

S P E C I F I C A T I O N

Class 3 EP rubber insulated chloroprene rubber sheathed flexible cable
3 P N C T

M I T S U B O S H I C O . , L T D .

| | | |
|----------------|----------------------------------|----------------------|
| No. RN-110000A | S P E C I F I C A T I O N | MITSUBOSHI CO., LTD. |
|----------------|----------------------------------|----------------------|

Name of Manufacture
 Class 3 EP rubber insulated chloroprene rubber sheathed flexible cable

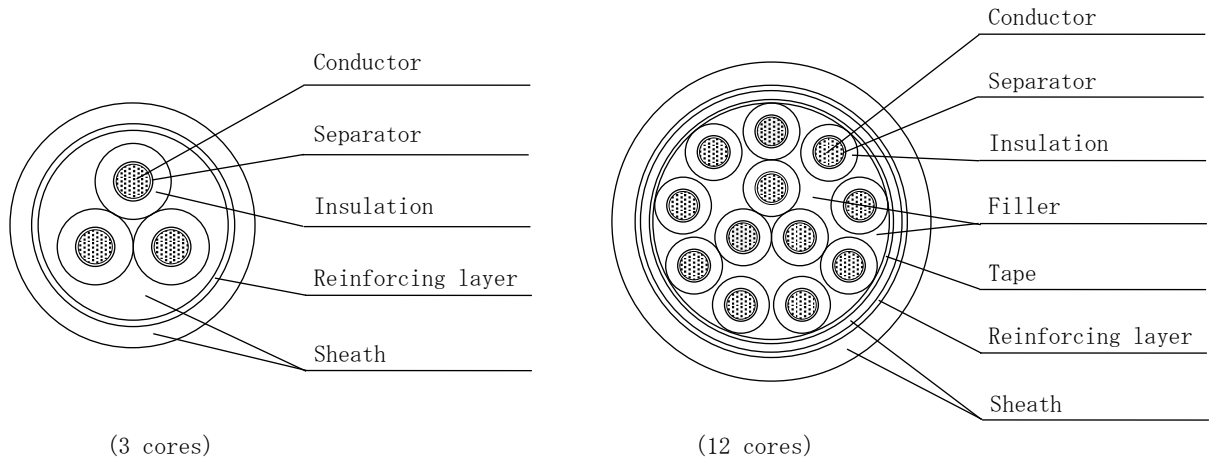
Applicable Standards
 JIS C 3005, JIS C 3152, JIS C 3327
 Electrical appliance and material safety law, Technical standards for electrical installations

1. Scope

This Specification covers quality level of 3PNCT
 used in power supply circuit of portable electrical machinery and apparatus not higher than 600V.

2. Construction and materials

(Construction)



- | | | |
|-----|-------------------------|---|
| 2.1 | Conductor | A stranded wire is composed of the tinned annealed copper wire specified in JIS C 3152. |
| 2.2 | Separator | A suitable separator is applied on the conductor. |
| 2.3 | Insulation | Ethylene propylene rubber compound The average thickness of the insulation is not less than 90% of the value in Attached Table 1. The minimum thickness of the insulation is not less than 80% of the value in Attached Table 1. |
| 2.4 | Identification of cores | Identification of cores are made by the color of insulation. (Attached Table 2) |
| 2.5 | Stranding of cores | As the need arises, cores are stranded with a suitable filler. |
| 2.6 | Reinforcing layer | A Reinforcing layer of butt-lapped cotton canvas tape is applied on inserted in the middle of the sheath. |
| 2.7 | Sheath | Chloroprene rubber compound The average thickness of sheath is not less than 90% of the value in Attached Tables. The minimum thickness of sheath is not less than 85% of the value in Attached Tables. |

3. Characteristics

| Item | | Characteristics | Test method |
|--|------------|---|---|
| Appearance | | The surface be smooth and there is not a flaw in case of use. | JIS C 3005 4.1 |
| Construction | | It depends on the Attached Table 1 with structure and size. | JIS C 3005 4.3 |
| Conductor resistance | | Not more than the value in Attached Table 1. | JIS C 3005 4.4 |
| Dielectric withstand voltage (in water) | | Capable of withstanding 3000V for 1min. | JIS C 3005 4.6 a) |
| Insulation resistance | | Not less than the value in Attached Table 1. | JIS C 3005 4.7.1 a) |
| *1) Tensile properties | Insulation | Tensile strength | Not less than 4Mpa |
| | | Elongation | Not less than 300% |
| | Sheath | Tensile strength | Not less than 13Mpa |
| | | Elongation | Not less than 300% |
| *1) Thermal aging | Insulation | Tensile strength | Not less than 80% of the value before heating |
| | | Elongation | |
| | Sheath | Tensile strength | Not less than 65% of the value before heating |
| | | Elongation | |
| *1) Oil resistance | Sheath | Tensile strength | *2) Not less than 60% of the value before oil-immersion |
| | | Elongation | |
| *1) Flame retardance | | To disappear naturally within 60 seconds | JIS C 3005 4.26.2 a) |
| *1) Bending (nominal sectional area 38mm ² or under) | | No damage nor crack to develop, number of broken component wires in each core not to exceed 30% | JIS C 3005 4.27.1 a) |
| *1) Impact | | No damage nor crack to develop, number of broken component wires in each core not to exceed 30% | JIS C 3005 4.28 |
| *1) Abrasion | | Sheath not to be so abraded as to expose the insulation | JIS C 3005 4.29 |

*1) The quality characteristic to enforce inspection regularly with an in-house standard.

*2) For the test piece less than 1mm in thickness, not less than 50%.

4. Marking on cable

The following information is continuously marked on cable.

- ① The symbol of the cable
- ② Nominal sectional area
- ③ Manufacture's name or abbreviation

Example: 3PNCT 4 × 2mm²



<PS>E

MITSUBOSHI

3PNCT


2mm²

5. Length and packaging

According to the Attached Table 1.

6. Marking on package

The following information is marked on package.

- ① The symbol of the cable and nominal sectional area
- ② Length
- ③ Year of manufacture or lot No.
- ④ Manufacture's name
- ⑤  J E T (only apply to Electrical Appliance and Material Safety Law)

Attached Table 1 : Construction, Size, Weight, and electric characteristic

2 mm²

| Number of core | Conductors | | Insulation | | Sheath | Overall diameter (approx.) (mm) | Approx. mass (kg/km) | Conductor resistance 20°C (Ω/km) | Insulation resistance 20°C (MQ·km) | Standard Unit length And packaging |
|----------------|-----------------|---------------------------------|--------------------------|---------------------------------|--------------------------|---------------------------------|----------------------|----------------------------------|------------------------------------|------------------------------------|
| | Composition | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | | | | | |
| 2 | (TA) 37/0.26 | 1.8 | 1.2 | 4.3 | 2.8 | 15.2 | 285 | 10.2 | 500 | 200m Drum |
| 3 | | | | | 2.8 | 15.9 | 320 | | | |
| 4 | | | | | 2.9 | 17.2 | 385 | | | |
| 5 | | | | | 3.0 | 18.6 | 455 | | | |
| 6 | | | | | 3.1 | 20.1 | 535 | | | |
| 7 | | | | | 3.1 | 21.4 | 610 | | | |
| 8 | | | | | 3.3 | 23.4 | 665 | | | |
| 9 | | | | | 3.3 | 24.8 | 725 | | | |
| 10 | | | | | 3.4 | 26.3 | 830 | | | |
| 12 | | | | | 3.4 | 26.0 | 850 | | | |
| 14 | | | | | 3.5 | 27.3 | 960 | | | |
| 15 | | | | | 3.5 | 27.9 | 1,010 | | | |
| 16 | | | | | 3.6 | 28.7 | 1,080 | | | |
| 18 | | | | | 3.7 | 30.2 | 1,170 | | | |
| 20 | | | | | 3.7 | 31.5 | 1,300 | | | |
| 24 | | | | | 3.9 | 34.6 | 1,560 | | | |
| 30 | 4.1 | 37.1 | 1,820 | | | | | | | |

3. 5 mm²

| Number of core | Conductors | | Insulation | | Sheath | Overall diameter (approx.) (mm) | Approx. mass (kg/km) | Conductor resistance 20°C (Ω/km) | Insulation resistance 20°C (MQ·km) | Standard Unit length And packaging |
|----------------|-----------------|---------------------------------|--------------------------|---------------------------------|--------------------------|---------------------------------|----------------------|----------------------------------|------------------------------------|------------------------------------|
| | Composition | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | | | | | |
| 2 | (TA) 45/0.32 | 2.5 | 1.2 | 5.0 | 2.9 | 16.8 | 365 | 5.54 | 500 | 200m Drum |
| 3 | | | | | 2.9 | 17.6 | 420 | | | |
| 4 | | | | | 3.0 | 19.1 | 510 | | | |
| 5 | | | | | 3.1 | 20.7 | 605 | | | |
| 6 | | | | | 3.2 | 22.4 | 715 | | | |
| 7 | | | | | 3.3 | 24.1 | 835 | | | |
| 8 | | | | | 3.4 | 26.2 | 890 | | | |
| 9 | | | | | 3.5 | 27.9 | 990 | | | |
| 10 | | | | | 3.6 | 29.7 | 1,130 | | | |
| 12 | | | | | 3.6 | 29.3 | 1,180 | | | |
| 14 | | | | | 3.7 | 30.8 | 1,330 | | | |
| 15 | | | | | 3.7 | 31.5 | 1,410 | | | |
| 16 | | | | | 3.8 | 32.4 | 1,500 | | | |
| 18 | | | | | 3.9 | 34.1 | 1,640 | | | |
| 20 | | | | | 4.0 | 35.8 | 1,830 | | | |
| 24 | | | | | 4.2 | 39.3 | 2,190 | | | |
| 30 | 4.4 | 42.2 | 2,580 | | | | | | | |

5. 5 mm²

| Number of core | Conductors | | Insulation | | Sheath | Overall diameter (approx.) (mm) | Approx. mass (kg/km) | Conductor resistance 20°C (Ω/km) | Insulation resistance 20°C (MΩ·km) | Standard Unit length And packaging |
|----------------|-----------------|---------------------------------|--------------------------|---------------------------------|--------------------------|---------------------------------|----------------------|----------------------------------|------------------------------------|------------------------------------|
| | Composition | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | | | | | |
| 2 | (TA) 70/0.32 | 3.1 | 1.2 | 5.6 | 2.9 | 18.0 | 440 | 3.56 | 500 | 200m Drum |
| 3 | | | | | 3.0 | 19.1 | 525 | | | |
| 4 | | | | | 3.1 | 20.7 | 640 | | | |
| 5 | | | | | 3.2 | 22.5 | 770 | | | |
| 6 | | | | | 3.3 | 24.4 | 910 | | | |
| 7 | | | | | 3.4 | 26.3 | 1,060 | | | |
| 8 | | | | | 3.6 | 28.7 | 1,150 | | | |
| 9 | | | | | 3.7 | 30.7 | 1,290 | | | |
| 10 | | | | | 3.8 | 32.6 | 1,460 | | | |
| 12 | | | | | 3.8 | 32.2 | 1,540 | | | |
| 14 | | | | | 3.9 | 33.8 | 1,740 | | | |
| 15 | | | | | 3.9 | 34.6 | 1,840 | | | |
| 16 | | | | | 4.0 | 35.6 | 1,950 | | | |
| 18 | | | | | 4.1 | 37.5 | 2,180 | | | |
| 20 | | | | | 4.2 | 39.4 | 2,410 | | | |

8 mm²

| Number of core | Conductors | | Insulation | | Sheath | Overall diameter (approx.) (mm) | Approx. mass (kg/km) | Conductor resistance 20°C (Ω/km) | Insulation resistance 20°C (MΩ·km) | Standard Unit length And packaging |
|----------------|-----------------|---------------------------------|--------------------------|---------------------------------|--------------------------|---------------------------------|----------------------|----------------------------------|------------------------------------|------------------------------------|
| | Composition | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | | | | | |
| 2 | (TA) 50/0.45 | 3.7 | 1.2 | 6.2 | 3.0 | 19.4 | 530 | 2.52 | 400 | 200m Drum |
| 3 | | | | | 3.1 | 20.6 | 640 | | | |
| 4 | | | | | 3.2 | 22.4 | 790 | | | |
| 5 | | | | | 3.3 | 24.3 | 945 | | | |
| 6 | | | | | 3.4 | 26.4 | 1,130 | | | |
| 7 | | | | | 3.6 | 28.7 | 1,330 | | | |
| 8 | | | | | 3.7 | 31.1 | 1,410 | | | |
| 9 | | | | | 3.8 | 33.2 | 1,590 | | | |
| 10 | | | | | 4.0 | 35.6 | 1,820 | | | |
| 12 | | | | | 3.9 | 34.9 | 1,910 | | | |

1 4 mm²

| Number of Core | Conductors | | Insulation | | Sheath | Overall diameter (approx.) (mm) | Approx. mass (kg/km) | Conductor resistance 20°C (Ω/km) | Insulation resistance 20°C (MQ·km) | Standard Unit length And packaging |
|----------------|-----------------|---------------------------------|--------------------------|---------------------------------|--------------------------|---------------------------------|----------------------|----------------------------------|------------------------------------|------------------------------------|
| | Composition | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | | | | | |
| 2 | (TA) 88/0.45 | 4.9 | 1.2 | 7.4 | 3.2 | 23.2 | 775 | 1.43 | 400 | 200 m Drum |
| 3 | | | | | 3.3 | 24.5 | 940 | | | |
| 4 | | | | | 3.4 | 26.7 | 1,170 | | | |
| 5 | | | | | 3.5 | 29.0 | 1,430 | | | |
| 6 | | | | | 3.7 | 31.6 | 1,710 | | | |

2 2 mm²

| Number of core | Conductors | | Insulation | | Sheath | Overall diameter (approx.) (mm) | Approx. mass (kg/km) | Conductor resistance 20°C (Ω/km) | Insulation resistance 20°C (MQ·km) | Standard Unit length And packaging |
|----------------|-------------------|---------------------------------|--------------------------|---------------------------------|--------------------------|---------------------------------|----------------------|----------------------------------|------------------------------------|------------------------------------|
| | Composition | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | | | | | |
| 2 | (TA) 7/20/0.45 | 6.8 | 1.6 | 10.2 | 3.6 | 29.6 | 1,300 | 0.919 | 300 | 200 m Drum |
| 3 | | | | | 3.7 | 31.4 | 1,590 | | | |
| 4 | | | | | 3.8 | 34.2 | 1,980 | | | |

3 0 mm²

| Number of Core | Conductors | | Insulation | | Sheath | Overall diameter (approx.) (mm) | Approx. mass (kg/km) | Conductor resistance 20°C (Ω/km) | Insulation resistance 20°C (MQ·km) | Standard Unit length And packaging |
|----------------|-------------------|---------------------------------|--------------------------|---------------------------------|--------------------------|---------------------------------|----------------------|----------------------------------|------------------------------------|------------------------------------|
| | Composition | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | | | | | |
| 2 | (TA) 7/27/0.45 | 7.9 | 1.6 | 11.3 | 3.7 | 32.0 | 1,580 | 0.681 | 300 | 200 m Drum |
| 3 | | | | | 3.8 | 34.0 | 1,960 | | | |
| 4 | | | | | 4.0 | 37.3 | 2,460 | | | |

3 8 mm²

| Number of core | Conductors | | Insulation | | Sheath | Overall diameter (approx.) (mm) | Approx. mass (kg/km) | Conductor resistance 20°C (Ω/km) | Insulation resistance 20°C (MQ·km) | Standard Unit length And packaging |
|----------------|-------------------|---------------------------------|--------------------------|---------------------------------|--------------------------|---------------------------------|----------------------|----------------------------------|------------------------------------|------------------------------------|
| | Composition | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | | | | | |
| 2 | (TA) 7/34/0.45 | 8.8 | 1.6 | 12.2 | 3.8 | 34.0 | 1,870 | 0.541 | 300 | 200 m Drum |
| 3 | | | | | 4.0 | 36.3 | 2,320 | | | |
| 4 | | | | | 4.2 | 39.9 | 2,910 | | | |

5 0 mm²

| Number of core | Conductors | | Insulation | | Sheath | Overall diameter (approx.) (mm) | Approx. mass (kg/km) | Conductor resistance 20°C (Ω/km) | Insulation resistance 20°C (MQ·km) | Standard Unit length And packaging |
|----------------|--------------------|---------------------------------|--------------------------|---------------------------------|--------------------------|---------------------------------|----------------------|----------------------------------|------------------------------------|------------------------------------|
| | Composition | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | | | | | |
| 2 | (TA) 19/16/0.45 | 10.1 | 2.1 | 14.5 | 4.1 | 39.2 | 2,440 | 0.423 | 300 | 200 m Drum |
| 3 | | | | | 4.3 | 41.8 | 3,010 | | | |
| 4 | | | | | 4.5 | 46.0 | 3,790 | | | |

6 0 mm²

| Number of core | Conductors | | Insulation | | Sheath | Overall diameter (approx.) (mm) | Approx. mass (kg/km) | Conductor resistance 20°C (Ω/km) | Insulation resistance 20°C (MΩ·km) | Standard Unit length And packaging |
|----------------|--------------------|---------------------------------|--------------------------|---------------------------------|--------------------------|---------------------------------|----------------------|----------------------------------|------------------------------------|------------------------------------|
| | Composition | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | | | | | |
| 2 | (TA) 19/20/0.45 | 11.3 | 2.1 | 15.7 | 4.3 | 42.0 | 2,850 | 0.339 | 300 | 200m Drum |
| 3 | | | | | 4.5 | 44.8 | 3,560 | | | |
| 4 | | | | | 4.7 | 49.3 | 4,490 | | | |

8 0 mm²

| Number of core | Conductors | | Insulation | | Sheath | Overall diameter (approx.) (mm) | Approx. mass (kg/km) | Conductor resistance 20°C (Ω/km) | Insulation resistance 20°C (MΩ·km) | Standard Unit length And packaging |
|----------------|--------------------|---------------------------------|--------------------------|---------------------------------|--------------------------|---------------------------------|----------------------|----------------------------------|------------------------------------|------------------------------------|
| | Composition | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | | | | | |
| 2 | (TA) 19/27/0.45 | 13.1 | 2.1 | 17.5 | 4.5 | 46.0 | 3,580 | 0.250 | 300 | 200m Drum |
| 3 | | | | | 4.7 | 49.1 | 4,510 | | | |
| 4 | | | | | 5.0 | 54.2 | 5,700 | | | |

1 0 0 mm²

| Number of core | Conductors | | Insulation | | Sheath | Overall diameter (approx.) (mm) | Approx. mass (kg/km) | Conductor resistance 20°C (Ω/km) | Insulation resistance 20°C (MΩ·km) | Standard Unit length And packaging |
|----------------|--------------------|---------------------------------|--------------------------|---------------------------------|--------------------------|---------------------------------|----------------------|----------------------------------|------------------------------------|------------------------------------|
| | Composition | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | | | | | |
| 2 | (TA) 19/34/0.45 | 14.7 | 2.1 | 19.1 | 4.7 | 49.6 | 4,300 | 0.199 | 200 | 200m Drum |
| 3 | | | | | 4.9 | 53.0 | 5,420 | | | |
| 4 | | | | | 5.3 | 58.7 | 6,910 | | | |

1 2 5 mm²

| Number of Core | Conductors | | Insulation | | Sheath | Overall diameter (approx.) (mm) | Approx. mass (kg/km) | Conductor resistance 20°C (Ω/km) | Insulation resistance 20°C (MΩ·km) | Standard Unit length And packaging |
|----------------|--------------------|---------------------------------|--------------------------|---------------------------------|--------------------------|---------------------------------|----------------------|----------------------------------|------------------------------------|------------------------------------|
| | Composition | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | | | | | |
| 2 | (TA) 19/42/0.45 | 16.3 | 2.7 | 21.9 | 5.1 | 55.0 | 5,420 | 0.161 | 200 | 100m Drum |
| 3 | | | | | 5.3 | 58.8 | 6,830 | | | |

1 5 0 mm²

| Number of Core | Conductors | | Insulation | | Sheath | Overall diameter (approx.) (mm) | Approx. mass (kg/km) | Conductor resistance 20°C (Ω/km) | Insulation resistance 20°C (MΩ·km) | Standard Unit length And packaging |
|----------------|--------------------|---------------------------------|--------------------------|---------------------------------|--------------------------|---------------------------------|----------------------|----------------------------------|------------------------------------|------------------------------------|
| | Composition | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | | | | | |
| 2 | (TA) 27/34/0.45 | 17.6 | 2.7 | 23.2 | 5.3 | 58.0 | 6,200 | 0.140 | 200 | 100m Drum |
| 3 | | | | | 5.5 | 62.0 | 7,830 | | | |

Cable of single core

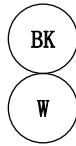
| Number of core | Conductors | | Insulation | | Sheath | Overall diameter (approx.) (mm) | Approx. mass (kg/km) | Conductor resistance 20°C (Ω/km) | Insulation resistance 20°C (MQ·km) | Standard Unit length And packaging |
|----------------|-----------------|---------------------------------|--------------------------|---------------------------------|--------------------------|---------------------------------|----------------------|----------------------------------|------------------------------------|------------------------------------|
| | Composition | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | Outside diameter (approx.) (mm) | Thickness (approx.) (mm) | | | | | |
| 3.5 | (TA) 45/0.32 | 2.5 | 1.2 | 5.0 | 2.5 | 11.0 | 155 | 5.38 | 500 | 200m Bundle |
| 5.5 | (TA) 70/0.32 | 3.1 | 1.2 | 5.6 | 2.6 | 11.8 | 190 | 3.46 | 500 | |
| 8 | (TA) 50/0.45 | 3.7 | 1.2 | 6.2 | 2.6 | 12.4 | 220 | 2.45 | 400 | |
| 14 | (TA) 88/0.45 | 4.9 | 1.2 | 7.4 | 2.7 | 13.8 | 305 | 1.39 | 400 | |
| 22 | (TA) 7/20/0.45 | 6.8 | 1.6 | 10.2 | 2.9 | 17.0 | 485 | 0.892 | 300 | 200m Drum |
| 30 | (TA) 7/27/0.45 | 7.9 | 1.6 | 11.3 | 3.0 | 18.3 | 590 | 0.661 | 300 | |
| 38 | (TA) 7/34/0.45 | 8.8 | 1.6 | 12.2 | 3.0 | 19.2 | 685 | 0.525 | 300 | |
| 50 | (TA) 19/16/0.45 | 10.1 | 2.1 | 14.5 | 3.2 | 21.9 | 875 | 0.411 | 300 | |
| 60 | (TA) 19/20/0.45 | 11.3 | 2.1 | 15.7 | 3.2 | 23.1 | 1,030 | 0.329 | 300 | |
| 80 | (TA) 19/27/0.45 | 13.1 | 2.1 | 17.5 | 3.4 | 25.3 | 1,290 | 0.243 | 300 | |
| 100 | (TA) 19/34/0.45 | 14.7 | 2.1 | 19.1 | 3.5 | 27.1 | 1,550 | 0.193 | 200 | |
| 125 | (TA) 19/42/0.45 | 16.3 | 2.7 | 21.9 | 3.7 | 30.3 | 1,960 | 0.156 | 200 | |
| 150 | (TA) 27/34/0.45 | 17.6 | 2.7 | 23.2 | 3.7 | 31.6 | 2,210 | 0.136 | 200 | |
| 200 | (TA) 37/34/0.45 | 20.6 | 3.3 | 27.4 | 4.0 | 36.4 | 2,970 | 0.0993 | 200 | |
| 250 | (TA) 37/42/0.45 | 22.9 | 3.3 | 29.7 | 4.2 | 39.1 | 3,520 | 0.0803 | 200 | |
| 325 | (TA) 37/55/0.45 | 26.2 | 3.3 | 33.0 | 4.4 | 42.8 | 4,430 | 0.0614 | 200 | |

Attached Table 2 : Identification of cores (1)

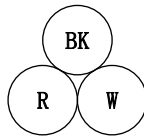
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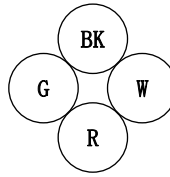
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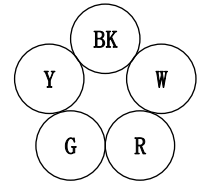
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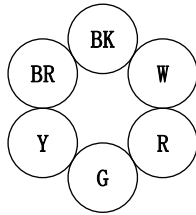
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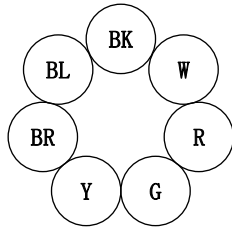
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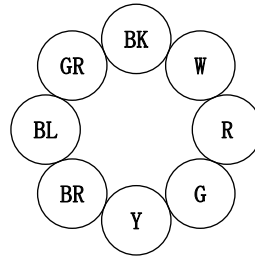
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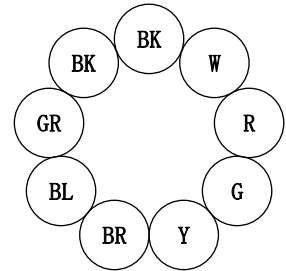
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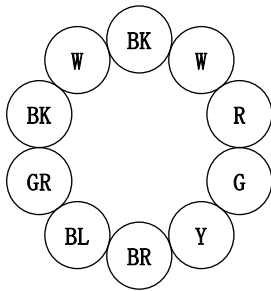
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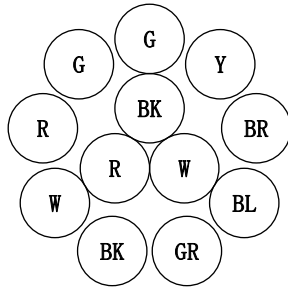
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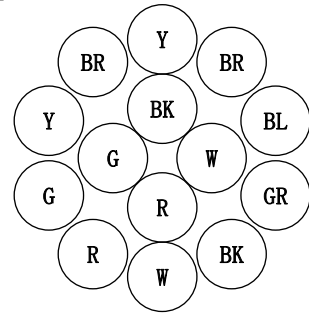
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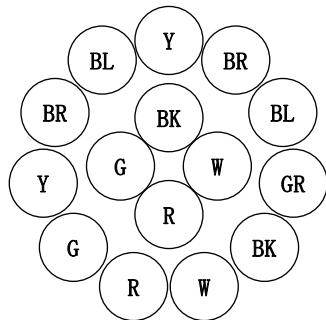
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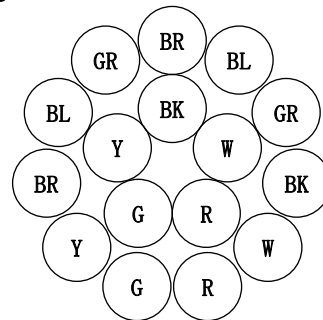
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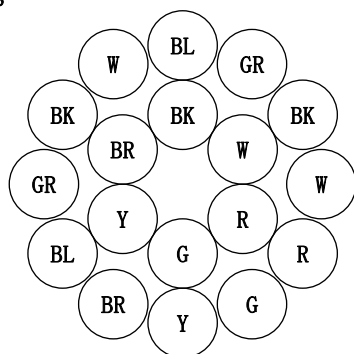
1 5



1 6



1 8



2 0

