



Armored Cables for Hazardous Locations

Marmon Industrial Energy & Infrastructure is one of the most reputable industrial cable manufacturers in the world. Manufactured in the United States of America with rigorous attention to detail and quality standards, Marmon IEI's products are specified by many industry leaders for some of the most challenging projects. As part of the Marmon Group and Berkshire Hathaway, Marmon IEI has the financial backing, technical support, and resource sharing of other Marmon Wire & Cable companies, giving Marmon IEI an advantage when dealing with even the most complex requirements. Marmon IEI's core strengths include the ability to design cables to meet the stringent requirements of our customers, fast delivery to meet on-site needs, and the capability to meet various regulatory standards.

Gardex®

Marmon Gardex® Type MC-HL and ITC-HL continuously-corrugated, welded armor cables have been developed and improved over the last 50 years. Marmon IEI specializes in MC-HL, ITC-HL, and Fieldbus cables, as well as custom cables that use category communication cable or optical fibers as core material.

Gardex® is a self-contained cable conduit system with an impervious continuously-corrugated armor. This armor provides a vapor-tight, metallic sheath to protect the cable. An overall polymeric jacket and an equipment grounding conductor(s) are also provided to meet hazardous location ("–HL") requirements.

Gardex® Type MC-HL and ITC-HL cables are listed for use in Class I, Division 1 hazardous locations. A Class I, Division 1 location is defined as an area where ignitable concentrations of flammable gases or vapors are present in normal operating conditions. The Gardex® armor system is recognized as two of the four approved wiring methods in NEC Article 501.10.A.1.

Gardex® cables are also suitable for Class I, Division 2 applications.

Gardex® Armored Cables for Hazardous Locations

- Self-Contained Conduit and Wiring System
- Provides a Hermetically Sealed Barrier
- Electrostatic shield when grounded properly
- Provides Ruggedness and Physical Protection for Cables against Workplace and Installation Hazards
- Armor is Impact and Crush Resistant to UL 2225 Standards
- Aluminum Sheath Provides Superior Electrical Shielding Performance for AC Drive Applications
- Outer Jackets are Sunlight, Oil, and Moisture Resistant
- Oil Resistant II or ARCTIC-GRADE (-40°C) Jackets are available
- All Jackets have Printed Sequential Length Markings (Feet or Meter)



Instrumentation and Control Cables, configurations and options:

Instrumentation:

300V, 105 °C, UL Type PLTC/ITC & ITC-HL, or 600V, 90 °C, UL Type MC-HL

Control:

300V, 105 °C, UL Type ITC-HL, or 600V, 90 °C, UL Type MC-HL

Gardex® is a UL-listed instrumentation cable that provides outstanding performance in process control applications which are subject to high current or voltage interference. It offers a variety of conductor combinations consisting of shielded or unshielded pairs, triads, and multiple conductors with or without overall shielding. Various insulation and jacketing materials are available to suit special requirements or standards. Gardex® cables may be installed in trays, ducts, or conduits, and may also be self-supported or direct-buried.

Construction

| | |
|--------------------------|---|
| Conductor Types: | Annealed, Bare Copper, Class “B” Stranded, per ASTM B3 & B8 Annealed, Tinned Copper, Class “B” Stranded, per ASTM B3, B8, & B33 |
| Insulation Types: | Instrumentation: PVC ⁱⁱ , PVC/Nylon, XLPE Control: PVC/Nylon ⁱ , XLPE |
| Color Code: | Instrumentation: ICEA Method I, Table E1: Black & White (Pairs); Black, White, & Red (Triads), with Printed Number Control: ICEA Method 4, Table 3: Black & Numbered, ICEA Method I, Table E2 |
| Shielding: | Aluminum/Polyester Shield, with Drain Wire |
| Inner Jacket: | PVC, ARCTIC-GRADE PVC |
| Armor: | Gardex® Continuously-Corrugated, Welded Aluminum |
| Overall Jacket | PVC, ARCTIC-GRADE PVC, OIL RES PVC |
| Special Lengths: | Continuous lengths of up to 10,000 ft can be provided based on cable configuration. Please contact your Marmon IEI customer service representative with your specific needs. |

Performance Standards

- UL-Listed, Type MCⁱ, per UL 1569, or Type PLTC/ITCⁱⁱ, per UL 13 & UL 2250, for use in Class I, Division 2 Hazardous Locations
- UL-Listed, Type ITC-HLⁱⁱ, or MC-HLⁱ, per UL 2225, for use in Class I, Division 1 Hazardous Locations
- UL-Approved and Marked for Cable Tray “CT” use
- UL-Approved and Marked with “FT-4/IEEE 1202” Flame Test Designation
- UL-Approved and Marked with “-40 °C” Designation, per ULⁱⁱⁱ
- Cables Pass 70,000 BTU/hr Vertical Tray Flame Test, per UL 1581, UL 1685, ICEA, & IEEE 383

Note:

- ⁱ 600V Applications Only
- ⁱⁱ 300V Applications Only
- ⁱⁱⁱ XLPE Insulation & ARCTIC-GRADE Jacket Required



Custom Gardex® Cables

Marmon Industrial Energy & Infrastructure offers a variety of custom cables that you can specify:

ITC-HL CAT5E OR 6 Ethernet Cables with Gardex® Armor:

These are industrial-type, ruggedized Cat5e Ethernet cables that use larger conductors. The Gardex® armor enables the cable to be used in Class I, Division 1 environments.

Fiber and Power Composite Cables:

We can combine power and fiber cables into one composite cable and apply a Gardex® armor.

Gardex® Instrumentation Cable – Specifications

| Electrical Properties ⁱ | Units | | Conductor Size - 300V | | | | Conductor Size - 600V | | | |
|------------------------------------|-------|------|----------------------------|------|----------------------------|------|----------------------------|------|----------------------------|------|
| | | | 18 AWG/0.8 mm ² | | 16 AWG/1.3 mm ² | | 18 AWG/0.8 mm ² | | 16 AWG/1.3 mm ² | |
| Resistance [R] | Ω/Mft | Ω/km | 6.7 | 21.9 | 4.2 | 13.7 | 6.7 | 21.9 | 4.2 | 13.7 |
| Mutual Capacitance | | | | | | | | | | |
| Type 185W | pF/ft | pF/m | 56 | 184 | 64 | 210 | 38 | 125 | 43 | 141 |
| Type 187W | pF/ft | pF/m | 56 | 184 | 64 | 210 | 38 | 125 | 43 | 141 |
| Type 2X5W | pF/ft | pF/m | 31 | 102 | 35 | 115 | 21 | 69 | 24 | 79 |
| Type 2X7W | pF/ft | pF/m | 31 | 102 | 35 | 115 | 21 | 69 | 24 | 79 |
| L/R Ratio | μH/Ω | | 13 | | 20 | | 16 | | 24 | |
| Inductance [L] | μH/ft | μH/m | 0.18 | 0.58 | 0.17 | 0.54 | 0.22 | 0.71 | 0.20 | 0.66 |

ⁱ Electrical Properties based on 7-Strand Bare Copper

| Part Number–300V PLTC/ITC | Pairs | Nominal O.D. | | Weight | | Outer Jacket Thickness | |
|--|-------|--------------|------|--------|-------|------------------------|------|
| | | in | mm | lb/ft | kg/m | mils | mm |
| Conductor Size: 18 AWG/0.8 mm² | | | | | | | |
| 185W–8860R | 1 | 0.500 | 12.7 | 0.134 | 0.199 | 50 | 1.27 |
| 187W–80280 | 2 | 0.680 | 17.3 | 0.228 | 0.339 | 50 | 1.27 |
| 187W–80480 | 4 | 0.800 | 20.3 | 0.313 | 0.466 | 50 | 1.27 |
| 187W–80880 | 8 | 0.940 | 23.9 | 0.434 | 0.646 | 50 | 1.27 |
| 187W–81280 | 12 | 1.170 | 29.7 | 0.606 | 0.902 | 50 | 1.27 |
| 187W–82480 | 24 | 1.430 | 36.3 | 0.947 | 1.409 | 50 | 1.27 |
| Conductor Size: 16 AWG/1.3 mm² | | | | | | | |
| 185W–6860R | 1 | 0.540 | 13.7 | 0.155 | 0.231 | 50 | 1.27 |
| 187W–60280 | 2 | 0.760 | 19.3 | 0.283 | 0.421 | 50 | 1.27 |
| 187W–60480 | 4 | 0.880 | 22.4 | 0.377 | 0.561 | 50 | 1.27 |
| 187W–60880 | 8 | 1.120 | 28.4 | 0.586 | 0.872 | 50 | 1.27 |
| 187W–61280 | 12 | 1.230 | 31.2 | 0.730 | 1.086 | 50 | 1.27 |
| 187W–62480 | 24 | 1.680 | 42.7 | 1.296 | 1.929 | 60 | 1.52 |

| Part Number–600V MC-HL | Pairs | Nominal O.D. | | Weight | | Outer Jacket Thickness | |
|--|-------|--------------|------|--------|-------|------------------------|------|
| | | in | mm | lb/ft | kg/m | mils | mm |
| Conductor Size: 18 AWG/0.8 mm² | | | | | | | |
| 2X5W–89610–200SI | 1 | 0.640 | 16.3 | 0.182 | 0.271 | 50 | 1.27 |
| 2X7W–80260–200SI | 2 | 0.840 | 21.3 | 0.290 | 0.431 | 50 | 1.27 |
| 2X7W–80460–200SI | 4 | 0.980 | 24.9 | 0.387 | 0.576 | 50 | 1.27 |
| 2X7W–80860–200SI | 8 | 1.230 | 31.2 | 0.555 | 0.827 | 50 | 1.27 |
| 2X7W–81260–200SI | 12 | 1.360 | 34.5 | 0.692 | 1.030 | 50 | 1.27 |
| 2X7W–82460–200S2 | 24 | 1.920 | 48.8 | 1.264 | 1.881 | 60 | 1.52 |
| Conductor Size: 16 AWG/1.3 mm² | | | | | | | |
| 2X5W–69610–200SI | 1 | 0.640 | 16.3 | 0.191 | 0.285 | 50 | 1.27 |
| 2X7W–60260–200SI | 2 | 0.940 | 23.9 | 0.352 | 0.524 | 50 | 1.27 |
| 2X7W–60460–200SI | 4 | 1.020 | 25.9 | 0.439 | 0.654 | 50 | 1.27 |
| 2X7W–60860–200SI | 8 | 1.230 | 31.2 | 0.630 | 0.937 | 50 | 1.27 |
| 2X7W–61260–200SI | 12 | 1.430 | 36.3 | 0.822 | 1.223 | 50 | 1.27 |
| 2X7W–62460–200SI | 24 | 2.060 | 52.3 | 1.556 | 2.316 | 60 | 1.52 |

Gardex® Control Cable – Specifications

| Electrical Properties ⁱ | Units | | Conductor Size | | | | | |
|------------------------------------|-------|------|----------------------------|------|----------------------------|------|----------------------------|------|
| | | | 14 AWG/2.1 mm ² | | 12 AWG/3.3 mm ² | | 10 AWG/5.3 mm ² | |
| Resistance [R] | Ω/Mft | Ω/km | 2.6 | 8.6 | 1.7 | 5.4 | 1.0 | 3.4 |
| Mutual Capacitance Type 2X3W | pF/ft | pF/m | 13 | 43 | 14 | 46 | 15 | 49 |
| L/R Ratio | μH/Ω | | 36 | | 53 | | 79 | |
| Inductance [L] | μH/ft | μH/m | 0.19 | 0.62 | 0.18 | 0.58 | 0.17 | 0.54 |

ⁱ Electrical Properties based on 7-Strand Bare Copper

| Part Number–600V MC-HL | Conductors | Nominal O.D. | | Weight | | Outer Jacket Thickness | |
|--|------------|--------------|------|--------|-------|------------------------|------|
| | | in | mm | lb/ft | kg/m | mils | mm |
| Conductor Size: 14 AWG/2.1 mm² | | | | | | | |
| 2X3W-4036L-230GIMC | 3 | 0.720 | 18.3 | 0.253 | 0.377 | 50 | 1.27 |
| 2X3W-4046L-230GIMC | 4 | 0.760 | 19.3 | 0.284 | 0.423 | 50 | 1.27 |
| 2X3W-4056L-230GIMC | 5 | 0.840 | 21.3 | 0.330 | 0.491 | 50 | 1.27 |
| 2X3W-4076L-230GIMC | 7 | 0.940 | 23.9 | 0.405 | 0.603 | 50 | 1.27 |
| 2X3W-4096L-230GIMC | 9 | 1.020 | 25.9 | 0.465 | 0.692 | 50 | 1.27 |
| 2X3W-4126L-230GIMCI | 12 | 1.120 | 28.4 | 0.569 | 0.832 | 50 | 1.27 |
| Conductor Size: 12 AWG/3.3 mm² | | | | | | | |
| 2X3W-2036L-230GIMC | 3 | 0.800 | 20.3 | 0.315 | 0.469 | 50 | 1.27 |
| 2X3W-2046L-230GIMCI | 4 | 0.840 | 21.3 | 0.353 | 0.525 | 50 | 1.27 |
| 2X3W-2056L-230GIMCI | 5 | 0.940 | 23.9 | 0.422 | 0.628 | 50 | 1.27 |
| 2X3W-2076L-230GIMCI | 7 | 0.980 | 24.9 | 0.485 | 0.721 | 50 | 1.27 |
| 2X3W-2096L-230GIMCI | 9 | 1.120 | 28.4 | 0.588 | 0.874 | 50 | 1.27 |
| 2X3W-2126L-230GIMC | 12 | 1.230 | 31.2 | 0.699 | 1.041 | 50 | 1.27 |
| Conductor Size: 10 AWG/5.3 mm² | | | | | | | |
| 2X3W-1036L-230GIMC | 3 | 0.880 | 22.4 | 0.400 | 0.595 | 50 | 1.27 |
| 2X3W-1046L-230GIMCI | 4 | 0.940 | 23.9 | 0.456 | 0.678 | 50 | 1.27 |
| 2X3W-1056L-230GIMC | 5 | 1.020 | 25.9 | 0.526 | 0.782 | 50 | 1.27 |
| 2X3W-1076L-230GIMC | 7 | 1.065 | 27.1 | 0.619 | 0.921 | 50 | 1.27 |
| 2X3W-1096L-230GIMC | 9 | 1.230 | 31.2 | 0.748 | 1.113 | 50 | 1.27 |
| 2X3W-1126L-230GIMC | 12 | 1.300 | 33.0 | 0.888 | 1.322 | 50 | 1.27 |

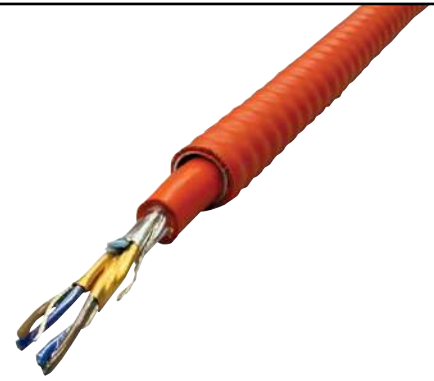


Gardex® Fieldbus

300V, 105 °C, UL Type PLTC/ITC & ITC-HL

600V, 90 °C, UL Type MC-HL

Gardex® Fieldbus cables are UL-listed and FIELDCOMM GROUP registered digital data cables conforming to FF-844 or ISA protocol. Gardex® offers shielded pairs with overall shielding in numerous pair counts. Various jacketing materials are available to suit special requirements or standards. Gardex® cables may be installed in trays, ducts, or conduits, and may also be self-supported or direct-buried.



Construction

| | |
|---|--|
| Conductor Types | 18 or 16 AWG, Annealed, Tinned Copper, Class “B” Stranded, per ASTM B3, B8 & B33 18 or 16 AWG, Annealed, Bare Copper, Class “B” Stranded, per ASTM B3 & B8 ^{vii} |
| Insulation | XLPE |
| Circuit Identification & Color Codes | Brown & Blue (FIELDCOMM STD.) Orange & Blue Black & White, White Numbered Custom Color Codes ^{vii} |
| Shielding | Aluminum/Polyester Shield, with Drain Wire |
| Shielded Pair Jacket^{viii} | Flame-Retardant, PVC, Black Flame-Retardant, Arctic-Grade PVC, Black Special Colors ^{vii} |
| Inner Jacket | Flame-Retardant, PVC, Orange (FIELDCOMM STD.) Flame-Retardant, Arctic-Grade PVC, Black ^{vii} |
| Armor | Gardex® Continuously-Corrugated, Welded Aluminum |
| Outer Jacket | Flame-Retardant, PVC, Orange (FIELDCOMM STD.) Flame-Retardant, Arctic-Grade PVC, Black ^{vii} Special Colors ^{vii} |

Performance Standards

Note:

- ⁱ 600V Applications Only
- ⁱⁱ 300V Applications Only
- ⁱⁱⁱ XLPE Insulation & Arctic-Grade Jacket Required
- ^{iv} 600V Applications Only, Green Ground Required
- ^v Insulation at -70°C, Jacket at -51°C
- ^{vi} Tinned Copper Conductor Required
- ^{vii} Available by Request Only

- UL Listed, Type MCⁱ, per UL 1569, or Type PLTC/ITCⁱⁱ, per UL 13 & UL 2250, for use in Class I, Division 2 Hazardous Locations
- UL Listed, Type ITC-HLⁱⁱ, or MC-HLⁱ, per UL 2225, for use in Class I, Division 1 Hazardous Locations
- UL-Approved and Marked for Cable Tray “CT” Use
- UL-Approved and Marked with “FT-4/IEEE 1202” Flame Test Designation
- UL-Approved and Marked with “-40°C” Designation, per ULⁱⁱⁱ
- Cables Pass 70,000 BTU/hr Vertical Tray Flame Test, per UL 1581, UL 1685, ICEA, & IEEE 383
- CUL-Listed as CEC Type ACIC in accordance with CSA Standard C22.2 No. 239^{iv}
- Passes ASTM D746-04 Brittleness Temperature Impact Test at -75 °C^v
- Meets Fieldbus Foundation FF-844 Specifications, Marked as “Type A HI Fieldbus Cable”^{vi}
- Meets ISA 50.02 Part 2 Fieldbus Standard, for Use in Industrial Control Systems
- Meets IEC 61158-2 Requirements for Industrial Fieldbus Cable

Gardex® Fieldbus Cable – Specifications

| Electrical Properties ⁱ | Units | | Conductor Size - 300V | | | | Conductor Size - 600V | | | |
|------------------------------------|-------|------|----------------------------|------|----------------------------|------|----------------------------|------|----------------------------|------|
| | | | 18 AWG/0.8 mm ² | | 16 AWG/1.3 mm ² | | 18 AWG/0.8 mm ² | | 16 AWG/1.3 mm ² | |
| Resistance [R] | Ω/Mft | Ω/km | 6.9 | 22.7 | 4.4 | 14.3 | 6.9 | 22.7 | 4.4 | 14.3 |
| Mutual Capacitance | | | | | | | | | | |
| Type FB5W | pF/ft | pF/m | 23 | 75 | 24 | 79 | 21 | 69 | 22 | 72 |
| Type FB7W | pF/ft | pF/m | 23 | 75 | 24 | 79 | 21 | 69 | 22 | 72 |
| L/R Ratio | μH/Ω | | 15 | | 23 | | 16 | | 24 | |
| Inductance [L] | μH/ft | μH/m | 0.20 | 0.67 | 0.20 | 0.66 | 0.22 | 0.71 | 0.21 | 0.69 |

ⁱ Electrical Properties based on 7-Strand Bare Copper

| Part Number–300V PLTC/ITC | Pairs | Nominal O.D. | | Weight | | Outer Jacket Thickness | |
|--|-------|--------------|------|--------|-------|------------------------|------|
| | | in | mm | lb/ft | kg/m | mils | mm |
| Conductor Size: 18 AWG/0.8 mm² | | | | | | | |
| FB5W–8831A-274 | 1 | 0.580 | 14.7 | 0.163 | 0.242 | 50 | 1.27 |
| FB7W–80230-374 | 2 | 0.800 | 20.3 | 0.275 | 0.411 | 50 | 1.27 |
| FB7W–80430-374 | 4 | 0.940 | 23.9 | 0.370 | 0.550 | 50 | 1.27 |
| FB7W–80830-374 | 8 | 1.170 | 29.7 | 0.544 | 0.810 | 50 | 1.27 |
| FB7W–81230-374 | 12 | 1.300 | 33.0 | 0.696 | 1.035 | 50 | 1.27 |
| FB7W–82430-374 | 24 | 1.830 | 46.5 | 1.236 | 1.839 | 60 | 1.52 |
| Conductor Size: 16 AWG/1.3 mm² | | | | | | | |
| FB5W–6861A-274 | 1 | 0.640 | 16.3 | 0.191 | 0.285 | 50 | 1.27 |
| FB7W–60260-374 | 2 | 0.940 | 23.9 | 0.350 | 0.521 | 50 | 1.27 |
| FB7W–60460-374 | 4 | 1.065 | 27.1 | 0.470 | 0.699 | 50 | 1.27 |
| FB7W–60860-374 | 8 | 1.300 | 33.0 | 0.678 | 1.009 | 50 | 1.27 |
| FB7W–61260-374 | 12 | 1.560 | 39.6 | 0.911 | 1.355 | 50 | 1.27 |
| FB7W–62460-374 | 24 | 2.140 | 54.4 | 1.694 | 2.521 | 60 | 1.52 |

| Part Number–600V MC-HL | Pairs | Nominal O.D. | | Weight | | Outer Jacket Thickness | |
|--|-------|--------------|------|--------|-------|------------------------|------|
| | | in | mm | lb/ft | kg/m | mils | mm |
| Conductor Size: 18 AWG/0.8 mm² | | | | | | | |
| FB5W–88610-274MC | 1 | 0.640 | 16.3 | 0.181 | 0.269 | 50 | 1.27 |
| FB7W–80260-374MC | 2 | 0.840 | 21.3 | 0.288 | 0.429 | 50 | 1.27 |
| FB7W–80460-374MC | 4 | 0.980 | 24.9 | 0.385 | 0.572 | 50 | 1.27 |
| FB7W–80860-374MC | 8 | 1.230 | 31.2 | 0.553 | 0.823 | 50 | 1.27 |
| FB7W–81260-374MC | 12 | 1.360 | 34.5 | 0.689 | 1.026 | 50 | 1.27 |
| FB7W–82460-374MC | 24 | 1.920 | 48.8 | 1.259 | 1.874 | 60 | 1.52 |
| Conductor Size: 16 AWG/1.3 mm² | | | | | | | |
| FB5W–68710-274MC | 1 | 0.640 | 16.3 | 0.192 | 0.286 | 50 | 1.27 |
| FB7W–60270-374MC | 2 | 0.940 | 23.9 | 0.352 | 0.524 | 50 | 1.27 |
| FB7W–60470-374MC | 4 | 1.120 | 28.4 | 0.483 | 0.719 | 50 | 1.27 |
| FB7W–60870-374MC | 8 | 1.300 | 33.0 | 0.664 | 0.988 | 50 | 1.27 |
| FB7W–61270-374MC | 12 | 1.560 | 39.6 | 0.886 | 1.318 | 50 | 1.27 |
| FB7W–62470-374MC | 24 | 2.140 | 54.4 | 1.622 | 2.414 | 60 | 1.52 |

Packaging & Documentation

If requested prior to ordering, Marmon IEI can provide Certificates & Test Reports (Certificates of Conformance) for every item on an order shipment.

Custom reel tags can be printed to meet customer requirements if they are requested prior to placing an order.

Unless otherwise specified, cables are delivered on wooden reels from 16 up to 96 inches in diameter. On most reels, there is an option to add lagging (wooden planks nailed to the reels flanges) to prevent damage to the cable while in transit. Marmon IEI's wooden reels are heat-treated and comply with international phytosanitary requirements.

Cable ends are left exposed on the outside of the reel to allow for final testing. They are sealed with heat-shrink caps during shipment.

CHEMICAL RESISTANCE GUIDE

| CHEMICAL | Chlorinated Polyethylene (CPE) | High Density Polyethylene (HDPE) | Low Density Polyethylene (LDPE) | Polyvinylchloride (PVC) |
|------------------------|--------------------------------|----------------------------------|---------------------------------|-------------------------|
| Sodium Chloride 10% | E | E | E | E |
| Ammonium Hydroxide 10% | E | E | E | E |
| Hydrochloric Acid 10% | E | E | E | E |
| Sodium Hydroxide 10% | E | E | E | E |
| Acetic Acid 5% | E | E | E | E |
| Sulfuric Acid 30% | E | E | E | G |
| Nitric Acid 10% | E | E | E | G |
| Naphtha | E | G | G | G |
| Methanol | E | G | P | G |
| Diesel / Gasoline | E | G | P | P |
| Acetone | E | G | P | D |
| Kerosene | E | G | P | E |
| Cyclohexane | G | G | P | P |
| Benzene | G | P | P | P |
| Toluene | G | P | P | P |
| Carbon Tetrachloride | G | P | P | P |

| | | |
|---|--------------|---|
| E | Excellent | Retains >80% original ultimate tensils and >80% original elongation and has <50% volume swell. |
| G | Good | Retains 60-80% original ultimate tensils or 60-80% original elongation or has 50-100% volume swell. |
| P | Poor | Retains <60% original ultimate tensile or <60% original elongation or has >100% volume swell. |
| D | Deteriorated | No properties could be recorded, compound deteriorated. |



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