

STORING & HANDLING: TESNIT® and DONIFLEX® GASKET MATERIALS in SHEETS or ROLLS & GASKETS THEREOF

Directives According to ISO 2230 "Rubber Products" & Our Experience

The stated guaranteed shelf-life of a brand new product is based upon its chemical composition and physical construction. In order to fully enjoy its potential, this recommended useful lifetime implies a correct handling and storing care measures exercised by the purchaser.

The title fiber-reinforced materials contain elastomers and non-resistant additives which particularly undergo normal aging and weathering processes affecting consequently the product original chemo-physical properties, quality and service performance. However, as the elastomer is present in just relatively marginal percentage and is in a somewhat protected state by the rest of the components, the degradation is less pronounced in comparison to equivalents of plain elastomers. Nonetheless, these deleterious effects are accentuated and accelerated by drastic environmental conditions leading to premature reduction of shelf-life and service-life. Proportional to their extent, damaged or even un-usable product may ensue. Strictly observing precautions should preserve the product integrity: thermal-, photo-, and chemical-protections, and strain-free position. Storing under the following ideal conditions is advised:

- Keep constant cool conditioning: the optimum is at 4–25°C away from any heat source.
- In a darkened storage away from direct sunlight and strong UVs.
- In a controlled atmosphere: 40–65% relative humidity (no condensation), and away from chemicals (fumes, vapors, gas or liquid), over-oxidizing atmospheres (ozone generating devices), and dust.
- Ensure lying products full flat in a horizontal resting position without reactive metal contact: avoid hanging, dangling or excessive folding which could result in deformation or appearance of cracks. Gasket materials received in a gently bent state or in rolls should not be left as such for a long period.
- Minimize exposure: placing products in HDPE bags is favorable, and stacked sheets (do not over-stack) should be covered on top with cardboard and/or PE foil.
- Follow "First In, First Out" practice. Also, avoid poor handling and poor fitting.

As tabulated, the recommended storing period of a fiber-based material depends essentially on the type of its elastomeric binder constituent.

ELASTOMER	INITIAL STORING* (year)	STORING EXTENSION** (year)
NR ; SBR	5	2
NBR ; HNBR ; CR	7	3
EPDM ; CSM	10	5

* The maximum time-period, starting from the production date, for which an elastomer-containing product appropriately packaged, may be usefully stored (under optimal conditions) before it requires inspection.

** The maximum time-period, following the initial storing period, for which an elastomer-containing product appropriately packaged, may be usefully stored (under optimal conditions), before it requires inspection.

NOTES: Storing at >25°C will reduce the useful shelf-life of a product; ex. by ~50% at 35°C.
Also, details on packaging recommendations available upon request.

The given information is based on decades of experience in the production and dealing with sealing elements, however the data may not be construed to support any warranty claims. Whenever in doubt, our staff will be pleased to advise you.

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ADDITIONAL GENERAL INSTRUCTIONS for STORING & HANDLING GASKET MATERIALS or GASKETS

Some of the given recommendations for TESNIT® and DONIFLEX® (see Page 1) do apply to certain degrees to the rest of materials or gaskets (graphite-, PTFE-, or metal-based). Nevertheless, as tabulated, such materials (or gaskets) can accommodate to low temperatures.

Noteworthy, always preventing water condensation and ice build-up, **the material (or gasket) should be dry and conditioned at ~20°C before use.** Metal surfaces should be protected from oxidation.

By nature, fragile and brittle materials (especially un-reinforced GRAFILIT®) or delicate materials (as DONIFLON®), necessitate the fact surface protection and added handling care.

Finally, composite laminates of metal foils may poorly adjust to a sudden temperature variation. In particular, metal-reinforced GRAFILIT® (type SL, EM or IQ) might deteriorate and delaminate in air after several years; but we have never actually witnessed any of that with time. Light has no negative effect on the materials properties.

Gasket Type *	Natural aging Temperature/ Light/Humidity	Storing Temperature (°C)	Surface Protection **	Disposition ***	Shelf-Life (year)
TESNIT®	Protect from oxidation	+4 to +25	Required	Horizontal	at least 5
DONIFLEX®	Protect from oxidation	+4 to +25	Required	Horizontal	at least 7
GRAFILIT®	Unaffected	-20 to +50	Required	Horizontal	at least 15
DONIFLON®	Unaffected	max +30	Required	Horizontal	Indefinite
MICALIT®	Unaffected	-20 to +25	Required	Horizontal	at least 6
Metal Solid Grooved Corrugated	Protect from oxidation	-20 to +50	Required	<ul style="list-style-type: none"> • Can be hanging by 2-points minimum • Max stack of 30 cm 	under 10 (for Carbon-steel <6 months)
Spiral Wound	Protect from oxidation	-20 to +50	Required	ONLY horizontal	at least 10
Metal-Jacketed Heat Exchanger	Protect from oxidation	-20 to +50	Required	Can be hanging by 2-points minimum	under 10 (for Carbon-steel <6 months)

* For PTFE-Enveloped Gaskets, check for both PTFE (or DONIFLON®) and the corresponding insert.

** Also, handle with cotton gloves to prevent mechanical damage.

*** Improper disposition can result in mechanical damage (material can crack, stretch, deform).

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