

- Raychem integrated harnessing systems specially developed for NBC contamination survivability of electrical power and signal distribution systems.
- Three system performance levels are available to choose the best suited material system for the application.
- Chemical agent tested – desorption and hazard contact area data available for NBC survivability modeling
- Tested to SC-X15111 and SC-X15112 fluid resistance requirements for commonly used military vehicle fluids
- Rugged materials to protect wires during the harness production, installation, use, and storage
- HarnWare® program selectable system components
- Exposed polymer surface area calculator in HarnWare harness design software for NBC survivability modeling considerations



Tyco Electronics introduces Raychem integrated 700 Series systems for harnessing applications requiring Nuclear Biological and Chemical contamination survivability (NBCCS). 700 Series NBC Survivable Systems are System 770, System 780, and System 790. Each of these systems consist of Raychem heat-shrinkable tubing, molded parts, wire, adhesives, adapters, and other components necessary to build harnesses from one connector side to the other. Components in each system are specifically designed for application environments they may be exposed to. Example of these environmental elements may include common vehicular or aerospace fluids, extreme high or low temperatures, or mechanical abuse during installation, operation, and storage.

Raychem NBCCS system materials have been tested to chemical agents as specified in the army test procedures (TOP 8-2-511) for both interior (1g/m<sup>2</sup>) and exterior (10g/m<sup>2</sup>) exposure levels. Super Tropical Bleach (STB) and Decontamination Standard #2 (DS2), respectively, were used per TOP 8-2-511 to decontaminate test specimens. The components used in NBCCS systems must survive normal operational conditions and environmental elements just as importantly as the NBC contaminants and decontamination processes. Raychem 700 systems have been tested under both NBC warfare and conventional environmental conditions and have been shown to function satisfactorily.

|                            |            |                |                                                    |
|----------------------------|------------|----------------|----------------------------------------------------|
| <b>Temperature Ratings</b> | System 770 | -55°C to 125°C | [Heat-shrinkable part recovery temperature: 150°C] |
|                            | System 780 | -55°C to 175°C | [Heat-shrinkable part recovery temperature: 180°C] |
|                            | System 790 | -65°C to 200°C | [Heat-shrinkable part recovery temperature: 220°C] |

|                       |                                                                                            |             |               |                     |                 |
|-----------------------|--------------------------------------------------------------------------------------------|-------------|---------------|---------------------|-----------------|
| <b>Specifications</b> | General System Specification                                                               |             |               |                     | RT-700          |
|                       |                                                                                            | <b>Wire</b> | <b>Tubing</b> | <b>Molded Parts</b> | <b>Adhesive</b> |
|                       | System 770                                                                                 | Spec 44     | RT-770 Type I | RT-770 Type II      | RT-1012         |
|                       | System 780                                                                                 | Spec 55     | RT-780 Type I | RT-780 Type II      | RT-1014         |
|                       | System 790                                                                                 | Spec 55     | RT-790 Type I | RT-790 Type II      | RT-1014         |
|                       | Other system component specifications not listed here are available from Tyco Electronics. |             |               |                     |                 |

**Key System Components\*** – Refer to individual component Specification Control Drawing and RT Specification slash sheets for product details and valid product part numbers.

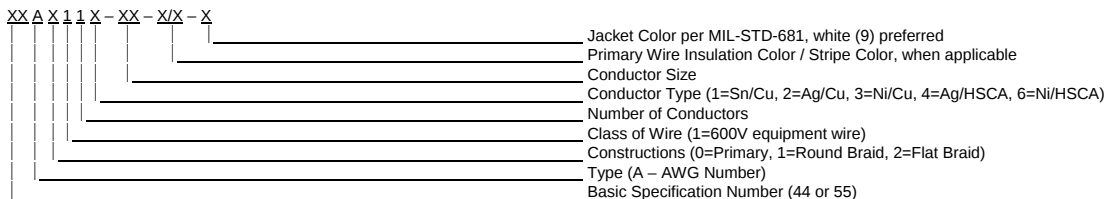
| Description              | System 770    | System 780    | System 790    |
|--------------------------|---------------|---------------|---------------|
| Heat-shrinkable Tubing   | RT-770        | RT-780        | RT-790        |
| Molded Part - boot       | -770          | -780          | -790          |
| Molded Part - transition | -770          | -780          | TTR           |
| Adhesive**               | S1264         | S1255-04      | S1255-04      |
| Wire - primary           | Spec 44       | Spec 55       | Spec 55       |
| Marker Sleeve            | TMS-SCE       | NBC-SCE       | NBC-SCE       |
| Marker Protection Sleeve | RT-375        | RT-375        | RT-375        |
| Cable                    | Thermorad 770 | Thermorad 780 | Thermorad 790 |

\* Components in these or other Raychem harnessing systems may be mixed to form a hybrid system. A hybridized system is useful when the harness passes through different temperature or environmental zones or a certain property of another system is necessary to meet overall harness performance requirements. When a hybridized system is used, the user must verify the compatibility and suitability of components selected for the hybridized system.

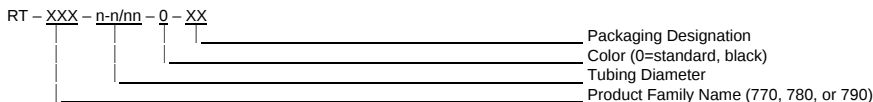
\*\* S1264 is a two part thermoset adhesive. This is room temperature curable. S1255-04 is one-part thermoset tape adhesive. Oven cure is required for this adhesive.

### Part Numbering\*

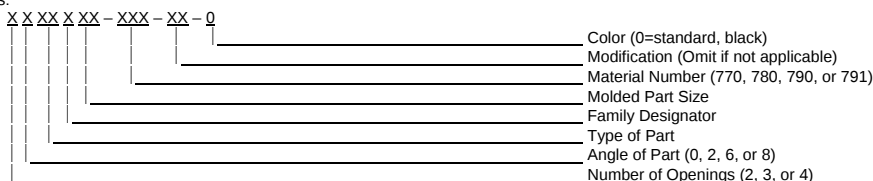
Wire:



Tubing:



Molded Parts:



\* Always confirm the validity of part numbers with appropriate Raychem product Specification Control Drawings

### Ordering Information

Tyco Electronics offers a complete system of Raychem and other Tyco Electronics brand components that may be used for NBC contamination survivable applications/requirements. Examples of these components include Tinel-Lock® backshells, CRES-Lock™ band adapters, molded parts, adhesives, heat-shrinkable tubing, over-braids, interconnection soldering devices, wires, cables, connectors, contacts, etc. Part numbers, product sizes, additional characteristics of products can be found in Raychem product catalog, Specification Control Drawings, or performance specifications. Contact a Tyco Electronics representative or visit [www.tycoelectronics.com](http://www.tycoelectronics.com) for more detailed information.

### Typical Interior Surface Chemical Agent Exposure Level Performance Data\*\*

|                | Agents (units)                        | System 770 | System 780 | System 790 |
|----------------|---------------------------------------|------------|------------|------------|
| Desorption     | HD ( $\mu\text{g}/\text{cm}^2$ )      | <0.23      | <0.20      | <0.16      |
|                | $V_x$ ( $\mu\text{g}/\text{cm}^2$ )   | 0.10       | <0.02      | <0.01      |
|                | TGD ( $\mu\text{g}/\text{cm}^2$ )     | 6.38       | 1.40       | 0.50       |
| Contact Hazard | HD ( $\text{mg}/\text{cm}^2$ )        | <0.050     | <0.050     | <0.00001   |
|                | $V_x A_{\text{max}}$ ( $\text{m}^2$ ) | >65.6      | >70.0      | >22.6      |
|                | TGD $A_{\text{max}}$ ( $\text{m}^2$ ) | 32.6       | 141        | 96.8       |

\*\*STB Decontamination

### Typical Exterior Surface Chemical Agent Exposure Level Performance Data\*\*\*

|                | Agents (units)                        | System 770 | System 780 | System 790 |
|----------------|---------------------------------------|------------|------------|------------|
| Desorption     | HD ( $\mu\text{g}/\text{cm}^2$ )      | <0.21      | <0.21      | <0.25      |
|                | $V_x$ ( $\mu\text{g}/\text{cm}^2$ )   | 0.11       | <0.05      | <0.04      |
|                | TGD ( $\mu\text{g}/\text{cm}^2$ )     | 1.54       | <0.04      | <0.01      |
| Contact Hazard | HD ( $\text{mg}/\text{cm}^2$ )        | <0.020     | <0.021     | <0.00001   |
|                | $V_x A_{\text{max}}$ ( $\text{m}^2$ ) | >61.8      | >70.0      | >22.6      |
|                | TGD $A_{\text{max}}$ ( $\text{m}^2$ ) | 194        | >1500      | 726        |

\*\*\* DS2 Decontamination

### Notes:

1. Refer to Raychem product specification RT-700 for additional system performance specification.
2. NBC performance data is based on tests done in accordance with TOP 8-2-511 (Test Operating Procedure, NBC Contamination Survivability, Small Items Equipment).
3. The details in regards to the above test data are available upon request from your Tyco Electronics sales or technical representative.
4. Contact your Tyco Electronics Raychem brand product representative for more information for these NBCCS and other Raychem integrated harnessing systems.
5. All information, including illustrations, is believed to be reliable. Users, however, should independently evaluate the suitability of each product for their application. Tyco Electronics makes no warranties as to the accuracy or completeness of the information, and disclaims any liability regarding its use. Tyco Electronics' only obligations are those in the Terms and Conditions of Sale for products described herein, and in no case will Tyco Electronics, Tyco International and its corporations or its distributors, employees, or affiliates be liable for any incidental, indirect, or consequential damages arising from the sale, resale, use, or misuse of the product. Specifications are subject to change without notice. In addition, Tyco Electronics reserves the right to make changes – without notification to buyers – to processing, configurations or materials.

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