Precautions to ensure safe usage

The precautions given below are intended to ensure safe and correct use of the products.
Note that certain restrictions apply to use of these products. Failure to observe these could result in injury or property damage.

⚠ Warning	A potentially hazardous situation which could result in death or serious injury.
⚠ Caution	A dangerous situation which could result in minor or medium injury and/or in which only property damage is foreseen.

⚠Warning TOYOX products have been developed and manufactured for general industrial applications.
For applications that require safety, confirm in advance.
Never use for implant or injection application or other applications where there is a possibility of the product partially remaining in the body.
Toyox makes no guarantee of the adaptability or safeness related to such applications.
Please read the Handling Precautions carefully before use.

Note: See the terminology glosses on our website for words marked with a ※.

TOYOFOODS / HYBRID TOYOFOODS / TOYOFOODS-S Hose

① Notes for using the hoses

1. The hose can be used for water, drinking water, foods, air, chemical, and powder.
2. Liquid left inside hoses may be affected by a plastic smell, making them unsuitable for use. Always check beforehand.
3. Do not use for fuel oil (heavy oil, kerosene (light oil), kerosene (lamp oil), gasoline) or solvents. Some lubricants are not suited for the hose. Please consult us before using the hose for any lubricants.
4. ⚠**Warning** Always use a hose within its recommended temperature and pressure range. In the case of use under negative pressure, TOYOFOODS-S hoses may not be applicable depending on applications or conditions (temperature, movements, etc.).
   Refer to the "Use condition reference values for TOYOX vacuum hoses" (Terms explained, Fig. 1) regarding guidelines for negative pressure use ranges.
5. Please note that compounding agents such as ※2 plasticizers could be extracted / eluted from the hose depending on use conditions. Please confirm the use conditions and the effects on your products before use.
6. Hoses expand and contract according to internal pressure, so adequate space should be provided when setting up.
7. When pressurizing, slowly open / close any valves to avoid ※1 impact pressure.
8. Use a hose that is compatible with the fluid used. Avoid using any other.
9. Clean the inside of the hose before using it to transport drinking water or food. (Clean the hose with hot water (80°C or below) for 30 minutes or less at 0.1 MPa pressure or less.)
10. Use hoses at bend angles larger than their ※3 minimum bending radius. Angles smaller than the minimum bending radius may result in hose overbending or lower pressure resistance.
11. Powders and granular materials may cause wear. Use a hose with as large a bending radius as possible.
12. Do not use a hose that is extremely bent near a coupling.
13. Keep the hose away from open flame.
14. Do not run over hoses with a vehicle or other heavy objects.
15. Do not use collapsed hoses.
16. Do not let hard angled objects, such as pieces of iron, press hard or rub strongly against a hose.
17. ⚠**Warning** Do not pass an electric current through the hose. This is dangerous because it may rupture the hose or cause electric shock.
18. The HYBRID TOYOFOODS hose has a structure resistant to twisting. Mount it so that it is not forced to twist by equipment oscillation or rotation.
19. ⚠**Warning** Do not allow anything other than the inner surface of the couplings or hose to come in contact with fluids (food, etc.), because the fluids may permeate the hose reinforcement layer or remain inside the couplings, and bacteria may propagate (attach to the parts) or the hose may deteriorate. Also, dust, hose fragments (reinforcement material) and ink adhering to the outer surface may be mixed in.

② Notes for cutting the hoses

1. To cut the hoses, use cutters with new blades as much as possible. (The reinforcement threads may slightly protrude from the end of the hose.)
2. When cutting a hose, make sure that the edge face of the hose is cut perpendicularly. If it is not perpendicular, the hose may leak or become disconnected.
3. When cutting HYBRID TOYOFOODS Hose or TOYOFOODS-S Hose, the edge of the reinforcement coil may cause injury. Please take sufficient care.

③ Notes for assembly

1. We recommend using TOYOCONNECTOR, our dedicated coupling, for TOYOFOODS Hose, HYBRID TOYOFOODS Hose and TOYOFOODS-S Hose. If you use a coupling other than our dedicated couplings or attach the coupling not according to our manual, the performance of your hose may decrease.
2. After mounting of couplings, ※4 permanent deformation of plastic may cause fluid leakage, hose disconnection, or hose rupture. Consult Toyox about coupling types and characteristics of hose material.
3. Use hose nipples suitable for the size of the hose. Do not use hose nipples with damaged or rusted surfaces.
4. Never tighten the hoses with wires.
5. The compression strength indicated in this brochure is based on data which was obtained from pressure tests conducted by Toyox using the hoses alone by its own testing method. Therefore, the hose may be dislocated before the hose ruptures, or another problem may occur depending on the conditions of the couplings being mounted (the shapes of hose nipples, types of hose clamps, number of hose clamps, fastening torque and how they are crimped). Select a safe, effective method for mounting couplings to the hoses based on the following data on withstanding pressure.
   For technological information on mounting couplings, please make inquiries through our Customer Advice Center.
6. Retighten the hose clamp as necessary. Deformation of the plastic hose clamp fastening can cause fluid leakage and hose disconnection.
7. Do not use one-push fittings. Hose may rupture.
8. When mounting the HYBRID TOYOFOODS Hose, keep the coupling straight, as the reinforcement material may stick out and cause injury if the hose is twisted when inserted.

④ Notes for inspections

1. **Pre-work inspection:** Before starting operation, check the hose for abnormalities, such as external damage, stiffening, softening and discoloration.
2. **Regular inspection:** During periods when the hose is in use, be sure to perform regular monthly inspections.

What to do if an abnormality is found

The life of hoses will be greatly affected by the physical properties, temperature, and flow rates of the fluid as well as by the frequency of pressurization and depressurization. If any of the following problems or similar signs are found in the pre-work or regular inspections, immediately cease use and replace the hose.

1. Abnormality near the coupling: localized stretching, bending, leakage or swelling
2. External damage: large scratches in the outer surface, cracking, or water infiltrating the reinforcement layer
3. Internal abnormalities: Bulging or ※5 separation of the inner surface, or wear that leads to exposure of the hose reinforcement material.
   Note: In the case of abnormalities on the interior or exterior surface, hose scrapings and fragments of hose reinforcing materials may mix into the fluid inside the hose.
4. Other abnormal changes (stiffening, ※6 swelling, cracking, bulging, discoloration of the reinforcement layer, etc.)

⑤ Notes for storage

1. Do not store outdoors or in a place subject to direct sunlight. This may cause the quality of the hose surface to deteriorate, becoming sticky and/or susceptible to cracking. Store in a low-humidity, well-ventilated place. Store keeping the inside of the hose free from foreign matter and dust.
2. Do not store where the hose will make contact with other PVC products or near rubber products.

⑥ Notes for disposal

1. Do not incinerate the hose. The incineration may generate toxic gases or damage incinerators; therefore, the hose should be treated as industrial waste for disposal purposes.
2. The hose should be disposed of in accordance with the requirements of the local region.