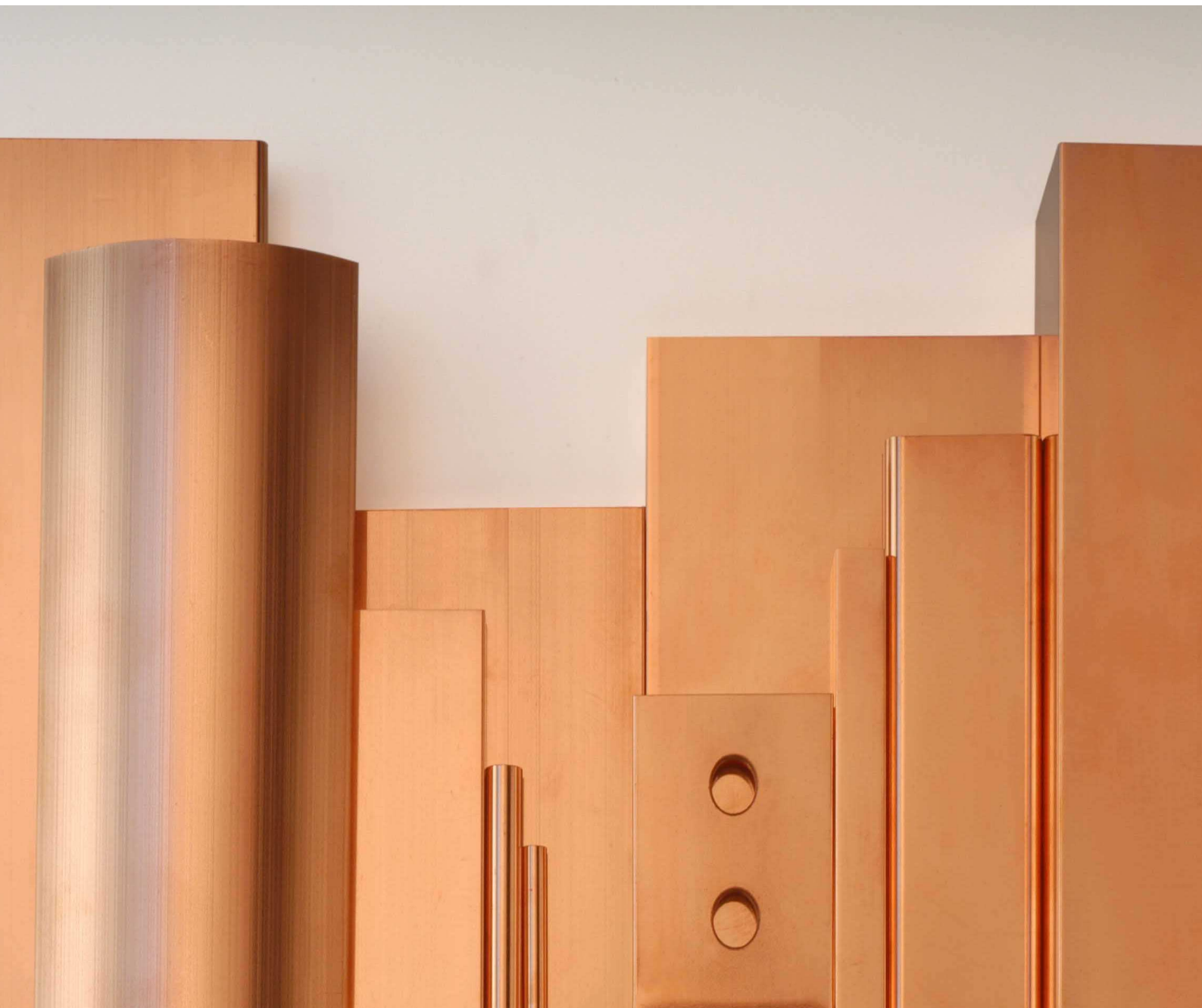


# Copper



*For more than 45 years, our company has been committed to providing the global distributors community with innovative, high quality, cost effective copper products. From our humble beginnings in 1968, the Company has grown to become one of the largest professional copper products company in the world. With operations in many countries, the Company distributes its TVH® products in over 72 countries under some of the most well established brand names in the industry. Worldwide, stockist and distribution professionals now depend upon TRAIID for quality and service.*

*TRAIID VILLARROYA manufactures a complete range of copper TVH®-ETP alloy rods, squares and shapes for all types of industries and customers. Our materials operate in many varied and often challenging applications. An unwavering commitment has always been maintained to the highest standards of the quality, as well as for the protection of the environment in the communities in which we live and work. The long-term business success of our products depends on our ability to ensure that our quality remains a top priority for the management and each employee. This idea is our commitment to making sustainable health a reality through innovative technology and services focused on addressing three critical needs: lowering costs, helping our customers and improving quality. All our materials are inspected as well as analyzed for determining the perfect composition according to international norms. Here we present you our standard delivery program, besides the stock list shown, other sizes and formats are also available upon request. All our materials are tested to certify the hardness, tensile and ultimate tensile strength. Our quality certification DIN ISO 9001:2008 regularly audited covers all our production from the very first moment to your final stock. The evolution of TRAIID VILLARROYA continues ... After all, we're more than a manufacturer. More than a distributor. We're an essential resource. Our customers' challenges keep changing, and we're helping them adapt every step of the way.*



# TVH® TV-ETP (Cu-ETP) MANUFACTURING PROGRAM

## SOLID RODS

<i>Ø Size mm.</i>	<i>Approx. weight Kg/m.</i>
4	0,112
5	0,175
6	0,252
7	0,343
8	0,5
10	0,7
11	0,8
12	1
13	1,2
14	1,4
15	1,6
16	1,8
18	2,3
20	2,8
22	3,4
24	4,1
25	4,4
26	4,8
27	5,1
28	5,5
30	6,3
32	7,2
34	8,1
35	8,6
36	9,1
38	10,1
40	11,2
42	12,4
45	14,2
50	17,2
55	21,2
60	25,2
65	29,6
70	34,3
75	39,4
80	44,8
85	51
90	56,2
95	64
100	70
110	86
120	102
130	120
150	160
180	230
200	283

# TVH® TV-ETP (Cu-ETP) MANUFACTURING PROGRAM

## SQUARE RODS

<i>Size mm.</i>	<i>Approx. weight Kg/m.</i>
<b>4x4</b>	0,142
<b>5x5</b>	0,223
<b>6x6</b>	0,320
<b>7x7</b>	0,436
<b>8x8</b>	0,6
<b>10x10</b>	0,9
<b>11x11</b>	1,1
<b>12x12</b>	1,3
<b>13x13</b>	1,5
<b>14x14</b>	1,8
<b>15x15</b>	2
<b>16x16</b>	2,3
<b>18x18</b>	2,9
<b>20x20</b>	3,6
<b>22x22</b>	4,3
<b>24x24</b>	5,2
<b>25x25</b>	5,6
<b>26x26</b>	6
<b>27x27</b>	6,5
<b>28x28</b>	7
<b>30x30</b>	8
<b>32x32</b>	9,2
<b>34x34</b>	10,3
<b>35x35</b>	10,9
<b>36x36</b>	11,6
<b>38x38</b>	12,9
<b>40x40</b>	14,3
<b>42x42</b>	15,7
<b>45x45</b>	18,1
<b>50x50</b>	22,3
<b>55x55</b>	26,9
<b>60x60</b>	32,1
<b>65x65</b>	37,6
<b>70x70</b>	43,6
<b>75x75</b>	50,1
<b>80x80</b>	57
<b>85x85</b>	65
<b>90x90</b>	72
<b>95x95</b>	82
<b>100x100</b>	89
<b>110x110</b>	109
<b>120x120</b>	130
<b>130x130</b>	153
<b>150x150</b>	203
<b>180x180</b>	292
<b>200x200</b>	360

# TVH® TV-ETP (Cu-ETP) MANUFACTURING PROGRAM

## RECTANGULARS

<i>Size mm.</i>	<i>Approx. weight Kg/m.</i>	<i>Size mm.</i>	<i>Approx. weight Kg/m.</i>
10x150	13,5	20x100	18
10x180	16,2	20x150	27
10x200	18,1	20x200	36
12x20	2,2	25x50	11,3
12x30	3,3	25x80	18
12x40	4,3	25x100	22,5
12x50	5,4	25x150	33,7
12x60	6,5	25x200	45
12x70	7,6	30x60	16,2
12x80	8,7	30x80	21,6
12x100	10,8	30x100	27
12x150	16,2	30x150	41
12x180	19,5	30x200	54
12x200	21,6	40x60	22
15x30	4,1	40x80	29
15x40	5,4	40x100	36
15x50	6,8	40x150	54
15x60	8,1	40x200	72
15x80	10,8	50x80	36
15x100	13,5	50x100	45
15x120	16,2	50x150	68
15x150	20,3	50x200	90
15x180	27	60x80	44
15x200	34	60x100	54
20x30	5,4	60x150	81
20x40	7,2	60x200	108
20x50	9	70x80	51
20x60	10,8	70x100	63
20x70	12,6	70x150	95
20x80	14,4	70x200	126

## TVH® TV-ETP (Cu-ETP)

Density 8,92 g/cm<sup>3</sup>  
 Electrolytic copper

### Specifications:

TRAID	TVH®	TV-ETP
ISO		Cu-ETP
USA	UNS	C 11000

### Nominal composition:

Cu	≥ 99,90 %
Others combined	0,0 – 0,1 %

NOMINAL PROPERTIES	UNIT	CONTINUOUS CAST
Melting point	°C	1083
Thermal Expansion	10 <sup>-6</sup> /K	16,9
Modulus of elasticity E	GPa	117
Thermal conductivity	W/m.K	391,1
Electrical resistivity	IACS	100 %
Electrical resistivity	10 <sup>-6</sup> Ω .m	0,0171
Proof stress	MPa	50-340
Tensile strength Rm	MPa	200-400
Elongation A <sub>5</sub>	%	5-50
Vickers Hardness	HV	40 to 120

### MAIN CHARACTERISTICS

Corrosion resistance: Either good or excellent in most environments and atmospheres other than those containing ammonia ions.

Cold working: Can be readily cold worked. When in the annealed condition, it can be readily bent to shape and has excellent ductility.

Hot working: Very readily hot worked.

Heat treatment: Solution treatment or annealing can be done by rapid cooling after heating to 370-650°C.

Machinability: Material has a machinability rating of 20 where brass TVH® TV39 is 100.

Weldability: Soldering of TVH® TV-ETP is excellent. Brazability and butt welding are also rated as good. Gas shielded arc welding has a fair rating. All other welding processes are not recommended.

### INDUSTRY APPLICATIONS

General engineering  
 Electronics  
 Busbars  
 Automotive  
 Domestic appliances  
 Cold forming components





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