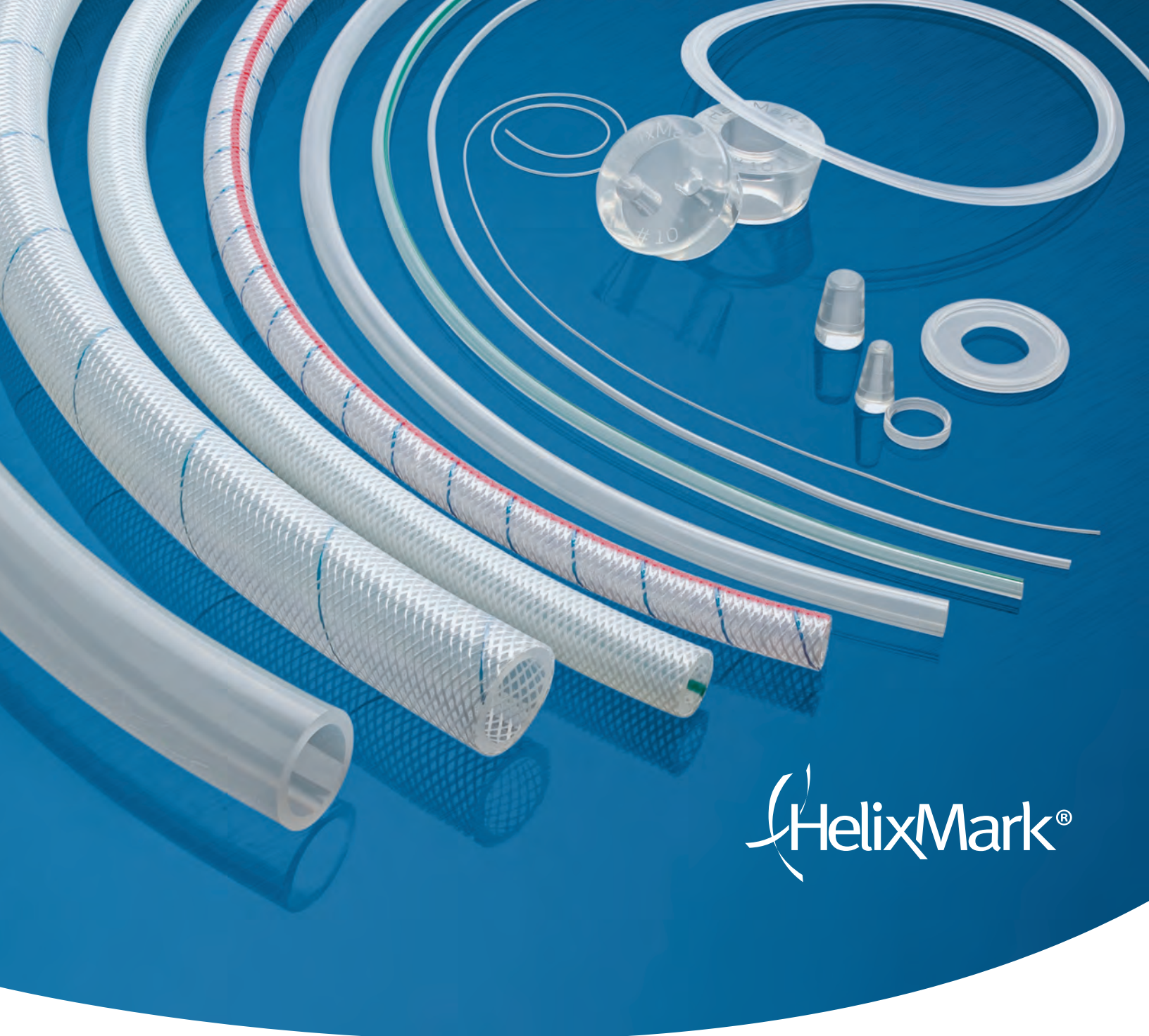




HelixMark®

## SILICONE TUBING FOR MEDICAL & LAB APPLICATIONS

Made in USA & Germany

 **FREUDENBERG**  
MEDICAL

The world's leading pharmaceutical and medical device companies rely on HelixMark to provide an extensive selection of high-quality silicone tubing and fluid handling products.

All HelixMark products are clean room manufactured in compliance with medtech and pharmaceutical industry requirements.

The following criteria apply to all articles of this program:

- Materials approved in accordance with USP Class VI, ISO 10993-1, FDA 21CFR 177-2600 and EP 3.1.9 or EP 3.1.9 without appearance of solution
- All silicone is platinum cured.
- Production and packaging in ISO Class 8 clean rooms
- Certified manufacturing in compliance with ISO 13485 quality standards
- Sterilizable by Autoclave, Ethylene Oxide and Gamma Irradiation
- Material certification included
- Lot traceability
- Double bagged
- Standard product availability guarantees short delivery times
- Customer-specific solutions available outside the HelixMark standard product portfolio





# HELIXMARK® STANDARD TUBING

HelixMark standard silicone tubing meets the needs of a broad range of applications and is universally applicable for the transfer of fluids under standard requirements. The tubing is offered in four types of silicone elastomer: Dow Corning, Wacker, NuSil, and Momenive. Individually packed in pre-cut lengths of 50 feet.

| INSIDE DIAMETER |       | OUTSIDE DIAMETER |       | WALL THICKNESS |      | DOW CORNING<br>ISO, FDA, USP, EP | WACKER<br>ISO, FDA, EP | NUSIL<br>ISO, USP, EP | MOMENTIVE<br>USP, FDA |
|-----------------|-------|------------------|-------|----------------|------|----------------------------------|------------------------|-----------------------|-----------------------|
| inch            | mm    | inch             | mm    | inch           | mm   | REF                              | REF                    | REF                   | REF                   |
| .012            | 0.31  | .025             | 0.64  | .006           | 0.15 | 60-011-01                        | 60-411-40              | 60-795-01             | 60-805-01             |
| .020            | 0.51  | .037             | 0.94  | .008           | 0.20 | 60-011-02                        | 60-411-41              | 60-795-02             | 60-805-02             |
| .025            | 0.64  | .047             | 1.19  | .011           | 0.28 | 60-011-03                        | 60-411-42              | 60-795-03             | 60-805-03             |
| .030            | 0.76  | .065             | 1.65  | .018           | 0.46 | 60-011-04                        | 60-411-43              | 60-795-04             | 60-805-04             |
| .040            | 1.02  | .085             | 2.16  | .023           | 0.58 | 60-011-05                        | 60-411-44              | 60-795-05             | 60-805-05             |
| .058            | 1.47  | .077             | 1.96  | .009           | 0.23 | 60-011-06                        | 60-411-45              | 60-795-06             | 60-805-06             |
| .062            | 1.58  | .095             | 2.41  | .016           | 0.41 | 60-011-07                        | 60-411-46              | 60-795-07             | 60-805-07             |
| .062            | 1.58  | .125             | 3.18  | .032           | 0.81 | 60-011-08                        | 60-411-47              | 60-795-08             | 60-805-08             |
| .078            | 1.98  | .125             | 3.18  | .024           | 0.61 | 60-011-09                        | 60-411-48              | 60-795-09             | 60-805-09             |
| .104            | 2.64  | .192             | 4.88  | .044           | 1.12 | 60-011-10                        | 60-411-49              | 60-795-10             | 60-805-10             |
| .132            | 3.35  | .183             | 4.65  | .026           | 0.66 | 60-011-11                        | 60-411-50              | 60-795-11             | 60-805-11             |
| .125            | 3.18  | .250             | 6.35  | .063           | 1.59 | 60-011-21                        | 60-411-51              | 60-795-21             | 60-805-21             |
| .188            | 4.78  | .313             | 7.95  | .063           | 1.59 | 60-011-22                        | 60-411-52              | 60-795-22             | 60-805-22             |
| .188            | 4.78  | .375             | 9.53  | .094           | 2.38 | 60-011-23                        | 60-411-53              | 60-795-23             | 60-805-23             |
| .250            | 6.35  | .375             | 9.53  | .063           | 1.59 | 60-011-24                        | 60-411-54              | 60-795-24             | 60-805-24             |
| .250            | 6.35  | .438             | 11.11 | .094           | 2.38 | 60-011-25                        | 60-411-55              | 60-795-25             | 60-805-25             |
| .250            | 6.35  | .500             | 12.70 | .125           | 3.18 | 60-011-26                        | 60-411-56              | 60-795-26             | 60-805-26             |
| .313            | 7.94  | .500             | 12.70 | .094           | 2.38 | 60-011-27                        | 60-411-57              | 60-795-27             | 60-805-27             |
| .375            | 9.53  | .500             | 12.70 | .063           | 1.59 | 60-011-28                        | 60-411-58              | 60-795-28             | 60-805-28             |
| .375            | 9.53  | .563             | 14.29 | .094           | 2.38 | 60-011-29                        | 60-411-59              | 60-795-29             | 60-805-29             |
| .375            | 9.53  | .625             | 15.88 | .125           | 3.18 | 60-011-30                        | 60-411-60              | 60-795-30             | 60-805-30             |
| .500            | 12.70 | .688             | 17.46 | .094           | 2.38 | 60-011-31                        | 60-411-61              | 60-795-31             | 60-805-31             |
| .500            | 12.70 | .750             | 19.05 | .125           | 3.18 | 60-011-32                        | 60-411-62              | 60-795-32             | 60-805-32             |
| .625            | 15.88 | .875             | 22.23 | .125           | 3.18 | 60-011-33                        | 60-411-63              | 60-795-33             | 60-805-33             |
| .625            | 15.88 | .938             | 23.82 | .156           | 3.97 | 60-011-34                        | 60-411-64              | 60-795-34             | 60-805-34             |
| .750            | 19.05 | 1.000            | 25.40 | .125           | 3.18 | N/A                              | 60-411-65              | N/A                   | N/A                   |

Values listed are typical and may vary. Typical hardness: 50 Shore A and 60 Shore A. 50 foot coils (~15m). Double bagged. Material certificate and lot traceability included.\*

**IN ACCORDANCE WITH**  
ISO: ISO 10993-1  
FDA: FDA 21CFR 177-2600  
USP: USP-CLASS VI  
EP: EP 3.1.9  
(EP: EP 3.1.9 without appearance of solution)

\* Individual measured values may differ from mean values. These values are not to be considered as product specifications. Non-implantable, non-sterile.

## TYPICAL MATERIAL PROPERTIES AS CURED

|                                       |      |      |      |      |
|---------------------------------------|------|------|------|------|
| Specific Gravity [g/cm <sup>3</sup> ] | 1.16 | 1.15 | 1.14 | 1.15 |
| Durometer Hardness, Shore A           | 50   | 60   | 50   | 50   |
| Tear Strength, Die B, ppi             | 262  | 218  | 230  | 270  |
| Tensile Strength, Die C, psi          | 1473 | 1385 | 1350 | 1400 |
| Elongation [%]                        | 903  | 771  | 810  | 880  |

# HELIXMARK®

## PERISTALTIC PUMP TUBING

HelixMark peristaltic pump tubing is designed and manufactured for use with peristaltic pumps and other applications with higher effective forces. A special production process designed to meet these requirements ensures that the products provide greater stability and capacity to withstand high stress. Offered in a range of sizes suitable for use with all commonly used pump types. The tubing is individually packaged in pre-cut lengths of 25 feet.



| INSIDE DIAMETER |       | OUTSIDE DIAMETER |       | WALL THICKNESS |      | FITS PUMP TUBE SIZE | ISO, FDA, USP |
|-----------------|-------|------------------|-------|----------------|------|---------------------|---------------|
| inch            | mm    | inch             | mm    | inch           | mm   | REF                 |               |
| .020            | 0.51  | .146             | 3.71  | .063           | 1.60 | #112                | 60-825-15     |
| .031            | 0.79  | .157             | 3.99  | .063           | 1.60 | #13                 | 60-825-23     |
| .039            | 0.99  | .063             | 1.60  | .012           | 0.31 |                     | 60-825-27     |
| .059            | 1.50  | .099             | 2.52  | .020           | 0.51 |                     | 60-825-37     |
| .063            | 1.60  | .189             | 4.80  | .063           | 1.60 | #14                 | 60-825-43     |
| .063            | 1.60  | .251             | 6.38  | .094           | 2.39 | #119                | 60-825-45     |
| .079            | 2.01  | .119             | 3.02  | .020           | 0.51 |                     | 60-825-51     |
| .099            | 2.52  | .139             | 3.53  | .020           | 0.51 |                     | 60-825-63     |
| .118            | 3.00  | .158             | 4.01  | .020           | 0.51 |                     | 60-825-70     |
| .125            | 3.18  | .251             | 6.38  | .063           | 1.60 | #16                 | 60-825-79     |
| .125            | 3.18  | .313             | 7.95  | .094           | 2.39 | #120                | 60-825-82     |
| .158            | 4.01  | .214             | 5.44  | .028           | 0.71 |                     | 60-825-93     |
| .188            | 4.78  | .314             | 7.98  | .063           | 1.60 | #25                 | 60-825-104    |
| .188            | 4.78  | .376             | 9.55  | .094           | 2.39 | #15                 | 60-825-108    |
| .188            | 4.78  | .388             | 9.86  | .100           | 2.54 | #15TW               | 60-825-110    |
| .188            | 4.78  | .438             | 11.13 | .125           | 3.18 | #123                | 60-825-112    |
| .250            | 6.35  | .376             | 9.55  | .063           | 1.60 | #17                 | 60-825-130    |
| .250            | 6.35  | .438             | 11.13 | .094           | 2.39 | #24                 | 60-825-133    |
| .250            | 6.35  | .450             | 11.43 | .100           | 2.54 | #24TW               | 60-825-136    |
| .250            | 6.35  | .500             | 12.70 | .125           | 3.18 | #26                 | 60-825-139    |
| .250            | 6.35  | .520             | 13.21 | .135           | 3.43 | #26TW               | 60-825-141    |
| .313            | 7.95  | .439             | 11.15 | .063           | 1.60 | #18                 | 60-825-160    |
| .313            | 7.95  | .501             | 12.73 | .094           | 2.39 | #35/121             | 60-825-163    |
| .313            | 7.95  | .629             | 15.98 | .158           | 4.01 | #185                | 60-825-166    |
| .375            | 9.53  | .563             | 14.30 | .094           | 2.39 | #36/122             | 60-825-191    |
| .375            | 9.53  | .625             | 15.88 | .125           | 3.18 | #73                 | 60-825-194    |
| .375            | 9.53  | .645             | 16.38 | .135           | 3.43 | #73TW               | 60-825-197    |
| .375            | 9.53  | .749             | 19.03 | .187           | 4.75 | #70/190             | 60-825-200    |
| .473            | 12.01 | .789             | 20.03 | .158           | 4.01 | #186                | 60-825-230    |
| .500            | 12.70 | .750             | 19.05 | .125           | 3.18 | #82                 | 60-825-243    |
| .500            | 12.70 | .770             | 19.56 | .135           | 3.43 | #82TW               | 60-825-245    |
| .500            | 12.70 | .874             | 22.20 | .187           | 4.75 | #88                 | 60-825-248    |
| .625            | 15.88 | .875             | 22.23 | .125           | 3.18 | #184                | 60-825-262    |
| .625            | 15.88 | .999             | 25.38 | .187           | 4.75 | #189                | 60-825-270    |
| .750            | 19.05 | 1.124            | 28.55 | .187           | 4.75 | #191                | 60-825-310    |
| 1.000           | 25.40 | 1.374            | 34.90 | .187           | 4.75 | #92                 | 60-825-420    |
| 1.000           | 25.40 | 1.400            | 35.56 | .200           | 5.08 | #92TW               | 60-825-428    |

Values listed are typical.  
Typical hardness: 60 Shore A.  
TW= Thick Wall (variance between competition pump numbers), 25 foot coils (~7 m).  
Double bagged. Material certification and lot traceability included.\*

**IN ACCORDANCE WITH**  
ISO: ISO 10993-1  
FDA: FDA 21CFR 177-2600  
USP: USP-CLASS VI  
EP: EP 3.1.9  
(EP): EP 3.1.9 without appearance of solution

\* Individual measured values may differ from mean values. These values are not to be considered as product specifications. Non-implantable, non-sterile.

# HELIXMARK®

## BRAIDED REINFORCED TUBING

HelixMark braided reinforced tubing is designed and manufactured for increased pressure and high temperature applications. Pressure-proof polyester braiding, firmly embedded between two layers of silicone, lends this tubing its particular durability and resistance to pressure. The tubing is individually packaged in pre-cut lengths of 25 feet.



| INSIDE DIAMETER |       | OUTSIDE DIAMETER |       | MAX PRESSURE | ISO, FDA, USP, EP |
|-----------------|-------|------------------|-------|--------------|-------------------|
| inch            | mm    | inch             | mm    | PSI          | REF               |
| .125            | 3.18  | .365             | 9.27  | 705          | 60-664-20         |
| .187            | 4.76  | .447             | 11.35 | 655          | 60-664-30         |
| .250            | 6.35  | .520             | 13.21 | 630          | 60-664-40         |
| .312            | 7.92  | .592             | 15.04 | 555          | 60-664-45         |
| .375            | 9.53  | .655             | 16.64 | 505          | 60-664-50         |
| .500            | 12.70 | .800             | 20.32 | 430          | 60-664-60         |
| .625            | 15.88 | .965             | 24.51 | 355          | 60-664-70         |
| .750            | 15.88 | 1.100            | 27.94 | 280          | 60-664-80         |
| .875            | 22.23 | 1.235            | 31.37 | 255          | 60-664-90         |
| 1.000           | 25.40 | 1.360            | 27.94 | 230          | 60-664-100        |

Values listed are typical.  
Typical hardness: 65 Shore A.  
25 foot coils (~7 m). Double bagged. Material certification and lot traceability included.\*  
Minimum burst pressure measured at 70°F (21°C).

**IN ACCORDANCE WITH**  
ISO: ISO 10993-1  
FDA: FDA 21CFR 177-2600  
USP: USP-CLASS VI  
EP: EP 3.1.9  
(EP): EP 3.1.9 without appearance of solution

\* Individual measured values may differ from mean values. These values are not to be considered as product specifications.  
Non-implantable, non-sterile.



## HELIXMARK® COLOR STRIPE TUBING

HelixMark color stripe tubing helps to maintain a clear overview in complex tubing systems and enables quick and easy identification of individual applications, sizes or functional configurations. The tubing is available with stripes in red, green and white, individually packaged in pre-cut lengths of 50 feet.

Values listed are typical.  
Typical hardness: 60 Shore A.  
50 foot coils (~15 m).  
Double bagged. Material  
certification and lot  
traceability included.\*

**IN ACCORDANCE WITH**  
ISO: ISO 10993-1  
FDA: FDA 21CFR 177-2600  
USP: USP-CLASS VI  
EP: EP 3.1.9  
(EP): EP 3.1.9 without  
appearance of  
solution

| INSIDE<br>DIAMETER |       | OUTSIDE<br>DIAMETER |       | WALL<br>THICKNESS |      | RED STRIPE<br>ISO, FDA, USP | GREEN STRIPE<br>ISO, FDA, USP | WHITE STRIPE<br>ISO, FDA, USP |
|--------------------|-------|---------------------|-------|-------------------|------|-----------------------------|-------------------------------|-------------------------------|
| inch               | mm    | inch                | mm    | inch              | mm   | REF                         | REF                           | REF                           |
| .125               | 3.18  | .250                | 6.35  | .063              | 1.59 | 61-078-21                   | 61-079-21                     | 61-080-21                     |
| .188               | 4.76  | .375                | 9.53  | .094              | 2.38 | 61-078-23                   | 61-079-23                     | 61-080-23                     |
| .250               | 6.35  | .500                | 12.70 | .125              | 3.18 | 61-078-26                   | 61-079-26                     | 61-080-26                     |
| .313               | 7.94  | .500                | 12.70 | .094              | 2.38 | 61-078-27                   | 61-079-27                     | 61-080-27                     |
| .375               | 9.53  | .625                | 15.88 | .125              | 3.18 | 61-078-30                   | 61-079-30                     | 61-080-30                     |
| .500               | 12.70 | .750                | 19.05 | .125              | 3.18 | 61-078-32                   | 61-079-32                     | 61-080-32                     |



## HELIXMARK® CLOSE TOLERANCE TUBING

HelixMark close tolerance silicone tubing maintains particularly tight tolerances with regard to inner diameter and wall thickness and is subjected to stringent quality assurance measures in production. This ensures increased dosing precision in demanding applications. The tubing is individually packaged in pre-cut lengths of 50 feet.

Values listed are typical.  
Typical hardness: 50 Shore A.  
50 foot coils (~15 m).  
Double bagged.\* Material  
certification and lot  
traceability included.

**IN ACCORDANCE WITH**  
ISO: ISO 10993-1  
FDA: FDA 21CFR 177-2600  
USP: USP-CLASS VI  
EP: EP 3.1.9  
(EP): EP 3.1.9 without  
appearance of solution

\* Individual measured values  
may differ from mean  
values. These values are  
not to be considered as  
product specifications. Non-  
implantable, non-sterile.

| INSIDE<br>DIAMETER |       | OUTSIDE<br>DIAMETER |       | WALL<br>THICKNESS | ISO, FDA, USP, EP |
|--------------------|-------|---------------------|-------|-------------------|-------------------|
| inch               | mm    | inch                | mm    | bar               | REF               |
| .125               | 3.18  | .250                | 6.35  | 1.59              | 60-111-21         |
| .188               | 4.76  | .313                | 7.95  | 1.60              | 60-111-22         |
| .250               | 6.35  | .375                | 9.53  | 1.59              | 60-111-24         |
| .250               | 6.35  | .438                | 11.13 | 2.39              | 60-111-25         |
| .375               | 9.53  | .563                | 14.29 | 2.38              | 60-111-29         |
| .375               | 9.53  | .625                | 15.88 | 3.18              | 60-111-30         |
| .500               | 12.70 | .688                | 17.48 | 2.39              | 60-111-31         |
| .500               | 12.70 | .750                | 19.05 | 3.18              | 60-111-32         |
| .625               | 15.88 | .875                | 22.23 | 3.18              | 60-111-33         |



## HELIXMARK® CLAMP GASKETS

HelixMark clamp gaskets ensure reliable sealing of radial plug-in connectors. The gaskets are suitable for all commonly used diameters and sizes and are supplied in packages of 25.

| TYPE     | INSIDE DIAMETER |        | ISO, FDA, USP, EP |
|----------|-----------------|--------|-------------------|
|          | inch            | mm     |                   |
| Mini     | 0.5             | 12.70  | 70-400-05         |
| Mini     | 0.75            | 19.05  | 70-400-07         |
| Standard | 1.0             | 25.40  | 70-400-10         |
| Standard | 1.5             | 38.10  | 70-400-15         |
| Standard | 2.0             | 50.80  | 70-400-20         |
| Standard | 2.5             | 63.50  | 70-400-25         |
| Standard | 3.0             | 76.20  | 70-400-30         |
| Standard | 4.0             | 101.60 | 70-400-40         |
| Standard | 6.0             | 152.40 | 70-400-60         |

Values listed are typical. Typical hardness: 80 Shore A. Please contact customer service for tolerances and for custom size requests. Packaged 25 per zip bag in crush-resistant boxes.\* Material Certification and lot traceability included.

**IN ACCORDANCE WITH**  
 ISO: ISO 10993-1  
 FDA: FDA 21CFR 177-2600  
 USP: USP-CLASS VI  
 EP: EP 3.1.9  
 (EP): EP 3.1.9 without appearance of solution

\* Individual measured values may differ from mean values. These values are not to be considered as product specifications. Non-implantable, non-sterile.



## HELIXMARK® STOPPERS

HelixMark silicone stoppers enable reliable sealing of glass tubes, vials and flasks. The stoppers are suitable for all commonly used diameters and sizes and are supplied in packages of 12.

Values listed are typical. Typical hardness: 50 Shore A. Please contact customer service for tolerances and custom size requests. Packaged 12 per zip bag in crush-resistant boxes.\* Material certification and lot traceability included.

**IN ACCORDANCE WITH**  
 ISO: ISO 10993-1  
 FDA: FDA 21CFR 177-2600  
 USP: USP-CLASS VI  
 EP: EP 3.1.9  
 (EP): EP 3.1.9 without appearance of solution

\* Individual measured values may differ from mean values. These values are not to be considered as product specifications. Non-implantable, non-sterile.

| SZ  | TOP DIAMETER |    | BOTTOM DIAMETER |    | HEIGHT |    | ISO, FDA, USP, EP |
|-----|--------------|----|-----------------|----|--------|----|-------------------|
|     | inch         | mm | inch            | mm | inch   | mm |                   |
| 000 | .512         | 13 | .315            | 8  | .984   | 25 | 70-416-99         |
| 00  | .519         | 15 | .394            | 10 | .984   | 25 | 70-416-90         |
| 0   | .669         | 17 | .669            | 13 | .984   | 25 | 70-416-00         |
| 1   | .748         | 19 | .787            | 14 | .984   | 25 | 70-416-01         |
| 2   | .787         | 20 | .945            | 16 | .984   | 25 | 70-416-02         |
| 3   | .945         | 24 | 1.024           | 18 | .984   | 25 | 70-416-03         |
| 4   | 1.024        | 26 | 1.063           | 20 | .984   | 25 | 70-416-04         |
| 5   | 1.063        | 27 | 1.260           | 23 | .984   | 25 | 70-416-05         |
| 6   | 1.260        | 32 | 1.457           | 30 | .984   | 25 | 70-416-06         |
| 7   | 1.457        | 37 | 1.457           | 30 | .984   | 25 | 70-416-07         |
| 8   | 1.614        | 41 | 1.614           | 33 | .984   | 25 | 70-416-08         |
| 9   | 1.772        | 45 | 1.772           | 37 | .984   | 25 | 70-416-09         |
| 10  | 1.969        | 50 | 1.969           | 42 | .984   | 25 | 70-416-10         |
| 12  | 2.520        | 64 | 2.520           | 54 | .984   | 25 | 70-416-12         |
| 13  | 2.677        | 68 | 2.284           | 58 | .984   | 25 | 70-416-13         |



# HELIXMARK® TWO-HOLE STOPPERS

Pharmaceutical grade silicone stoppers are platinum-cured and ideal for a tight, reliable seal. Two-Hole Stoppers have full traceability down to the raw material, contain no peroxide residues, and are autoclavable. Available in 16 standard sizes, hole diameter ranges from 3mm to 16mm.

Values listed are typical.  
Typical hardness: 50 Shore A.  
Please contact customer service for tolerances and custom size requests.  
Packaged 12 per zip bag in crush-resistant boxes.\*  
Material certification and lot traceability included.

**IN ACCORDANCE WITH**  
ISO: ISO 10993-1  
FDA: FDA 21CFR 177-2600  
USP: USP-CLASS VI  
EP: EP 3.1.9  
(EP): EP 3.1.9 without appearance of solution

\* Individual measured values may differ from mean values. These values are not to be considered as product specifications. Non-implantable, non-sterile.

| SZ  | TOP DIAMETER |    | BOTTOM DIAMETER |    | HEIGHT |    | HOLE DIAMETER |    | ISO, FDA, USP, EP |
|-----|--------------|----|-----------------|----|--------|----|---------------|----|-------------------|
|     | inch         | mm | inch            | mm | inch   | mm | inch          | mm | REF               |
| 000 | .512         | 13 | .315            | 8  | .984   | 25 | .118          | 3  | 70-619-99         |
| 00  | .591         | 15 | .394            | 10 | .984   | 25 | .118          | 3  | 70-619-90         |
| 0   | .669         | 17 | .512            | 13 | .984   | 25 | .118          | 3  | 70-619-00         |
| 1   | .748         | 19 | .551            | 14 | .984   | 25 | .157          | 4  | 70-619-01         |
| 2   | .787         | 20 | .630            | 16 | .984   | 25 | .196          | 5  | 70-619-02         |
| 3   | .945         | 24 | .709            | 18 | .984   | 25 | .196          | 5  | 70-619-03         |
| 4   | 1.024        | 26 | .787            | 20 | .984   | 25 | .196          | 5  | 70-619-04         |
| 5   | 1.063        | 27 | .906            | 23 | .984   | 25 | .236          | 6  | 70-619-05         |
| 6   | 1.260        | 32 | 1.024           | 26 | .984   | 25 | .314          | 8  | 70-619-06         |
| 7   | 1.457        | 37 | 1.181           | 30 | .984   | 25 | .354          | 9  | 70-619-07         |
| 8   | 1.614        | 41 | 1.299           | 33 | .984   | 25 | .393          | 10 | 70-619-08         |
| 9   | 1.772        | 45 | 1.457           | 37 | .984   | 25 | .472          | 12 | 70-619-09         |
| 10  | 1.969        | 50 | 1.654           | 42 | .984   | 25 | .551          | 14 | 70-619-10         |
| 12  | 2.520        | 64 | 2.127           | 54 | .984   | 25 | .623          | 16 | 70-619-12         |
| 13  | 2.677        | 68 | 2.284           | 58 | .984   | 25 | .623          | 16 | 70-619-13         |

# HELIXMARK®

## CUSTOM SERVICES

In addition to the products for the general needs of the medtech and pharmaceutical industry shown in our catalog, we also offer a wide range of options for customer-specific silicone tubing solutions. This allows the configuration of made-to-measure solutions to meet the customer's precise requirements.



**MULTI-LUMEN  
TUBING**



**CUSTOM COLORS**



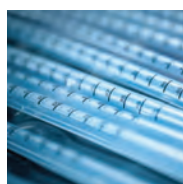
**UV-LIGHT SHIELDING  
TUBING**



**RADIOPAQUE  
TUBING**



**PACKAGING ON  
SPOOLS**



**PAD PRINTING**



**BOTTLE CAP  
ASSEMBLIES**



**MOLDED ENDS**



**TUBING SYSTEMS**



**ADDITIONAL SERVICES**

- Precision cut-to-length
- Tip trimming
- Hole Punching
- Skiving
- Overmolding



**Freudenberg Medical manufactures products exclusively for the medical and pharmaceutical industry. This focus enables us to understand and rapidly and efficiently fulfill our customers' precise requirements. Our capabilities as a supplier and partner in the development of products and solutions are distinguished by exceptional flexibility and innovation.**

We are your global partner for the design, development and production of innovative medical technology and combination products. Our portfolio is comprised of complex medical components and catheter solutions for minimally invasive devices. We are a leading manufacturer not only in the field of precision molded components and tubing in silicone and thermoplastics, but also in coating technologies and the production of metal hypotubes.

Freudenberg Medical is a part of the Freudenberg Group, a technology group with a tradition reaching back over 170 years and a provider of innovative products for more than 30 market segments around the globe.

In our daily work, both our corporation and individual employees are committed to upholding the values for which we all stand:

- Value for customers
- Innovation
- Leadership
- People
- Responsibility and
- Long term orientation

As a development partner, we ensure that every innovation project our customers entrust to us is realized and led to commercial success by our unique combination of technical expertise, a global R & D network, financial stability and enormous flexibility.

# SILICONE CHEMICAL COMPATIBILITIES

- Little or no effect (Volume swell <10%)
- Possible loss of physical properties (Volume swell 10–20%)
- Noticeable change (Volume swell 20–40%)
- Not suitable for service

## Chemical Medium

- Acetaldehyde
- Acetamide
- Acetic Acid, 25% to 60%
- Acetic Anhydride
- Acetone
- Acetylene
- Acrylonitrile
- Alums
- Aluminum Chloride
- Aluminum Salts
- Aluminum Sulfate
- Ammonia Gas, Cold
- Ammonia Gas, Hot
- Ammonium Hydroxide, Concentrated
- Ammonium Nitrate
- Ammonium Phosphate
- Ammonium Salts
- Ammonium Sulfate
- Amyl Acetate
- Amyl Alcohol
- Amyl Borate
- Amyl Chloride
- Amyl Chloronaphthalene
- Amyl Naphthalene
- Aniline
- Aniline Hydrochloride
- Asphalt
- Barium Chloride
- Barium Hydroxide
- Barium Salts
- Beer
- Beet Sugar Liquors
- Benzaldehyde
- Benzene
- Benzoic Acid
- Bleach Liquor
- Borax
- Boric Acid
- Bromine
- Bromobenzene
- Butane
- Butyl Acetate
- Butyl Alcohol

- Butyraldehyde
- Calcium Bisulfide
- Calcium Chloride
- Calcium Hydroxide
- Calcium Hypochlorite
- Calcium Nitrate
- Calcium Salts
- Cane Sugar Liquors
- Carbitol
- Carbolic Acid
- Carbon Dioxide
- Carbon Monoxide
- Carbon Tetrachloride
- Carbonic Acid
- Castor Oil
- Caustic Soda
- Chlorinated Solvents
- Chlorinated Solvents, Dry
- Chlorinated Solvents, Wet
- Chlorobenzene
- Chlorobromomethane
- Chloroform
- Chloronaphthalene
- Chlorosulfonic Acid
- Chlorotoluene
- Chrome Plating Solution
- Chromic Acid
- Citric Acid
- Coconut Oil
- Cod Liver Oil
- Copper Salts
- Corn Oil
- Creosote, Coal Tar
- Creosote, Wood
- Cresol
- Cyclohexane
- Detergent Solutions
- Dextrose
- Diacetone Alcohol
- Dichlorobenzene
- Diethyl Ether
- Diethylamine
- Diethylene Glycol
- Dimethyl Formamide
- Dioctyl Phthalate
- Dioxane
- Diphenyl
- Ethers
- Ethanolamine
- Ethers
- Ethyl Acetate
- Ethyl Acetoacetate
- Ethyl Alcohol
- Ethyl Cellulose
- Ethyl Chloride
- Ethylene
- Ethylene Chlorohydrin

- Ethylene Diamine
- Ethylene Dichloride
- Ethylene Glycol
- Ethylene Oxide
- Ethylene Trichloride
- Fatty Acids
- Ferric Chloride
- Ferric Sulfate
- Fluorobenzene
- Formaldehyde
- Formic Acid
- Fuel Oil
- Fumaric Acid
- Gasoline
- Gelatin
- Glucose
- Glycerin
- Glycols
- Green Sulfate Liquor
- Halowax Oil
- Hexaldehyde
- Hexane
- Hydrazine
- Hydrobromic Acid
- Hydrochloric Acid, 3 Molar to 158°F
- Hydrochloric Acid, Hot 37%
- Hydrocyanic Acid
- Hydrofluoric Acid, Concentrated Hot
- Hydrofluorosilicic Acid
- Hydrogen Gas
- Hydrogen Peroxide
- Hydrogen Sulfide, Dry Cold
- Hydrogen Sulfide, Wet Cold
- Isobutyl Alcohol
- Isooctane
- Isopropanol
- Isopropyl Acetate
- Kerosene
- Lactic Acid, Cold
- Lard
- Lead Acetate
- Lead Nitrate
- Linseed Oil
- Lithium Hydroxide
- Lubricating Oils, Petroleum
- Lye
- Magnesium Chloride
- Magnesium Salts
- Magnesium Sulfate
- Manganese Sulfate
- Mercury
- Mesityl Oxide
- Methane
- Methanol
- Methyl Bromide

- Methyl Chloride
- Methylene Di-P-Phenylene Isocyanate
- Methyl Ethyl Ketone
- Methyl Isobutyl Ketone
- Methyl Methacrylate
- Methylene Chloride
- Milk
- Mineral Oils
- Monochlorobenzene
- Naphtha
- Naphthalene
- Natural Gas
- Nickel Chloride
- Nickel Salts
- Nitric Acid, 50–100%
- Nitrobenzene
- Nitroethane
- Nitrogen
- Nitrogen Oxides
- Animal Oil
- Lubricating Oils, Petroleum
- Mineral Oils
- Vegetable Oils
- Oleic Acid
- Oxalic Acid
- Oxygen, Cold
- Ozone
- Paraffins
- Perchloric Acid
- Perchloroethylene
- Petrol
- Phenol
- Phosphoric Acid
- Phthalic Acid
- Picric Acid
- Pinene
- Potassium Carbonate
- Potassium Chlorate
- Potassium Cyanide
- Potassium Dichromate
- Potassium Hydroxide
- Potassium Iodide
- Potassium Nitrate
- Potassium Salts
- Producer Gas
- Propane
- Pyridine
- Pyrrole
- Sea Water
- Sewage
- Silicone Oils
- Silver Nitrate
- Soap Solutions
- Soda Ash
- Sodium Bicarbonate
- Sodium Bisulfate

- Sodium Bisulfide
- Sodium Borate
- Sodium Chloride
- Sodium Cyanide
- Sodium Hydroxide
- Sodium Hypochlorite
- Sodium Nitrate
- Sodium Perborate
- Sodium Peroxide
- Sodium Phosphate, Dibasic
- Sodium Sulfate
- Sodium Sulfide
- Sodium Sulfite
- Sodium Thiosulfate
- Soybean Oil
- Stannic Chloride
- Stannous Chloride
- Stearic Acid
- Stoddard Solvent
- Styrene
- Sulfur Chloride
- Sulfur Dioxide
- Sulfur Hexafluoride
- Sulfur Dioxide
- Sulfur Trioxide
- Sulfuric Acid, Concentrated Room Temp
- Sulfuric Acid, Concentrated to 158°F
- Sulfurous Acid
- Tannic Acid
- Tar, Bituminous
- Tartaric Acid
- Tributyl Mercaptan
- Tin Chloride
- Toluene
- Trichloroethane
- Trichloroethylene
- Tricresyl Phosphate
- Turpentine
- Vegetable Oils
- Vinegar
- Water
- Whiskey
- Wine
- Xylene
- Xylol
- Yeast, Aqueous

**Note:** Volume swell is only one indicator of elastomer fluid compatibility and may be based on the solubility parameter alone. Fluid attack on the backbone of the polymer may show up as change in physical properties such as Tensile Strength, Elongation at Break, and Hardness. Elevated temperature and extended exposure times may create more aggressive conditions than cited in this guide.

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