# TECHNICAL DATA
## NATURAL & SYNTHETIC FIBRES

Goonvean FIBRES

## Natural Fibres

| | Cotton | Wool | Viscose Rayon | Cellulose |
|---|---|---|---|---|
| **Specific Gravity (g $cm^3$)** | 1.54 | 1.28-1.32 | 1.51 | 1.54 |
| **Tenacity (cN/dtex) Dry** | 1.5 –2.1 | 0.9-1.5 | 1.8-2.2 | -- |
| **Wet** | 1.3-1.8 | 0.7-1.4 | 0.9-1.2 | -- |
| **Tensile Strength (Mpa)** | 230 | 120-200 | 685-850 | -- |
| **Elongation at Break (%)** | 8 | 25-35 | 6-10 | -- |
| **Shrinkage @ 150$^0$C (%)** | 0 | -- | 0 | -- |
| **Melting Point ($^0$C)** | >230 | chars | >240 | Chars > 230 |
| **Absorbency (%)** | 7-8 | 13-15 | high | 7.5 |
| **Limiting Oxygen Index** | 18 | 25 | 29 | -- |
| **Heat Resistance ($^0$C)** | <150 | <120 | <150 | <150 |
| **Flammability** | flammable | self extinguish | flammable | flammable |
| **Acid Resistance** | poor | limited | poor | poor |
| **Alkali Resistance** | limited | poor/limited | limited | limited |
| **Resistance to Organic Solvents** | good | good | poor | good |
| **Resistance to Oxidising Agents** | limited | poor | poor | -- |
| **Biological Resistance** | poor | poor | poor | poor |
| **Abrasion Resistance** | good | moderate | good-mod | -- |
| **Resistance to Sunlight** | fair | fair | limited | -- |
| **Dye Affinity** | good | good | good | -- |

**Other natural fibres include Hemp, Bamboo, Coir and Silk.**





ISO/TS 16949 BUREAU VERITAS Certification

# Synthetic Fibres

| | Nylon | Polyester | Polypropylene | Polyethylene |
|---|---|---|---|---|
| **Specific Gravity (g $cm^3$)** | 1.14 | 1.38 | 0.91-0.94 | 0.96 |
| **Tenacity (cN/dtex) Dry** | 3.0-4.5 | 3.0-6.0 | 3.8-5.0 | 2.0-4.0 |
| **Wet** | 2.7-4.0 | 3.0-5.8 | -- | -- |
| **Tensile Strength (Mpa)** | 850-950 | 1100 | 240-410 | 175-600 |
| **Elongation at Break (%)** | 16-19 | 13 | 15-25 | 10-20 |
| **Shrinkage at 150$^0$C[a] (%)** | 5-6 | 11 | -- | -- |
| **100$^0$C[b] (%)** | -- | -- | 5-10 | 5-15 |
| **Melting Point ($^0$C)** | 215(6)<br>260(6,6) | >230 | 160-170 | 130 |
| **Absorbency (%)** | 4.5 | 0.1-0.2 | <0.1 | <0.1 |
| **Limiting Oxygen Index** | 20 | 21 | 27 | -- |
| **Heat Resistance ($^0$C)** | <180 | <180 | <130 | <90 |
| **Flammability** | moderate | moderate | moderate-low | moderate |
| **Acid Resistance** | poor/mod | good | good | good |
| **Alkali Resistance** | good | poor in strong | good | good |
| **Resistance to Organic Solvents** | good | good | good | good |
| **Resistance to Oxidising Agents** | good | good | good | fair |
| **Biological Resistance** | good | good | excellent | excellent |
| **Abrasion Resistance** | v. good | v. good | good | good |
| **Resistance to Sunlight** | good | good | limited(needs stabilisation) | limited(needs stabilisation) |
| **Dye Affinity** | good | good | limited | limited |

# Synthetic Fibres

| | Polyacrylonitrile | Mod-Acrylic | Arselon® |
|---|---|---|---|
| **Specific Gravity (g $cm^{-3}$)** | 1.18 | 1.8 | 1.43 |
| **Tenacity (cN/dtex)** Dry | 3.8-4.1 | 2.4 | -- |
| Wet | -- | -- | -- |
| **Tensile Strength (Mpa)** | 350-550 | -- | 400 |
| **Elongation at Break (%)** | 8-15 | 30 | -- |
| **Melting Point ($^0$C)** | >230 chars | >230 | Fuses at 450 |
| **Absorbency (%)** | <2.0 | <2.0 | <9.0 |
| **Limiting Oxygen Index** | 27 | 28 | 30 |
| **Heat Resistance ($^0$C)** | <180 | <180 | <250 |
| **Flammability** | low | very low | very low |
| **Acid Resistance** | good | good | good |
| **Alkali Resistance** | good | poor | good |
| **Resistance to Organic Solvents** | good | good | good |
| **Resistance to Oxidising Agents** | good | good | good |
| **Biological Resistance** | good | good | good |
| **Abrasion Resistance** | moderate | good | good |
| **Resistance to Sunlight** | excellent | excellent | excellent |
| **Dye Affinity** | fair/good | fair/good | fair/good |

Arselon® is a trademark of Khimvolokno

# Synthetic Fibres

| | Conex® | Nomex® | Aramid |
|---|---|---|---|
| **Specific Gravity (g $cm^{-3}$)** | 1.38 | 1.38 | 1.44 |
| **Tenacity (cN/dtex)** Dry | 4.4 - 4.9 | 4.4-4.5 | 15.8-20.3 |
| Wet | 4 - 4.4 | 2.6-3.6 | -- |
| **Tensile Strength (Mpa)** | 590 - 690 | 445 - 535 | 2750 |
| **Elongation at Break (%)** | 35 - 45 | 27 - 37 | 3.7 |
| **Shrinkage at 150$^0$C$^a$ (%)** | -- | 2 | 0.2 |
| **Melting Point ($^0$C)** | 400 - 430 | does not melt but pyrolyses >300 | >300 |
| **Absorbency (%)** | -- | <12 | <4.5 |
| **Limiting Oxygen Index** | 30 | 09 | -- |
| **Heat Resistance ($^0$C)** | <250 | <250 | <250 |
| **Flammability** | flame resistant | flame resistant | flame resistant |
| **Acid Resistance** | moderate-good | moderate-good | moderate-good |
| **Alkali Resistance** | good | good | good |
| **Resistance to Organic Solvents** | good | good | good |
| **Resistance to Oxidising Agents** | good | good | good |
| **Biological Resistance** | excellent | good | excellent |
| **Abrasion Resistance** | good | good | good |
| **Resistance to Sunlight** | limited | limited | limited |
| **Dye Affinity** | limited | limited | limited |

Nomex® is a trademark of DuPont
Conex® is a trademark of Teijin