



dialysis,
chemotherapy
drug delivery
and minimally
invasive
surgeries

The next generation in non-DEHP tubing

Tygon[®] ND 100-65 tubing, one of the medical industry's first non-DEHP tubing offerings, has been formulated specifically to meet the demanding challenges of applications such as dialysis, chemotherapy drug delivery and minimally invasive surgeries.

Characteristics

From open heart surgery to dialysis, Tygon[®] ND 100-65 tubing has been specially formulated for medical device manufacturers that require a non-DEHP plasticized material. ND 100-65 sets the new standard for performance and durability in blood contact applications. Based upon a unique chemistry, TYGON[®] ND Series tubing was formulated to be Registration, Evaluation, Authorization and restriction of Chemical substances (REACH) compliant for DEHP. To ensure compliance, every individual compound lot is tested to ensure DEHP levels are <1000 ppm. During the extrusion process, individual product dimensions are maintained and monitored through in-line micrometers and off-line verification with computerized imaging equipment. Consistent with many medical tubing requirements, Tygon[®] ND-100-65 material can be effectively bonded/welded using the following methods: heat, electronic (RF)/ultrasonic, solvent and adhesive. Factors to be considered when selecting the components include: security of the bond required, effect on the integrity of the materials to be joined and presence of residues or extractables that may affect biocompatibility. When bonding procedures are not used, mechanical clamps are recommended to provide secure attachment.

Biocompatibility

Tygon[®] ND 100-65 tubing is made from a biocompatible non-DEHP polymer material developed specifically for blood contact medical device needs. It meets USP Class VI, ISO 10993, European Pharmacopoeia 3.1.1.2 and European REACH requirements. It is also non-hemolytic and non-pyrogenic.



Features and Benefits

- crystal clear for easy visualization of fluid flow
- ideal for contact with bodily fluids
- non-wetting surface permits complete drainage
- meets USP Class VI criteria
- REACH compliant
- withstands EtO, gas and gamma sterilization

Typical Applications

- minimally invasive devices
- Blood and IV solutions
- dialysis equipment
- wound drainage
- inhalation equipment
- chemotherapy drug delivery
- kidney dialysis pumps
- peristaltic pumps
- catheters

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Tygon® ND 100-65 Standard Sizes

Part Number	ID	OD	Wall	Min. Bend Radius	Max. Working Pressure* 22°C (73°F)	Vacuum Rating at 22°C (73°F)
TY0,79ND2,38	0,79 mm (1/32")	2,38 mm (3/32")	0,79 mm (1/32")	3,2 mm	6,9 bar	760 mmHg
TY1,59ND3,18	1,59 mm (1/16")	3,18 mm (1/8")	0,79 mm (1/32")	6,4 mm	3,8 bar	760 mmHg
TY1,59ND4,76	1,59 mm (1/16")	4,76 mm (3/16")	1,59 mm (1/16")	3,2 mm	6,9 bar	760 mmHg
TY2,38ND3,97	2,38 mm (3/32")	3,97 mm (5/32")	0,79 mm (1/32")	9,5 mm	2,7 bar	760 mmHg
TY2,38ND5,56	2,38 mm (3/32")	5,56 mm (7/32")	1,59 mm (1/16")	6,4 mm	4,8 bar	760 mmHg
TY3,18ND4,76	3,18 mm (1/8")	4,76 mm (3/16")	0,79 mm (1/32")	12,7 mm	2,0 bar	635 mmHg
TY3,18ND6,35	3,18 mm (1/8")	6,35 mm (1/4")	1,59 mm (1/16")	9,5 mm	3,8 bar	760 mmHg
TY3,97ND5,56	3,97 mm (5/32")	5,56 mm (7/32")	0,79 mm (1/32")	19,1 mm	1,7 bar	381 mmHg
TY3,97ND7,14	3,97 mm (5/32")	7,14 mm (9/32")	1,59 mm (1/16")	12,7 mm	3,1 bar	760 mmHg
TY4,76ND6,35	4,76 mm (3/16")	6,35 mm (1/4")	0,79 mm (1/32")	25,4 mm	1,3 bar	254 mmHg
TY4,76ND7,94	4,76 mm (3/16")	7,94 mm (5/16")	1,59 mm (1/16")	15,9 mm	2,7 bar	760 mmHg
TY4,76ND9,53	4,76 mm (3/16")	9,53 mm (3/8")	2,38 mm (3/32")	3,2 mm	3,8 bar	760 mmHg
TY4,76ND11,11	4,76 mm (3/16")	11,11 mm (7/16")	3,18 mm (1/8")	9,5 mm	4,8 bar	760 mmHg
TY6,35ND7,94	6,35 mm (1/4")	7,94 mm (5/16")	0,79 mm (1/32")	28,6 mm	1,2 bar	127 mmHg
TY6,35ND9,53	6,35 mm (1/4")	9,53 mm (3/8")	1,59 mm (1/16")	25,4 mm	2,0 bar	635 mmHg
TY6,35ND11,11	6,35 mm (1/4")	11,11 mm (7/16")	2,38 mm (3/32")	19,1 mm	3,1 bar	760 mmHg
TY6,35ND12,7	6,35 mm (1/4")	12,7 mm (1/2")	3,18 mm (1/8")	15,9 mm	3,8 bar	760 mmHg
TY7,94ND11,11	7,94 mm (5/16")	11,11 mm (7/16")	1,59 mm (1/16")	35,0 mm	1,7 bar	381 mmHg
TY7,94ND12,7	7,94 mm (5/16")	12,7 mm (1/2")	2,38 mm (3/32")	25,4 mm	2,4 bar	760 mmHg
TY7,94ND14,29	7,94 mm (5/16")	14,29 mm (9/16")	3,18 mm (1/8")	22,3 mm	3,1 bar	760 mmHg
TY9,53ND12,7	9,53 mm (3/8")	12,7 mm (1/2")	1,59 mm (1/16")	44,5 mm	1,3 bar	254 mmHg
TY9,53ND14,29	9,53 mm (3/8")	14,29 mm (9/16")	2,38 mm (3/32")	35,0 mm	2,0 bar	635 mmHg
TY9,53ND15,88	9,53 mm (3/8")	15,88 mm (5/8")	3,18 mm (1/8")	28,6 mm	2,8 bar	760 mmHg
TY11,11ND14,29	11,11 mm (7/16")	14,29 mm (9/16")	1,59 mm (1/16")	57,2 mm	1,3 bar	203 mmHg
TY11,11ND15,88	11,11 mm (7/16")	15,88 mm (5/8")	2,38 mm (3/32")	44,5 mm	1,7 bar	457 mmHg
TY11,11ND17,46	11,11 mm (7/16")	17,46 mm (11/16")	3,18 mm (1/8")	35,0 mm	2,4 bar	760 mmHg
TY12,7ND15,88	12,7 mm (1/2")	15,88 mm (5/8")	1,59 mm (1/16")	22,3 mm	1,2 bar	152 mmHg
TY12,7ND17,46	12,7 mm (1/2")	17,46 mm (11/16")	2,38 mm (3/32")	54,0 mm	1,7 bar	381 mmHg
TY12,7ND19,05	12,7 mm (1/2")	19,05 mm (3/4")	3,18 mm (1/8")	44,5 mm	2,0 bar	635 mmHg
TY14,29ND19,05	14,29 mm (9/16")	19,05 mm (3/4")	2,38 mm (3/32")	63,5 mm	1,3 bar	254 mmHg
TY15,88ND20,64	15,88 mm (5/8")	20,64 mm (13/16")	2,38 mm (3/32")	76,2 mm	1,3 bar	228 mmHg
TY15,88ND22,23	15,88 mm (5/8")	22,23 mm (7/8")	3,18 mm (1/8")	60,4 mm	1,7 bar	381 mmHg
TY15,88ND23,81	15,88 mm (5/8")	23,81 mm (15/16")	3,97 mm (5/32")	50,8 mm	2,0 bar	635 mmHg
TY19,05ND25,4	19,05 mm (3/4")	25,4 mm (1")	3,18 mm (1/8")	95,3 mm	1,3 bar	508 mmHg
TY22,23ND28,58	22,23 mm (7/8")	28,58 mm (1-1/8")	3,18 mm (1/8")	104,8 mm	1,3 bar	203 mmHg
TY25,4ND31,75	25,4 mm (1")	31,75 mm (1-1/4")	3,18 mm (1/8")	130,2 mm	1,2 bar	127 mmHg

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*Working pressures are calculated at a 1:5 ratio relative to burst pressure using ASTM D1599

The values listed for working and burst pressures are derived from tests conducted under controlled laboratory conditions. Many factors will reduce the tubing's ability to withstand pressures, including temperature, chemical attack, stress, pulsation and the attachment to fittings. It is imperative that the user conduct tests simulating the conditions of the application prior to specifying the tubing for use.

Typical Physical Properties of Tygon® ND 100-65 Tubing

Property	ASTM Method	Value of Rating
Durometer Hardness	D2240	65° Shore A, 15s
Color	-	Clear
Tensile Strength	D412	2,075 psi (14.3 MPa)
Ultimate Elongation	D412	415,00%
Tear Resistance	D1004	32,4 kN/m (185 lb-f/inch)
Specific Gravity	D792	1,19
pression Set, Constant Deflection @158°F (70°C) for 22 hrs.	D395	60,00%
Tensile Modulus, @100% Elongation	D412	817 psi (5.6 MPa)
Maximum Recommended Operating Temperature	-	165 °F (74°C)
Brittleness by Impact Temperature	D746	-44°F (-42°C)
Water Absorption, % 24 hrs. @ 23°C	D570	0.12

Unless otherwise noted, all tests were conducted at room temperature (73°F). Values shown were determined on 0.075" thick extruded strip or 0.075" thick molded ASTM plaques or molded ASTM durometer buttons.

Tygon® ND 100-65 Characteristics

The biocompatibility of Tygon® ND 100-65 has been tested and found to be non-toxic in the following test protocols:

ISO 10993 – Cytotoxicity	Pass
ISO 10993 – Genotoxicity	Pass
ISO 10993 – In Vitro Platelet Aggregation	Pass
ISO 10993 – Irritation/Sensitization	Pass
ISO 10993 – Unactivated Partial Thromboplastin Time Assay	Pass
USP Class VI	Pass
USP Physicochemical Testing/Plastics	Pass
USP Pyrogens	Pass
USP – Chromogenic Testing	Pass
USP – Chromogenic Validation	Pass
USP – Physicochemical Testing/Elastomeric Closures	Pass
C3a Complement Activation Assay	Pass
Hemocompatibility	Pass
European Pharmacopeia 3.1.1.2	Pass

Sterilization Methods

Autoclavable	Yes
Gas	Yes
Radiation	Yes (2.5 Mrad)

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