In order to store finished and semi-finished products for high levels of manufacturing precision, we consequently recommend storage under constant conditions in a normal climate (23°C/50%rH). This allows external influences to be minimized and dimensional stability to be maintained over long periods. It is not possible to specify a maximum storage period, as this depends heavily on the materials, storage conditions and external influences.

These recommendations should be adjusted in line with individual requirements and circumstances. They do not replace the fundamentally applicable statutory regulations, or exonerate customers from their responsibility or individuals from their duty of care. These are merely intended as recommendations drawn up on the basis of current knowledge. They do not constitute any generally applicable assurance.

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