



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 ※.

TOYOSPRING / TOYORING Hoses

- The hose can be used for water, air, oil, chemicals, and powder, but when using it with oils, chemicals, or powder, confirm chemical resistance data on the ToyoX website or please consult with our Customer Advice Center. ※Do not use for fuel oil (heavy oil, kerosene (light oil), kerosene (lamp oil), gasoline) or solvents.
- Do not use for food or beverages.**
- 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.
- Use the products within their working temperature range. Depressurization deformation temperature of TOYORING Hose is the temperature at which the hose deforms when its interior (in a straight condition) is depressurized to -0.1 MPa (-760 mmHg). It is not the hose's use limit temperature.
- Use the products within their working pressure range. ※ -0.1 MPa is an approximate value. Refer to the "Use condition reference values for TOYOX vacuum hoses" (Terms explained, Fig. 1) regarding guidelines for negative pressure use ranges.
- 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.
- Powders and granular materials may cause wear. Use a hose with as large a bending radius as possible.
- Keep the hose away from open flame.
- Use hose nipples suitable for the size of the hose. Do not use hose nipples with damaged or rusted surfaces. We recommend using TOYOX dedicated hose couplings and hose clamps. Retighten the hose clamp as necessary. Deformation of the plastic hose clamp fastening can cause fluid leakage and hose disconnection. Tightly fastening hose with wire may damage the inner or exterior surface of the hose and cause it to rupture.
- Do not use one-push fittings. Hose may rupture.
- Do not allow anything other than the inner surface of the couplings or hose to come in contact with fluids, 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.
- 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 repair or replace the hose.
 - Abnormalities near the fitting: Localized stretching, bending, leakage, bulging, or shallow insertion into the nipple
 - External damage: Large scratches in the outer surface, cracking, or water infiltrating the reinforcement layer
 - 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.
 - Other abnormal changes (stiffening, ※6 swelling, cracking, bulging, etc.)
- 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.
- Take sufficient care when cutting hoses, as the edge of the reinforcement coil may cause injury.
- 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.
- 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.
- The hose should be disposed of in accordance with the requirements of the local region.