# $k^2$

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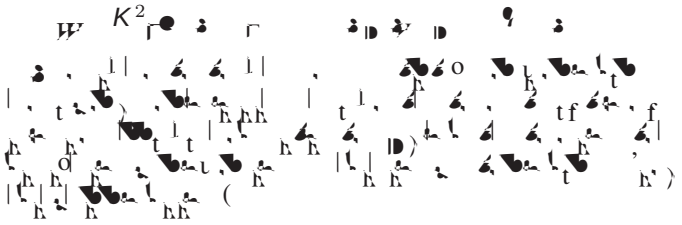
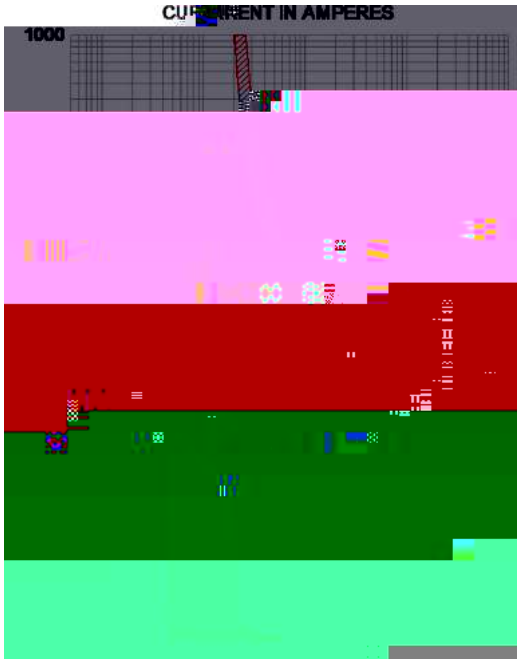
***Abstract*** $I^2t$, $I^2t$, $I^2t$, $I^2t$ $k^2$, **3003.2** **142-2007,**

***Index Terms*** $I^2t$,



| $I_G$(A) | $t_f$(s) | $I_G^2t$ ($A^2s$) | $S_{30}\rightarrow S_{30\ trade\ size}$ ($mm^2$) | $S_{90}\rightarrow S_{90\ trade\ size}$ ($mm^2$) |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
| 20 | 991 | $3.96\cdot10^5$ | 3.59→4 | 4.43→6 |
| 30 | 193 | 1.74105 | 2.37→2.5 | 2.94→4 |
| 40 | 53 | $8.48\cdot10^4$ | 1.66→2.5 | 2.05→2.5 |
| 50 | 21.6 | $5.40\cdot10^4$ | 1.32→1.5 | 1.64→2.5 |
| 60 | 20.8 | $7.49\cdot10^4$ | 1.56→2.5 | 1.93→2.5 |
| 100 | 5.4 | $5.40\cdot10^4$ | 1.32→1.5 | 1.64→2.5 |
| 200 | 1.73 | $6.92\cdot10^4$ | 1.50→1.5 | 1.85→2.5 |
| 400 | 0.5 | $8.00\cdot10^4$ | 1.41→2.5 | 1.96→2.5 |

| Cable insulation | $\theta_0$(°C) | $\theta_{Af}$(°C) |
|---|---|---|
| 70°C Polyvinyl chloride (PVC) | 60 | 200 |
| 90°C Polyvinyl chloride (PVC) | 80 | 200 |
| Cross-linked polyethylene (XLPE) | 80 | 200 |
| 60 °C Ethylene propylene rubber (EPR) | 55 | 200 |
| 85 °C Ethylene propylene rubber (EPR) | 75 | 220 |
| Mineral PVC covered | 70 | 200 |
| Mineral bare sheath | 105 | 250 |




| $I_{cr}$(A) | $t_f$(s) | $I_c^2t$ ($A^2s$) | $S_{30}\rightarrow S_{30}$ trade size ($mm^2$) | $S_{90}\rightarrow S_{90}$ trade size ($mm^2$) |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
| 20 | 991 | $3.96\cdot10^5$ | 3.59→4 | 4.43→6 |
| 30 | 193 | 1.74105 | 2.37→2.5 | 2.94→4 |
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| 50 | 21.6 | $5.40\cdot10^4$ | 1.32→1.5 | 1.64→2.5 |
| 60 | 20.8 | $7.49\cdot10^4$ | 1.56→2.5 | 1.93→2.5 |
| 100 | 5.4 | $5.40\cdot10^4$ | 1.32→1.5 | 1.64→2.5 |
| 200 | 1.73 | $6.92\cdot10^4$ | 1.50→1.5 | 1.85→2.5 |
| 400 | 0.5 | $8.00\cdot10^4$ | 1.61→2.5 | 1.99→2.5 |
| 500 | 0.37 | $9.25\cdot10^4$ | 1.73→2.5 | 2.14→2.5 |
| 600 | 0.23 | $8.28\cdot10^4$ | 1.64 →2.5 | 2.03 →2.5 |
| 700 | 0.18 | $8.82\cdot10^4$ | 1.69→2.5 | 2.09→2.5 |
| 800 | 0.13 | $8.32\cdot10^4$ | 1.64→2.5 | 2.03→2.5 |
| 1000 | 0.014 | $1.40\cdot10^4$ | 0.67→1.5 | 0.83→1.5 |

$\varepsilon \geq 1.05$

| Insulation | $t_f$ (s) | S (mm$^2$) | $t_f$ (s) | S (mm$^2$) | $t_f$ (s) | S (mm$^2$) | $t_f$ (s) | S (mm$^2$) |
|---|---|---|---|---|---|---|---|---|
| PVC | 0.1 | n/a | 1 | 10 | 10 | 95 | 100 | >300 |
| EPR | 0.1 | 1.5 | 1 | 16 | 10 | 150 | 100 | >300 |
| XLPE | 0.1 | 1.5 | 1 | 16 | 10 | 150 | 100 | >300 |

$\varepsilon \leq 1.05$ $t_f$

$S = 10$ $t_f$ $t_f \leq 0.1$