

International MTW Wire Equivalent Table

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Global machinery manufacturers face a consistent challenge in wiring their equipment for international markets: ensuring compliance with diverse electrical standards across different regions. This document, **AcDc Engineering's "International MTW Wire Equivalent Table"**, provides a clear, practical cross-reference for Machine Tool Wire (MTW), the flexible PVC single-core wiring standard commonly used in the United States (UL 1063), against its closest counterparts globally. The primary goal is to simplify the complex landscape of global wire designations, voltage ratings, and regulations (including CSA, IEC, EN, CCC, NOM, and JIS) to facilitate seamless design and regulatory compliance for export-ready industrial machinery. The table highlights that Tri-rated cable (UL MTW, CSA TEW, and HAR H07V-K) is the most versatile solution for minimizing inventory and achieving universal acceptability.

International MTW Wire Equivalent Table:

For global machinery manufacturers, the most versatile choice is: Tri-rated: UL MTW + CSA TEW + HAR H07V-K + CCC Certified.

Global Machine-Tool / Hook-Up Wire Equivalency (PVC, Flexible, Single-Core, Class 5/6)

<i>Region / Country</i>	<i>Wire Type / Designation</i>	<i>Voltage Rating</i>	<i>Standard / Regulation</i>	<i>Notes / Equivalency to UL MTW</i>
<i>United States</i>	<i>MTW (Machine Tool Wire)</i>	<i>600 V</i>	<i>UL 1063</i>	<i>Baseline reference. Flexible PVC for industrial machinery.</i>
<i>Canada</i>	<i>TEW</i>	<i>600 V</i>	<i>CSA C22.2 No. 127</i>	<i>Nearly identical to MTW; often sold dual-marked MTW/TEW.</i>
<i>Europe (EU)</i>	<i>H05V-K</i>	<i>300/500 V</i>	<i>EN 50525-2-31 / IEC 60227</i>	<i>Flexible PVC control wire; lighter-duty MTW equivalent.</i>

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	<i>H07V-K</i>	<i>450/750 V</i>	<i>EN 50525-2-31 / IEC 60227</i>	<i>Direct EU equivalent to MTW when 450/750V is acceptable.</i>
<i>International (IEC)</i>	<i>IEC 60227-3 PVC flexible wire</i>	<i>300/500 or 450/750 V</i>	<i>IEC 60227</i>	<i>Global baseline equivalent (IEC harmonized).</i>
<i>China (CCC)</i>	<i>60227 IEC 01(B), 60227 IEC 02(B)</i>	<i>300/500–450/750 V</i>	<i>GB/T 5023 + CCC</i>	<i>China's formal IEC 60227 adoption; CCC marking required.</i>
	<i>BVR (Flexible PVC Hook-Up)</i>	<i>450/750 V</i>	<i>GB/T 5023</i>	<i>Closest China-market match to MTW in flexibility.</i>
<i>Mexico</i>	<i>NOM PVC Hook-Up Wire</i>	<i>300/500–600 V</i>	<i>NOM-063-SCFI / NMX-J-010</i>	<i>Mexico accepts MTW, TEW, or H07V-K with NOM certification.</i>
<i>Japan</i>	<i>KIV (PVC Flexible Wire)</i>	<i>600 V</i>	<i>JIS C 3306 / PSE</i>	<i>Very close match to H07V-K / MTW in construction.</i>
<i>Korea</i>	<i>IV-F (Flexible PVC)</i>	<i>450/750 V</i>	<i>KS C IEC 60227-3</i>	<i>Korea IEC-harmonized equivalent to H07V-K.</i>
<i>Australia / New Zealand</i>	<i>V-90 / V-90HT Flexible PVC</i>	<i>450/750–600 V</i>	<i>AS/NZS 5000.1 / 5000.6</i>	<i>Flexible PVC wires used in control/industrial wiring; MTW-equivalent.</i>
<i>India</i>	<i>PVC Flexible Cable (IS 694)</i>	<i>450/750 V</i>	<i>IS 694</i>	<i>Equivalent to IEC 60227 flexible conductors (H07V-K type).</i>

<i>Region / Country</i>	<i>Wire Type / Designation</i>	<i>Voltage Rating</i>	<i>Standard / Regulation</i>	<i>Notes / Equivalency to UL MTW</i>
<i>UK (HAR)</i>	<i>Tri-Rated Cable (MTW/TEW/H07V-K)</i>	<i>600 V</i>	<i>BS EN 50525 + UL + CSA</i>	<i>Multi-listed "universal" machine-wire; ideal global equivalent.</i>

Summary

The "International MTW Wire Equivalent Table" serves as an essential guide for standardizing machine tool wiring for global applications. It establishes UL MTW (600 V) as the baseline and identifies direct equivalents across major economic regions. Key findings include:

1. North America: Canada's TEW (600 V) is nearly identical to MTW, often sold as a dual-marked product.
2. Europe (EU) and IEC: The H07V-K (450/750 V) wire is the direct European equivalent, aligned with the broader IEC 60227 standard. The lighter-duty H05V-K is noted for less demanding applications.
3. Key Export Markets: The table provides specific matches for China (BVR), Japan (KIV), Mexico (requiring NOM certification), Korea (IV-F), and Australia/New Zealand (V-90).

Universal Solution: AcDc Engineering recommends Tri-rated cable (MTW/TEW/H07V-K) for global manufacturers, as this multi-listed product satisfies the requirements of multiple major standards simultaneously, offering an optimal approach to standardization and compliance in a single wire type.

About the Author:

Dennis Zimmer is a professional electrical engineer with more than 35 years of experience in MEP, AE, and Controls across commercial, manufacturing, and industrial projects. Dennis has served as a principal engineer, middle manager, and business owner. Over the course of his career, Dennis has held P.E. licenses in 15 states.

He has also been accredited by WA LSI to perform electrical field evaluations for over 7 years and has additional Machine Safety & Risk Assessment certification.

His passion is mentoring engineers in technical mastery, business acumen, and leadership excellence.

Thank you, Dennis

