**建筑节能设计报告书**

公共建筑

甲类

|  |  |
| --- | --- |
| 工程名称 | 绿色佳园 |
| 工程地点 | 福建-泉州 |
| 设计编号 |  |
| 建设单位 |  |
| 设计单位 | 黎明职业大学建筑工程学院 |
| 设 计 人 |  |
| 校 对 人 |  |
| 审 核 人 |  |
| 设计日期 | 2021年12月22日 |



|  |  |
| --- | --- |
| 采用软件 | 节能设计BECS2020 |
| 软件版本 | 20190909 |
| 研发单位 | 北京绿建软件有限公司 |
| 正版授权码 | T13055462332 |

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# 建筑概况

|  |  |  |
| --- | --- | --- |
| 工程名称 | 绿色佳园 | |
| 工程地点 | 福建-泉州 | |
| 地理位置 | 北纬：24.56° | 东经：118.36° |
| 建筑面积 | 地上12339㎡ 地下0㎡ | |
| 建筑层数 | 地上7 地下0 | |
| 建筑高度 | 30.9m | |
| 建筑（节能计算）体积 | 51993.37 | |
| 建筑（节能计算）外表面积 | 11100.21 | |
| 北向角度 | 83 | |
| 结构类型 |  | |
| 外墙太阳辐射吸收系数 | 0.75 | |
| 屋顶太阳辐射吸收系数 | 0.75 | |

# 设计依据

1. 《福建省公共建筑节能设计标准》DBJ 13-305-2019

2. 《民用建筑热工设计规范》GB50176

3. 《建筑幕墙、门窗通用技术条件》GB/T 31433-2015

4. 《建筑外门窗气密，水密，抗风压性能分级及检测方法》GB/T 7106-2008

5. 《建筑幕墙》GB/T 21086-2007

# 规定性指标检查

## 工程材料

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 材料名称 | 导热系数λ | 蓄热系数S | 密度ρ | 比热容Cp | 蒸汽渗透系数u | 备注 |
| W/(m.K) | W/(㎡.K) | kg/m3 | J/(kg.K) | g/(m.h.kPa) |
| 水泥砂浆 | 0.930 | 11.370 | 1800.0 | 1050.0 | 0.0210 | 来源：《民用建筑热工设计规范》GB50176-2016 |
| 石灰砂浆 | 0.810 | 10.070 | 1600.0 | 1050.0 | 0.0443 | 来源：《民用建筑热工设计规范》GB50176-2016 |
| 钢筋混凝土 | 1.740 | 17.200 | 2500.0 | 920.0 | 0.0158 | 来源：《民用建筑热工设计规范》GB50176-2016 |
| 挤塑聚苯乙烯泡沫塑料（带表皮） | 0.030 | 0.340 | 35.0 | 1380.0 | 0.0000 | 来源：《民用建筑热工设计规范》GB50176-2016，蒸汽渗透系数没有给出 |
| 加气混凝土、泡沫混凝土(ρ=700) | 0.180 | 3.100 | 700.0 | 1050.0 | 0.0998 | 来源：《民用建筑热工设计规范》GB50176-2016 |
| 混凝土多孔砖(190六孔砖） | 0.750 | 7.490 | 1450.0 | 709.4 | 0.0000 |  |
| 聚苯颗粒保温砂浆 | 0.060 | 0.950 | 230.0 | 900.0 | 0.0000 |  |
| 浮石混凝土(ρ=1100)(水泥焦渣) | 0.420 | 6.130 | 1100.0 | 1050.0 | 0.0353 | 蒸汽渗透系数为测定值 |
| 保温砂浆 | 0.290 | 4.440 | 800.0 | 1050.0 | 0.0000 | 蒸汽渗透系数没有给出 |
| 保温砂浆 | 0.290 | 4.440 | 800.0 | 1050.0 | 0.0000 | 蒸汽渗透系数没有给出 |

## 围护结构作法简要说明

**1. 屋顶：**屋顶构造一：（由上到下）

浮石混凝土(ρ=1100)(水泥焦渣) 20mm＋挤塑聚苯乙烯泡沫塑料（带表皮） 20mm＋挤塑聚苯乙烯泡沫塑料（带表皮） 20mm＋保温砂浆 30mm＋加气混凝土、泡沫混凝土(ρ=700) 80mm＋钢筋混凝土 120mm＋保温砂浆 20mm

**2. 屋顶防火隔离带：**屋顶防火隔离带构造一：（由上到下）

水泥砂浆 20mm＋聚苯颗粒保温砂浆 20mm＋水泥砂浆 20mm＋钢筋混凝土 200mm＋石灰砂浆 20mm

**3. 外墙构造：**外墙构造一：（由外到内）

水泥砂浆 20mm＋挤塑聚苯乙烯泡沫塑料（带表皮） 20mm＋水泥砂浆 20mm＋钢筋混凝土 200mm＋石灰砂浆 20mm

**4. 挑空楼板构造：**挑空楼板构造一：（由上到下）

水泥砂浆 20mm＋钢筋混凝土 120mm＋水泥砂浆 20mm＋挤塑聚苯乙烯泡沫塑料（带表皮） 20mm＋水泥砂浆 20mm

**5. 外窗构造：**断热铝合金窗--Low-E中空玻璃：

传热系数2.800W/m^2.K，太阳得热系数0.652

## 体形系数

|  |  |
| --- | --- |
| 外表面积 | 11100.21 |
| 建筑体积 | 51993.37 |
| 体形系数 | 0.21 |

## 窗墙比

### 窗墙比

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 朝向 | 窗面积(㎡) | 墙面积(㎡) | 窗墙比 | 限值 | 结论 |
| 南向 | 581.66 | 2284.41 | 0.25 | 0.70 | 适宜 |
| 北向 | 468.69 | 1556.54 | 0.30 | 0.70 | 适宜 |
| 东向 | 218.26 | 1325.43 | 0.16 | 0.70 | 适宜 |
| 西向 | 300.01 | 1705.63 | 0.18 | 0.70 | 适宜 |
| 《标准》依据 | | 《福建省公共建筑节能设计标准》DBJ 13-305-2019第4.1.3条 | | | |
| 标准要求 | | 甲类公共建筑各单一朝向窗墙面积比不宜大于0.70 | | | |
| 结论 | | 适宜 | | | |

### 外窗表

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 朝向 | 编号 | 尺寸 | 楼层 | 数量 | 单个面积 （㎡） | 合计面积 （㎡） |
| 南向 581.66 | C0815 | 0.80×1.50 | 3 | 1 | 1.20 | 1.20 |
| C1621a | 1.65×2.10 | 4 | 2 | 3.47 | 6.93 |
| GC0404 | 0.40×0.40 | 4,6 | 6 | 0.16 | 0.96 |
| GC0504 | 0.50×0.40 | 5 | 3 | 0.20 | 0.60 |
| GC4815 | 4.80×1.50 | 2 | 2 | 7.20 | 14.40 |
| TC2217 | 2.20×1.70 | 5 | 6 | 3.74 | 22.44 |
| TC2223 | 2.20×2.30 | 2~4 | 18 | 5.06 | 91.08 |
| TC2226 | 2.20×2.60 | 1 | 6 | 5.72 | 34.32 |
| TC2423 | 2.40×2.30 | 6~7 | 5 | 5.52 | 27.60 |
| TC2523 | 2.50×2.30 | 3~4 | 2 | 5.75 | 11.50 |
| TC2616 | 2.60×1.60 | 2~4 | 3 | 4.16 | 12.48 |
| TC2617 | 2.60×1.70 | 5 | 1 | 4.42 | 4.42 |
| TC2716 | 2.70×1.60 | 7 | 1 | 4.32 | 4.32 |
| TC3016 | 3.00×1.60 | 4~5 | 2 | 4.80 | 9.60 |
| TC3017 | 3.00×1.70 | 6 | 12 | 5.10 | 61.20 |
| TC3023 | 3.00×2.30 | 4~5,7 | 25 | 6.90 | 172.50 |
| TC3623 | 3.60×2.30 | 7 | 10 | 8.28 | 82.80 |
| TC3717 | 3.70×1.70 | 5 | 1 | 6.29 | 6.29 |
| TC3723 | 3.70×2.30 | 3~4 | 2 | 8.51 | 17.02 |
| 北向 468.69 | C1321a | 1.35×2.10 | 1 | 2 | 2.84 | 5.67 |
| C1515 | 1.90×1.50 | 5 | 1 | 2.85 | 2.85 |
| C1515 | 1.50×1.50 | 6~7 | 2 | 2.25 | 4.50 |
| C3021 | 3.00×2.10 | 2 | 1 | 6.30 | 6.30 |
| C3430a | 3.45×3.00 | 4 | 8 | 10.35 | 82.80 |
| C4530 | 4.50×3.00 | 4 | 2 | 13.50 | 27.00 |
| C7221 | 7.20×2.10 | 2 | 1 | 15.12 | 15.12 |
| GC0404 | 0.40×0.40 | 5 | 1 | 0.16 | 0.16 |
| MC-7 | 1.90×2.10 | 3~4 | 2 | 3.99 | 7.98 |
| TC0926 | 0.90×2.60 | 1 | 1 | 2.34 | 2.34 |
| TC1526 | 1.50×2.60 | 1 | 1 | 3.90 | 3.90 |
| TC2417 | 2.40×1.70 | 3 | 7 | 4.08 | 28.56 |
| TC2423 | 2.40×2.30 | 2,4 | 8 | 5.52 | 44.16 |
| TC2626 | 2.60×2.60 | 1 | 2 | 6.76 | 13.52 |
| TC2717 | 2.70×1.70 | 3 | 5 | 4.59 | 22.95 |
| TC2723 | 2.70×2.30 | 2 | 3 | 6.21 | 18.63 |
| TC2726 | 2.70×2.60 | 1 | 4 | 7.02 | 28.08 |
| TC3026 | 3.00×2.60 | 1 | 3 | 7.80 | 23.40 |
| TC3323 | 3.30×2.30 | 4 | 7 | 7.59 | 53.13 |
| TC3623 | 3.60×2.30 | 4 | 1 | 8.28 | 8.28 |
| TC3923 | 3.60×2.30 | 4 | 3 | 8.28 | 24.84 |
| TC4226 | 4.20×2.60 | 1 | 2 | 10.92 | 21.84 |
| TC4227 | 4.20×2.70 | 2 | 2 | 11.34 | 22.68 |
| 东向 218.26 | C0521 | 0.50×2.10 | 1 | 2 | 1.05 | 2.10 |
| C0721 | 0.70×2.10 | 1 | 1 | 1.47 | 1.47 |
| C1021 | 1.00×2.10 | 1 | 1 | 2.10 | 2.10 |
| C1930 | 1.90×3.00 | 4 | 1 | 5.70 | 5.70 |
| C2230 | 2.20×3.00 | 4 | 2 | 6.60 | 13.20 |
| C3021 | 3.00×2.10 | 1 | 1 | 6.30 | 6.30 |
| C3230 | 3.20×3.00 | 4 | 2 | 9.60 | 19.20 |
| C3330 | 3.30×3.00 | 4 | 1 | 9.90 | 9.90 |
| C3430 | 3.40×3.00 | 4 | 3 | 10.20 | 30.60 |
| C3530a | 3.55×3.00 | 4 | 1 | 10.65 | 10.65 |
| C3830 | 3.80×3.00 | 4 | 1 | 11.40 | 11.40 |
| C5730 | 5.70×3.00 | 4 | 2 | 17.10 | 34.20 |
| TC1527 | 1.50×2.70 | 2 | 2 | 4.05 | 8.10 |
| TC1923 | 1.90×2.30 | 4 | 3 | 4.37 | 13.11 |
| TC2517 | 2.50×1.70 | 3 | 1 | 4.25 | 4.25 |
| TC2523 | 2.50×2.30 | 2 | 1 | 5.75 | 5.75 |
| TC3326 | 3.00×2.60 | 1 | 2 | 7.80 | 15.60 |
| TC4527 | 4.50×2.70 | 2 | 1 | 12.15 | 12.15 |
| TC4826 | 4.80×2.60 | 1 | 1 | 12.48 | 12.48 |
| 西向 300.01 | C0321a | 0.35×2.10 | 1 | 2 | 0.74 | 1.47 |
| C0721 | 0.70×2.10 | 1 | 1 | 1.47 | 1.47 |
| C0815 | 0.80×1.50 | 1 | 1 | 1.20 | 1.20 |
| C1930 | 1.90×3.00 | 4 | 1 | 5.70 | 5.70 |
| C2230 | 2.20×3.00 | 4 | 2 | 6.60 | 13.20 |
| C5730 | 5.70×3.00 | 4 | 2 | 17.10 | 34.20 |
| GC0404 | 0.40×0.40 | 1~4 | 12 | 0.16 | 1.92 |
| GC0504 | 0.50×0.40 | 5~6 | 6 | 0.20 | 1.20 |
| MC-4' | 2.74×1.50 | 1 | 1 | 4.10 | 4.10 |
| TC1223 | 1.20×2.30 | 5~6 | 2 | 2.76 | 5.52 |
| TC1527 | 1.50×2.70 | 2 | 2 | 4.05 | 8.10 |
| TC2416 | 2.40×1.60 | 5 | 1 | 3.84 | 3.84 |
| TC2423 | 2.40×2.30 | 4 | 1 | 5.52 | 5.52 |
| TC2517 | 2.50×1.70 | 3 | 1 | 4.25 | 4.25 |
| TC2523 | 2.50×2.30 | 2,4 | 2 | 5.75 | 11.50 |
| TC2716 | 2.70×1.60 | 4,6 | 2 | 4.32 | 8.64 |
| TC2717 | 2.70×1.70 | 3 | 4 | 4.59 | 18.36 |
| TC2723 | 2.70×2.30 | 2,5 | 8 | 6.21 | 49.68 |
| TC3016 | 3.00×1.60 | 2 | 1 | 4.80 | 4.80 |
| TC3017 | 3.00×1.70 | 3 | 1 | 5.10 | 5.10 |
| TC3023 | 3.00×2.30 | 4~6 | 13 | 6.90 | 89.70 |
| TC3126 | 3.10×2.60 | 1 | 1 | 8.06 | 8.06 |
| TC4826 | 4.80×2.60 | 1 | 1 | 12.48 | 12.48 |

## 可见光透射比

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 朝向 | 窗墙比 | 最不利窗编号 | 最不利透射比 | 透射比限值 |
| 南向 | 0.25 | TC2423 | 1.00 | 0.60 |
| 北向 | 0.30 | C1515 | 1.00 | 0.60 |
| 东向 | 0.16 | C3530a | 1.00 | 0.60 |
| 西向 | 0.18 | TC3023 | 1.00 | 0.60 |
| 标准依据 | | 《福建省公共建筑节能设计标准》DBJ 13-305-2019第4.1.4条 | | |
| 标准要求 | | 单一朝向窗墙面积比小于0.40时，玻璃的可见光透射比不应当小于0.6;单一朝向窗墙面积比大于等于0.40时，玻璃的可见光透射比不应当小于0.4; | | |
| 结论 | | 满足 | | |

## 天窗

### 天窗屋顶比

本工程无此项内容

### 天窗类型

本工程无此项内容

## 屋顶构造

### 屋顶相关构造

#### 屋顶构造一

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 材料名称 （由上到下） | 厚度δ | 导热系数λ | 蓄热系数S | 修正系数 | 热阻R | 热惰性指标 |
| (mm) | W/(m.K) | W/(㎡.K) | α | (㎡K)/W | D=R\*S |
| 浮石混凝土(ρ=1100)(水泥焦渣) | 20 | 0.420 | 6.130 | 1.00 | 0.048 | 0.292 |
| 挤塑聚苯乙烯泡沫塑料（带表皮） | 20 | 0.030 | 0.340 | 1.20 | 0.556 | 0.227 |
| 挤塑聚苯乙烯泡沫塑料（带表皮） | 20 | 0.030 | 0.340 | 1.20 | 0.556 | 0.227 |
| 保温砂浆 | 30 | 0.290 | 4.440 | 1.00 | 0.103 | 0.459 |
| 加气混凝土、泡沫混凝土(ρ=700) | 80 | 0.180 | 3.100 | 1.00 | 0.444 | 1.378 |
| 钢筋混凝土 | 120 | 1.740 | 17.200 | 1.00 | 0.069 | 1.186 |
| 保温砂浆 | 20 | 0.290 | 4.440 | 1.00 | 0.069 | 0.306 |
| 各层之和∑ | 310 | － | － | － | 1.845 | 4.075 |
| 外表面太阳辐射吸收系数 | 0.75 | | | | | |
| 传热系数K=1/(0.16+∑R) | 0.50 | | | | | |

#### 屋顶防火隔离带构造一

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 材料名称 （由上到下） | 厚度δ | 导热系数λ | 蓄热系数S | 修正系数 | 热阻R | 热惰性指标 |
| (mm) | W/(m.K) | W/(㎡.K) | α | (㎡K)/W | D=R\*S |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 聚苯颗粒保温砂浆 | 20 | 0.060 | 0.950 | 1.20 | 0.278 | 0.317 |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 钢筋混凝土 | 200 | 1.740 | 17.200 | 1.00 | 0.115 | 1.977 |
| 石灰砂浆 | 20 | 0.810 | 10.070 | 1.00 | 0.025 | 0.249 |
| 各层之和∑ | 280 | － | － | － | 0.460 | 3.031 |
| 外表面太阳辐射吸收系数 | 0.75 | | | | | |
| 传热系数K=1/(0.16+∑R) | 1.61 | | | | | |

### 屋顶平均热工特性

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 构造名称 | 面积(㎡) | 面积所占比例 | 传热系数K W / (㎡K) | 热惰性指标D | 太阳辐射吸收系数 |
| 屋顶构造一 | 2911.18 | 0.880 | 0.50 | 4.08 | 0.75 |
| 屋顶防火隔离带构造一 | 395.78 | 0.120 | 1.61 | 3.03 | 0.75 |
| 合计 | 3306.96 | 1.000 | 0.63 | 3.95 | 0.75 |
| 标准依据 | 《福建省公共建筑节能设计标准》DBJ 13-305-2019第4.2.1条 | | | | |
| 标准要求 | K应满足表4.2.1-2的规定(K≤0.50) | | | | |
| 结论 | 不满足 | | | | |

## 外墙构造

### 外墙构造一

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 材料名称 （由外到内） | 厚度δ | 导热系数λ | 蓄热系数S | 修正系数 | 热阻R | 热惰性指标 |
| (mm) | W/(m.K) | W/(㎡.K) | α | (㎡K)/W | D=R\*S |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 挤塑聚苯乙烯泡沫塑料（带表皮） | 20 | 0.030 | 0.340 | 1.20 | 0.556 | 0.227 |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 钢筋混凝土 | 200 | 1.740 | 17.200 | 1.00 | 0.115 | 1.977 |
| 石灰砂浆 | 20 | 0.810 | 10.070 | 1.00 | 0.025 | 0.249 |
| 各层之和∑ | 280 | － | － | － | 0.738 | 2.941 |
| 外表面太阳辐射吸收系数 | 0.75 | | | | | |
| 传热系数K=1/(0.16+∑R) | 1.11 | | | | | |
| 标准依据 | 《福建省公共建筑节能设计标准》DBJ 13-305-2019第4.2.1条 | | | | | |
| 标准要求 | K应满足表4.2.1-2的规定(K≤1.50) | | | | | |
| 结论 | 满足 | | | | | |

## 挑空楼板构造

### 挑空楼板构造一

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 材料名称 （由上到下） | 厚度δ | 导热系数λ | 蓄热系数S | 修正系数 | 热阻R | 热惰性指标 |
| (mm) | W/(m.K) | W/(㎡.K) | α | (㎡K)/W | D=R\*S |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 钢筋混凝土 | 120 | 1.740 | 17.200 | 1.00 | 0.069 | 1.186 |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 挤塑聚苯乙烯泡沫塑料（带表皮） | 20 | 0.030 | 0.340 | 1.20 | 0.556 | 0.227 |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 各层之和∑ | 200 | － | － | － | 0.689 | 2.146 |
| 传热系数K=1/(0.16+∑R) | 1.18 | | | | | |
| 标准依据 | 《福建省公共建筑节能设计标准》DBJ 13-305-2019第4.2.1条 | | | | | |
| 标准要求 | K≤1.50 | | | | | |
| 结论 | 满足 | | | | | |

## 外窗热工

### 外窗构造

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 序号 | 构造名称 | 构造编号 | 传热系数 | 太阳得热系数 | 可见光透射比 | 备注 |
| 1 | 断热铝合金窗--Low-E中空玻璃 | 74 | 2.80 | 0.65 | 1.000 | 摘自《福建省居住建筑节能设计标准实施细则》55页 |

### 外遮阳类型

#### 百叶遮阳



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 序号 | 编号 | 挑出 A (m) | 百叶间距 D (m) | 下垂 C (m) |
| 1 | 百叶遮阳0 | 0.244 | 0.400 | 0.141 |

### 平均传热系数

1. 南向：

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 传热系数 |
| 1 | C0815 | 3 | 1 | 1.200 | 1.200 | 74 | 2.800 |
| 2 | C1621a | 4 | 2 | 3.465 | 6.930 | 74 | 2.800 |
| 3 | GC0404 | 4,6 | 6 | 0.160 | 0.960 | 74 | 2.800 |
| 4 | GC0504 | 5 | 3 | 0.200 | 0.600 | 74 | 2.800 |
| 5 | GC4815 | 2 | 2 | 7.200 | 14.400 | 74 | 2.800 |
| 6 | TC2217 | 5 | 6 | 3.740 | 22.440 | 74 | 2.800 |
| 7 | TC2223 | 2~4 | 18 | 5.060 | 91.080 | 74 | 2.800 |
| 8 | TC2226 | 1 | 6 | 5.720 | 34.320 | 74 | 2.800 |
| 9 | TC2423 | 6~7 | 5 | 5.520 | 27.600 | 74 | 2.800 |
| 10 | TC2523 | 3~4 | 2 | 5.750 | 11.500 | 74 | 2.800 |
| 11 | TC2616 | 2~4 | 3 | 4.160 | 12.480 | 74 | 2.800 |
| 12 | TC2617 | 5 | 1 | 4.420 | 4.420 | 74 | 2.800 |
| 13 | TC2716 | 7 | 1 | 4.320 | 4.320 | 74 | 2.800 |
| 14 | TC3016 | 4~5 | 2 | 4.800 | 9.600 | 74 | 2.800 |
| 15 | TC3017 | 6 | 12 | 5.100 | 61.200 | 74 | 2.800 |
| 16 | TC3023 | 4~5,7 | 25 | 6.900 | 172.500 | 74 | 2.800 |
| 17 | TC3623 | 7 | 10 | 8.280 | 82.800 | 74 | 2.800 |
| 18 | TC3717 | 5 | 1 | 6.290 | 6.290 | 74 | 2.800 |
| 19 | TC3723 | 3~4 | 2 | 8.510 | 17.020 | 74 | 2.800 |
| 朝向总面积(㎡) | | | 581.660 | 朝向平均传热系数 | | | 2.800 |

2. 北向：

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 传热系数 |
| 1 | C1321a | 1 | 2 | 2.835 | 5.670 | 74 | 2.800 |
| 2 | C1515 | 5 | 1 | 2.850 | 2.850 | 74 | 2.800 |
| 3 | C1515 | 6~7 | 2 | 2.250 | 4.500 | 74 | 2.800 |
| 4 | C3021 | 2 | 1 | 6.300 | 6.300 | 74 | 2.800 |
| 5 | C3430a | 4 | 8 | 10.350 | 82.800 | 74 | 2.800 |
| 6 | C4530 | 4 | 2 | 13.500 | 27.000 | 74 | 2.800 |
| 7 | C7221 | 2 | 1 | 15.120 | 15.120 | 74 | 2.800 |
| 8 | GC0404 | 5 | 1 | 0.160 | 0.160 | 74 | 2.800 |
| 9 | MC-7 | 3~4 | 2 | 3.990 | 7.980 | 74 | 2.800 |
| 10 | TC0926 | 1 | 1 | 2.340 | 2.340 | 74 | 2.800 |
| 11 | TC1526 | 1 | 1 | 3.900 | 3.900 | 74 | 2.800 |
| 12 | TC2417 | 3 | 7 | 4.080 | 28.560 | 74 | 2.800 |
| 13 | TC2423 | 2,4 | 8 | 5.520 | 44.160 | 74 | 2.800 |
| 14 | TC2626 | 1 | 2 | 6.760 | 13.520 | 74 | 2.800 |
| 15 | TC2717 | 3 | 5 | 4.590 | 22.950 | 74 | 2.800 |
| 16 | TC2723 | 2 | 3 | 6.210 | 18.630 | 74 | 2.800 |
| 17 | TC2726 | 1 | 4 | 7.020 | 28.080 | 74 | 2.800 |
| 18 | TC3026 | 1 | 3 | 7.800 | 23.400 | 74 | 2.800 |
| 19 | TC3323 | 4 | 7 | 7.590 | 53.130 | 74 | 2.800 |
| 20 | TC3623 | 4 | 1 | 8.280 | 8.280 | 74 | 2.800 |
| 21 | TC3923 | 4 | 3 | 8.280 | 24.840 | 74 | 2.800 |
| 22 | TC4226 | 1 | 2 | 10.920 | 21.840 | 74 | 2.800 |
| 23 | TC4227 | 2 | 2 | 11.340 | 22.680 | 74 | 2.800 |
| 朝向总面积(㎡) | | | 468.690 | 朝向平均传热系数 | | | 2.800 |

3. 东向：

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 传热系数 |
| 1 | C0521 | 1 | 2 | 1.050 | 2.100 | 74 | 2.800 |
| 2 | C0721 | 1 | 1 | 1.470 | 1.470 | 74 | 2.800 |
| 3 | C1021 | 1 | 1 | 2.100 | 2.100 | 74 | 2.800 |
| 4 | C1930 | 4 | 1 | 5.700 | 5.700 | 74 | 2.800 |
| 5 | C2230 | 4 | 2 | 6.600 | 13.200 | 74 | 2.800 |
| 6 | C3021 | 1 | 1 | 6.300 | 6.300 | 74 | 2.800 |
| 7 | C3230 | 4 | 2 | 9.600 | 19.200 | 74 | 2.800 |
| 8 | C3330 | 4 | 1 | 9.900 | 9.900 | 74 | 2.800 |
| 9 | C3430 | 4 | 3 | 10.200 | 30.600 | 74 | 2.800 |
| 10 | C3530a | 4 | 1 | 10.650 | 10.650 | 74 | 2.800 |
| 11 | C3830 | 4 | 1 | 11.400 | 11.400 | 74 | 2.800 |
| 12 | C5730 | 4 | 2 | 17.100 | 34.200 | 74 | 2.800 |
| 13 | TC1527 | 2 | 2 | 4.050 | 8.100 | 74 | 2.800 |
| 14 | TC1923 | 4 | 3 | 4.370 | 13.110 | 74 | 2.800 |
| 15 | TC2517 | 3 | 1 | 4.250 | 4.250 | 74 | 2.800 |
| 16 | TC2523 | 2 | 1 | 5.750 | 5.750 | 74 | 2.800 |
| 17 | TC3326 | 1 | 2 | 7.800 | 15.600 | 74 | 2.800 |
| 18 | TC4527 | 2 | 1 | 12.150 | 12.150 | 74 | 2.800 |
| 19 | TC4826 | 1 | 1 | 12.480 | 12.480 | 74 | 2.800 |
| 朝向总面积(㎡) | | | 218.260 | 朝向平均传热系数 | | | 2.800 |

4. 西向：

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 传热系数 |
| 1 | C0321a | 1 | 2 | 0.735 | 1.470 | 74 | 2.800 |
| 2 | C0721 | 1 | 1 | 1.470 | 1.470 | 74 | 2.800 |
| 3 | C0815 | 1 | 1 | 1.200 | 1.200 | 74 | 2.800 |
| 4 | C1930 | 4 | 1 | 5.700 | 5.700 | 74 | 2.800 |
| 5 | C2230 | 4 | 2 | 6.600 | 13.200 | 74 | 2.800 |
| 6 | C5730 | 4 | 2 | 17.100 | 34.200 | 74 | 2.800 |
| 7 | GC0404 | 1~4 | 12 | 0.160 | 1.920 | 74 | 2.800 |
| 8 | GC0504 | 5~6 | 6 | 0.200 | 1.200 | 74 | 2.800 |
| 9 | MC-4' | 1 | 1 | 4.104 | 4.104 | 74 | 2.800 |
| 10 | TC1223 | 5~6 | 2 | 2.760 | 5.520 | 74 | 2.800 |
| 11 | TC1527 | 2 | 2 | 4.050 | 8.100 | 74 | 2.800 |
| 12 | TC2416 | 5 | 1 | 3.840 | 3.840 | 74 | 2.800 |
| 13 | TC2423 | 4 | 1 | 5.520 | 5.520 | 74 | 2.800 |
| 14 | TC2517 | 3 | 1 | 4.250 | 4.250 | 74 | 2.800 |
| 15 | TC2523 | 2,4 | 2 | 5.750 | 11.500 | 74 | 2.800 |
| 16 | TC2716 | 4,6 | 2 | 4.320 | 8.640 | 74 | 2.800 |
| 17 | TC2717 | 3 | 4 | 4.590 | 18.360 | 74 | 2.800 |
| 18 | TC2723 | 2,5 | 8 | 6.210 | 49.680 | 74 | 2.800 |
| 19 | TC3016 | 2 | 1 | 4.800 | 4.800 | 74 | 2.800 |
| 20 | TC3017 | 3 | 1 | 5.100 | 5.100 | 74 | 2.800 |
| 21 | TC3023 | 4~6 | 13 | 6.900 | 89.700 | 74 | 2.800 |
| 22 | TC3126 | 1 | 1 | 8.060 | 8.060 | 74 | 2.800 |
| 23 | TC4826 | 1 | 1 | 12.480 | 12.480 | 74 | 2.800 |
| 朝向总面积(㎡) | | | 300.014 | 朝向平均传热系数 | | | 2.800 |

### 综合太阳得热系数

1. 南向：

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 窗太阳得热系数 | 外遮阳编号 | 外遮阳系数 | 综合太阳得热系数 |
| 1 | C0815 | 3 | 1 | 1.200 | 1.200 | 74 | 0.652 | 百叶遮阳0 | 0.605 | 0.394 |
| 2 | C1621a | 4 | 2 | 3.465 | 6.930 | 74 | 0.652 | 百叶遮阳0 | 0.596 | 0.389 |
| 3 | GC0404 | 4,6 | 6 | 0.160 | 0.960 | 74 | 0.652 | 百叶遮阳0 | 0.622 | 0.406 |
| 4 | GC0504 | 5 | 3 | 0.200 | 0.600 | 74 | 0.652 | 百叶遮阳0 | 0.615 | 0.401 |
| 5 | GC4815 | 2 | 2 | 7.200 | 14.400 | 74 | 0.652 | 百叶遮阳0 | 0.591 | 0.385 |
| 6 | TC2217 | 5 | 6 | 3.740 | 22.440 | 74 | 0.652 | 百叶遮阳0 | 0.594 | 0.387 |
| 7 | TC2223 | 2~4 | 18 | 5.060 | 91.080 | 74 | 0.652 | 百叶遮阳0 | 0.594 | 0.387 |
| 8 | TC2226 | 1 | 6 | 5.720 | 34.320 | 74 | 0.652 | 百叶遮阳0 | 0.594 | 0.387 |
| 9 | TC2423 | 6~7 | 5 | 5.520 | 27.600 | 74 | 0.652 | 百叶遮阳0 | 0.593 | 0.387 |
| 10 | TC2523 | 3~4 | 2 | 5.750 | 11.500 | 74 | 0.652 | 百叶遮阳0 | 0.593 | 0.387 |
| 11 | TC2616 | 2~4 | 3 | 4.160 | 12.480 | 74 | 0.652 | 百叶遮阳0 | 0.593 | 0.387 |
| 12 | TC2617 | 5 | 1 | 4.420 | 4.420 | 74 | 0.652 | 百叶遮阳0 | 0.593 | 0.387 |
| 13 | TC2716 | 7 | 1 | 4.320 | 4.320 | 74 | 0.652 | 百叶遮阳0 | 0.593 | 0.386 |
| 14 | TC3016 | 4~5 | 2 | 4.800 | 9.600 | 74 | 0.652 | 百叶遮阳0 | 0.592 | 0.386 |
| 15 | TC3017 | 6 | 12 | 5.100 | 61.200 | 74 | 0.652 | 百叶遮阳0 | 0.592 | 0.386 |
| 16 | TC3023 | 4~5,7 | 25 | 6.900 | 172.500 | 74 | 0.652 | 百叶遮阳0 | 0.592 | 0.386 |
| 17 | TC3623 | 7 | 10 | 8.280 | 82.800 | 74 | 0.652 | 百叶遮阳0 | 0.591 | 0.386 |
| 18 | TC3717 | 5 | 1 | 6.290 | 6.290 | 74 | 0.652 | 百叶遮阳0 | 0.591 | 0.386 |
| 19 | TC3723 | 3~4 | 2 | 8.510 | 17.020 | 74 | 0.652 | 百叶遮阳0 | 0.591 | 0.386 |
| 朝向总面积(㎡) | | | | | 581.660 | 综合太阳得热系数 | | | 0.593 | 0.386 |

2. 北向：

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 窗太阳得热系数 | 外遮阳编号 | 外遮阳系数 | 综合太阳得热系数 |
| 1 | C1321a | 1 | 2 | 2.835 | 5.670 | 74 | 0.652 | 百叶遮阳0 | 0.683 | 0.445 |
| 2 | C1515 | 5 | 1 | 2.850 | 2.850 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.445 |
| 3 | C1515 | 6~7 | 2 | 2.250 | 4.500 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.445 |
| 4 | C3021 | 2 | 1 | 6.300 | 6.300 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.445 |
| 5 | C3430a | 4 | 8 | 10.350 | 82.800 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.444 |
| 6 | C4530 | 4 | 2 | 13.500 | 27.000 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.444 |
| 7 | C7221 | 2 | 1 | 15.120 | 15.120 | 74 | 0.652 | 百叶遮阳0 | 0.681 | 0.444 |
| 8 | GC0404 | 5 | 1 | 0.160 | 0.160 | 74 | 0.652 | 百叶遮阳0 | 0.686 | 0.447 |
| 9 | MC-7 | 3~4 | 2 | 3.990 | 7.980 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.445 |
| 10 | TC0926 | 1 | 1 | 2.340 | 2.340 | 74 | 0.652 | 百叶遮阳0 | 0.683 | 0.446 |
| 11 | TC1526 | 1 | 1 | 3.900 | 3.900 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.445 |
| 12 | TC2417 | 3 | 7 | 4.080 | 28.560 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.445 |
| 13 | TC2423 | 2,4 | 8 | 5.520 | 44.160 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.445 |
| 14 | TC2626 | 1 | 2 | 6.760 | 13.520 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.445 |
| 15 | TC2717 | 3 | 5 | 4.590 | 22.950 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.445 |
| 16 | TC2723 | 2 | 3 | 6.210 | 18.630 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.445 |
| 17 | TC2726 | 1 | 4 | 7.020 | 28.080 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.445 |
| 18 | TC3026 | 1 | 3 | 7.800 | 23.400 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.445 |
| 19 | TC3323 | 4 | 7 | 7.590 | 53.130 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.444 |
| 20 | TC3623 | 4 | 1 | 8.280 | 8.280 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.444 |
| 21 | TC3923 | 4 | 3 | 8.280 | 24.840 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.444 |
| 22 | TC4226 | 1 | 2 | 10.920 | 21.840 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.444 |
| 23 | TC4227 | 2 | 2 | 11.340 | 22.680 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.444 |
| 朝向总面积(㎡) | | | | | 468.690 | 综合太阳得热系数 | | | 0.682 | 0.445 |

3. 东向：

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 窗太阳得热系数 | 外遮阳编号 | 外遮阳系数 | 综合太阳得热系数 |
| 1 | C0521 | 1 | 2 | 1.050 | 2.100 | 74 | 0.652 | 百叶遮阳0 | 0.580 | 0.378 |
| 2 | C0721 | 1 | 1 | 1.470 | 1.470 | 74 | 0.652 | 百叶遮阳0 | 0.575 | 0.375 |
| 3 | C1021 | 1 | 1 | 2.100 | 2.100 | 74 | 0.652 | 百叶遮阳0 | 0.572 | 0.373 |
| 4 | C1930 | 4 | 1 | 5.700 | 5.700 | 74 | 0.652 | 百叶遮阳0 | 0.568 | 0.371 |
| 5 | C2230 | 4 | 2 | 6.600 | 13.200 | 74 | 0.652 | 百叶遮阳0 | 0.568 | 0.370 |
| 6 | C3021 | 1 | 1 | 6.300 | 6.300 | 74 | 0.652 | 百叶遮阳0 | 0.567 | 0.370 |
| 7 | C3230 | 4 | 2 | 9.600 | 19.200 | 74 | 0.652 | 百叶遮阳0 | 0.567 | 0.369 |
| 8 | C3330 | 4 | 1 | 9.900 | 9.900 | 74 | 0.652 | 百叶遮阳0 | 0.567 | 0.369 |
| 9 | C3430 | 4 | 3 | 10.200 | 30.600 | 74 | 0.652 | 百叶遮阳0 | 0.566 | 0.369 |
| 10 | C3530a | 4 | 1 | 10.650 | 10.650 | 74 | 0.652 | 百叶遮阳0 | 0.566 | 0.369 |
| 11 | C3830 | 4 | 1 | 11.400 | 11.400 | 74 | 0.652 | 百叶遮阳0 | 0.566 | 0.369 |
| 12 | C5730 | 4 | 2 | 17.100 | 34.200 | 74 | 0.652 | 百叶遮阳0 | 0.566 | 0.369 |
| 13 | TC1527 | 2 | 2 | 4.050 | 8.100 | 74 | 0.652 | 百叶遮阳0 | 0.569 | 0.371 |
| 14 | TC1923 | 4 | 3 | 4.370 | 13.110 | 74 | 0.652 | 百叶遮阳0 | 0.568 | 0.371 |
| 15 | TC2517 | 3 | 1 | 4.250 | 4.250 | 74 | 0.652 | 百叶遮阳0 | 0.567 | 0.370 |
| 16 | TC2523 | 2 | 1 | 5.750 | 5.750 | 74 | 0.652 | 百叶遮阳0 | 0.567 | 0.370 |
| 17 | TC3326 | 1 | 2 | 7.800 | 15.600 | 74 | 0.652 | 百叶遮阳0 | 0.567 | 0.370 |
| 18 | TC4527 | 2 | 1 | 12.150 | 12.150 | 74 | 0.652 | 百叶遮阳0 | 0.566 | 0.369 |
| 19 | TC4826 | 1 | 1 | 12.480 | 12.480 | 74 | 0.652 | 百叶遮阳0 | 0.566 | 0.369 |
| 朝向总面积(㎡) | | | | | 218.260 | 综合太阳得热系数 | | | 0.567 | 0.370 |

4. 西向：

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 窗太阳得热系数 | 外遮阳编号 | 外遮阳系数 | 综合太阳得热系数 |
| 1 | C0321a | 1 | 2 | 0.735 | 1.470 | 74 | 0.652 | 百叶遮阳0 | 0.595 | 0.388 |
| 2 | C0721 | 1 | 1 | 1.470 | 1.470 | 74 | 0.652 | 百叶遮阳0 | 0.584 | 0.380 |
| 3 | C0815 | 1 | 1 | 1.200 | 1.200 | 74 | 0.652 | 百叶遮阳0 | 0.582 | 0.380 |
| 4 | C1930 | 4 | 1 | 5.700 | 5.700 | 74 | 0.652 | 百叶遮阳0 | 0.576 | 0.376 |
| 5 | C2230 | 4 | 2 | 6.600 | 13.200 | 74 | 0.652 | 百叶遮阳0 | 0.576 | 0.375 |
| 6 | C5730 | 4 | 2 | 17.100 | 34.200 | 74 | 0.652 | 百叶遮阳0 | 0.574 | 0.374 |
| 7 | GC0404 | 1~4 | 12 | 0.160 | 1.920 | 74 | 0.652 | 百叶遮阳0 | 0.592 | 0.386 |
| 8 | GC0504 | 5~6 | 6 | 0.200 | 1.200 | 74 | 0.652 | 百叶遮阳0 | 0.588 | 0.383 |
| 9 | MC-4' | 1 | 1 | 4.104 | 4.104 | 74 | 0.652 | 百叶遮阳0 | 0.575 | 0.375 |
| 10 | TC1223 | 5~6 | 2 | 2.760 | 5.520 | 74 | 0.652 | 百叶遮阳0 | 0.579 | 0.377 |
| 11 | TC1527 | 2 | 2 | 4.050 | 8.100 | 74 | 0.652 | 百叶遮阳0 | 0.578 | 0.377 |
| 12 | TC2416 | 5 | 1 | 3.840 | 3.840 | 74 | 0.652 | 百叶遮阳0 | 0.576 | 0.375 |
| 13 | TC2423 | 4 | 1 | 5.520 | 5.520 | 74 | 0.652 | 百叶遮阳0 | 0.576 | 0.375 |
| 14 | TC2517 | 3 | 1 | 4.250 | 4.250 | 74 | 0.652 | 百叶遮阳0 | 0.575 | 0.375 |
| 15 | TC2523 | 2,4 | 2 | 5.750 | 11.500 | 74 | 0.652 | 百叶遮阳0 | 0.575 | 0.375 |
| 16 | TC2716 | 4,6 | 2 | 4.320 | 8.640 | 74 | 0.652 | 百叶遮阳0 | 0.575 | 0.375 |
| 17 | TC2717 | 3 | 4 | 4.590 | 18.360 | 74 | 0.652 | 百叶遮阳0 | 0.575 | 0.375 |
| 18 | TC2723 | 2,5 | 8 | 6.210 | 49.680 | 74 | 0.652 | 百叶遮阳0 | 0.575 | 0.375 |
| 19 | TC3016 | 2 | 1 | 4.800 | 4.800 | 74 | 0.652 | 百叶遮阳0 | 0.575 | 0.375 |
| 20 | TC3017 | 3 | 1 | 5.100 | 5.100 | 74 | 0.652 | 百叶遮阳0 | 0.575 | 0.375 |
| 21 | TC3023 | 4~6 | 13 | 6.900 | 89.700 | 74 | 0.652 | 百叶遮阳0 | 0.575 | 0.375 |
| 22 | TC3126 | 1 | 1 | 8.060 | 8.060 | 74 | 0.652 | 百叶遮阳0 | 0.575 | 0.375 |
| 23 | TC4826 | 1 | 1 | 12.480 | 12.480 | 74 | 0.652 | 百叶遮阳0 | 0.574 | 0.374 |
| 朝向总面积(㎡) | | | | | 300.014 | 综合太阳得热系数 | | | 0.575 | 0.375 |

### 外窗热工性能

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 朝向 | 窗编号 | 窗构造 编号 | K值 | K限值 | 窗墙比 | 是否满足 |
| 南向 | GC4815 | 74 | 2.80 | 3.00 | 0.23 | 满足 |
| GC4815 | 74 | 2.80 | 3.00 | 满足 |
| TC2217 | 74 | 2.80 | 3.00 | 满足 |
| TC2217 | 74 | 2.80 | 3.00 | 满足 |
| TC2217 | 74 | 2.80 | 3.00 | 满足 |
| TC2217 | 74 | 2.80 | 3.00 | 满足 |
| TC2217 | 74 | 2.80 | 3.00 | 满足 |
| TC2217 | 74 | 2.80 | 3.00 | 满足 |
| TC2223 | 74 | 2.80 | 3.00 | 满足 |
| TC2223 | 74 | 2.80 | 3.00 | 满足 |
| 北向 | C3021 | 74 | 2.80 | 3.00 | 满足 |
| C7221 | 74 | 2.80 | 3.00 | 满足 |
| TC0926 | 74 | 2.80 | 3.00 | 满足 |
| TC1526 | 74 | 2.80 | 3.00 | 满足 |
| TC2417 | 74 | 2.80 | 3.00 | 满足 |
| TC2417 | 74 | 2.80 | 3.00 | 满足 |
| TC2423 | 74 | 2.80 | 3.00 | 满足 |
| TC2423 | 74 | 2.80 | 3.00 | 满足 |
| TC2626 | 74 | 2.80 | 3.00 | 满足 |
| TC2717 | 74 | 2.80 | 3.00 | 满足 |
| 东向 | C0521 | 74 | 2.80 | 3.00 | 满足 |
| C0521 | 74 | 2.80 | 3.00 | 满足 |
| C3021 | 74 | 2.80 | 3.00 | 满足 |
| TC1527 | 74 | 2.80 | 3.00 | 满足 |
| TC1527 | 74 | 2.80 | 3.00 | 满足 |
| TC2523 | 74 | 2.80 | 3.00 | 满足 |
| TC4527 | 74 | 2.80 | 3.00 | 满足 |
| TC4826 | 74 | 2.80 | 3.00 | 满足 |
| 西向 | C0721 | 74 | 2.80 | 3.00 | 满足 |
| C0815 | 74 | 2.80 | 3.00 | 满足 |
| MC-4' | 74 | 2.80 | 3.00 | 满足 |
| TC1527 | 74 | 2.80 | 3.00 | 满足 |
| TC1527 | 74 | 2.80 | 3.00 | 满足 |
| TC2416 | 74 | 2.80 | 3.00 | 满足 |
| TC2423 | 74 | 2.80 | 3.00 | 满足 |
| TC2523 | 74 | 2.80 | 3.00 | 满足 |
| TC2716 | 74 | 2.80 | 3.00 | 满足 |
| TC2716 | 74 | 2.80 | 3.00 | 满足 |
| 标准依据 | | 《福建省居住建筑节能设计标准》DBJ 13-62-2019第4.2.1条 | | | | |
| 标准要求 | | 每个外窗和透光幕墙传热系数应满足不大于3.0W/(m2·K)的要求 | | | | |
| 结论 | | 满足 | | | | |

注：达标朝向最多列出10项，不达标朝向列出全部不达标项

### 总体热工性能

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 朝向 | 面积 | 传热系数 | 综合太阳得热系数 | 窗墙比 | 标准要求 | 结论 |
| 南向 | 581.66 | 2.80 | 0.39 | 0.25 | K≤3.00, SHGC≤0.44 | 满足 |
| 北向 | 468.69 | 2.80 | 0.44 | 0.30 | K≤3.00, SHGC≤0.52 | 满足 |
| 东向 | 218.26 | 2.80 | 0.37 | 0.16 | K≤3.00, SHGC≤0.52 | 满足 |
| 西向 | 300.01 | 2.80 | 0.38 | 0.18 | K≤3.00, SHGC≤0.52 | 满足 |
| 综合平均 | 1568.62 | 2.80 | 0.40 | 0.23 |  |  |
| 标准依据 | 《福建省公共建筑节能设计标准》DBJ 13-305-2019第4.2.1条 | | | | | |
| 标准要求 | 外窗传热系数和综合太阳得热系数满足表4.2.1-2的要求 | | | | | |
| 结论 | 满足 | | | | | |

注：本表所统计的外窗包含凸窗。

## 有效通风换气面积

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 楼层 | 房间编号 | 房间面积（㎡） | | 立面面积（㎡） | 门窗编号 | 门窗面积（㎡） | 有效通风面积比 | 门窗类型 | 有效通风面积/外窗面积 | 有效通风面积/立面面积 | 结论 |
| 4 | 4005(最不利房间) | 113.76 | | 105.30 | TC3023 | 6.90 | 0.90 | 外窗 | 0.90 | 0.12 | 适宜 |
| TC3023 | 6.90 | 0.90 | 外窗 |
| 通风换气装置 | | | 无 | | | | | | | | |
| 标准依据 | | | 《福建省公共建筑节能设计标准》DBJ 13-305-2019第4.1.8条 | | | | | | | | |
| 标准要求 | | | 甲类建筑外窗有效通风换气面积不宜小于所在房间立面面积的10% | | | | | | | | |
| 结论 | | | 适宜 | | | | | | | | |

注：达标时只列出一项，不达标时列出全部不达标项

## 非中空窗面积比

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 朝向 | 非中空玻璃面积(㎡) | 透光面积(㎡) | 非中空面积比 | 限值 | 结论 |
| 南向 | 0.00 | 581.66 | 0.00 | 0.15 | 满足 |
| 北向 | 0.00 | 468.69 | 0.00 | 0.15 | 满足 |
| 东向 | 0.00 | 218.26 | 0.00 | 0.15 | 满足 |
| 西向 | 0.00 | 300.01 | 0.00 | 0.15 | 满足 |
| 《标准》依据 | | 《福建省公共建筑节能设计标准》DBJ 13-305-2019第4.2.7条 | | | |
| 标准要求 | | 非中空玻璃的面积不应超过同一立面透光面积的15% | | | |
| 结论 | | 满足 | | | |

## 外窗气密性

|  |  |  |
| --- | --- | --- |
| 层数 | 1～9层 | 10层以上 |
| 最不利气密性等级 | 6级 C0321a | － |
| 外窗气密性措施 |  |  |
| 标准依据 | 《福建省公共建筑节能设计标准》DBJ 13-305-2019第4.2.5条 | 《福建省公共建筑节能设计标准》DBJ 13-305-2019第4.2.5条 |
| 标准要求 | 10层以下外窗气密性应满足《建筑幕墙、门窗通用技术条件》GB/T 31433-2015中的6级 | 10层及以上外窗气密性应满足《建筑幕墙、门窗通用技术条件》GB/T 31433-2015的7级 |
| 结论 | 满足 | － |

## 幕墙气密性

|  |  |
| --- | --- |
| 最不利气密性等级 | － |
| 幕墙气密性措施 |  |
| 通风换气装置 | 无 |
| 标准依据 | 《福建省公共建筑节能设计标准》DBJ 13-305-2019第4.2.6条 |
| 标准要求 | 幕墙气密性应满足《建筑幕墙、门窗通用技术条件》GB/T 31433-2015的3级 |
| 结论 | － |

## 规定性指标检查结论

|  |  |  |  |
| --- | --- | --- | --- |
| 序号 | 检查项 | 结论 | 可否性能权衡 |
| 1 | 窗墙比 | 适宜 |  |
| 2 | 可见光透射比 | 满足 |  |
| 3 | 天窗类型 | 无屋顶透光部分 |  |
| 4 | 屋顶构造 | 不满足 | 可 |
| 5 | 外墙构造 | 满足 |  |
| 6 | 挑空楼板构造 | 满足 |  |
| 7 | 外窗热工 | 满足 |  |
| 8 | 有效通风换气面积 | 适宜 |  |
| 9 | 非中空窗面积比 | 满足 |  |
| 10 | 外窗气密性 | 满足 |  |
| 11 | 幕墙气密性 | 满足 |  |
| 结论 | | 不满足 | 可 |

□说明：本工程规定性指标设计**不满足**要求，需依据《福建省公共建筑节能设计标准》DBJ 13-305-2019的要求进行节能设计的权衡判断。

# 热工性能权衡判断

## 说明

本建筑按福建省公共建筑节能设计标准 DBJ 13-305-2019之规定进行强制性条文和必须满足条款的规定性指标检查，结果未能达标，按标准规定继续进行热工性能权衡判断。

## 工程材料

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 材料名称 | 导热系数λ | 蓄热系数S | 密度ρ | 比热容Cp | 蒸汽渗透系数u | 备注 |
| W/(m.K) | W/(㎡.K) | kg/m3 | J/(kg.K) | g/(m.h.kPa) |
| 水泥砂浆 | 0.930 | 11.370 | 1800.0 | 1050.0 | 0.0210 | 来源：《民用建筑热工设计规范》GB50176-2016 |
| 石灰砂浆 | 0.810 | 10.070 | 1600.0 | 1050.0 | 0.0443 | 来源：《民用建筑热工设计规范》GB50176-2016 |
| 钢筋混凝土 | 1.740 | 17.200 | 2500.0 | 920.0 | 0.0158 | 来源：《民用建筑热工设计规范》GB50176-2016 |
| 挤塑聚苯乙烯泡沫塑料（带表皮） | 0.030 | 0.340 | 35.0 | 1380.0 | 0.0000 | 来源：《民用建筑热工设计规范》GB50176-2016，蒸汽渗透系数没有给出 |
| 加气混凝土、泡沫混凝土(ρ=700) | 0.180 | 3.100 | 700.0 | 1050.0 | 0.0998 | 来源：《民用建筑热工设计规范》GB50176-2016 |
| 混凝土多孔砖(190六孔砖） | 0.750 | 7.490 | 1450.0 | 709.4 | 0.0000 |  |
| 聚苯颗粒保温砂浆 | 0.060 | 0.950 | 230.0 | 900.0 | 0.0000 |  |
| 浮石混凝土(ρ=1100)(水泥焦渣) | 0.420 | 6.130 | 1100.0 | 1050.0 | 0.0353 | 蒸汽渗透系数为测定值 |
| 保温砂浆 | 0.290 | 4.440 | 800.0 | 1050.0 | 0.0000 | 蒸汽渗透系数没有给出 |
| 保温砂浆 | 0.290 | 4.440 | 800.0 | 1050.0 | 0.0000 | 蒸汽渗透系数没有给出 |

## 围护结构作法简要说明

**1. 屋顶：**屋顶构造一：（由上到下）

浮石混凝土(ρ=1100)(水泥焦渣) 20mm＋挤塑聚苯乙烯泡沫塑料（带表皮） 20mm＋挤塑聚苯乙烯泡沫塑料（带表皮） 20mm＋保温砂浆 30mm＋加气混凝土、泡沫混凝土(ρ=700) 80mm＋钢筋混凝土 120mm＋保温砂浆 20mm

**2. 屋顶防火隔离带：**屋顶防火隔离带构造一：（由上到下）

水泥砂浆 20mm＋聚苯颗粒保温砂浆 20mm＋水泥砂浆 20mm＋钢筋混凝土 200mm＋石灰砂浆 20mm

**3. 外墙构造：**外墙构造一：（由外到内）

水泥砂浆 20mm＋挤塑聚苯乙烯泡沫塑料（带表皮） 20mm＋水泥砂浆 20mm＋钢筋混凝土 200mm＋石灰砂浆 20mm

**4. 挑空楼板构造：**挑空楼板构造一：（由上到下）

水泥砂浆 20mm＋钢筋混凝土 120mm＋水泥砂浆 20mm＋挤塑聚苯乙烯泡沫塑料（带表皮） 20mm＋水泥砂浆 20mm

**5. 外窗构造：**断热铝合金窗--Low-E中空玻璃：

传热系数2.800W/m^2.K，太阳得热系数0.652

## 体形系数

|  |  |
| --- | --- |
| 外表面积 | 11100.21 |
| 建筑体积 | 51993.37 |
| 体形系数 | 0.21 |

## 窗墙比

### 窗墙比

|  |  |  |  |
| --- | --- | --- | --- |
| 朝向 | 窗面积(㎡) | 墙面积(㎡) | 窗墙比 |
| 南向 | 581.66 | 2284.41 | 0.25 |
| 北向 | 468.69 | 1556.54 | 0.30 |
| 东向 | 218.26 | 1325.43 | 0.16 |
| 西向 | 300.01 | 1705.63 | 0.18 |

### 外窗表

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 朝向 | 编号 | 尺寸 | 楼层 | 数量 | 单个面积 （㎡） | 合计面积 （㎡） |
| 南向 581.66 | C0815 | 0.80×1.50 | 3 | 1 | 1.20 | 1.20 |
| C1621a | 1.65×2.10 | 4 | 2 | 3.47 | 6.93 |
| GC0404 | 0.40×0.40 | 4,6 | 6 | 0.16 | 0.96 |
| GC0504 | 0.50×0.40 | 5 | 3 | 0.20 | 0.60 |
| GC4815 | 4.80×1.50 | 2 | 2 | 7.20 | 14.40 |
| TC2217 | 2.20×1.70 | 5 | 6 | 3.74 | 22.44 |
| TC2223 | 2.20×2.30 | 2~4 | 18 | 5.06 | 91.08 |
| TC2226 | 2.20×2.60 | 1 | 6 | 5.72 | 34.32 |
| TC2423 | 2.40×2.30 | 6~7 | 5 | 5.52 | 27.60 |
| TC2523 | 2.50×2.30 | 3~4 | 2 | 5.75 | 11.50 |
| TC2616 | 2.60×1.60 | 2~4 | 3 | 4.16 | 12.48 |
| TC2617 | 2.60×1.70 | 5 | 1 | 4.42 | 4.42 |
| TC2716 | 2.70×1.60 | 7 | 1 | 4.32 | 4.32 |
| TC3016 | 3.00×1.60 | 4~5 | 2 | 4.80 | 9.60 |
| TC3017 | 3.00×1.70 | 6 | 12 | 5.10 | 61.20 |
| TC3023 | 3.00×2.30 | 4~5,7 | 25 | 6.90 | 172.50 |
| TC3623 | 3.60×2.30 | 7 | 10 | 8.28 | 82.80 |
| TC3717 | 3.70×1.70 | 5 | 1 | 6.29 | 6.29 |
| TC3723 | 3.70×2.30 | 3~4 | 2 | 8.51 | 17.02 |
| 北向 468.69 | C1321a | 1.35×2.10 | 1 | 2 | 2.84 | 5.67 |
| C1515 | 1.90×1.50 | 5 | 1 | 2.85 | 2.85 |
| C1515 | 1.50×1.50 | 6~7 | 2 | 2.25 | 4.50 |
| C3021 | 3.00×2.10 | 2 | 1 | 6.30 | 6.30 |
| C3430a | 3.45×3.00 | 4 | 8 | 10.35 | 82.80 |
| C4530 | 4.50×3.00 | 4 | 2 | 13.50 | 27.00 |
| C7221 | 7.20×2.10 | 2 | 1 | 15.12 | 15.12 |
| GC0404 | 0.40×0.40 | 5 | 1 | 0.16 | 0.16 |
| MC-7 | 1.90×2.10 | 3~4 | 2 | 3.99 | 7.98 |
| TC0926 | 0.90×2.60 | 1 | 1 | 2.34 | 2.34 |
| TC1526 | 1.50×2.60 | 1 | 1 | 3.90 | 3.90 |
| TC2417 | 2.40×1.70 | 3 | 7 | 4.08 | 28.56 |
| TC2423 | 2.40×2.30 | 2,4 | 8 | 5.52 | 44.16 |
| TC2626 | 2.60×2.60 | 1 | 2 | 6.76 | 13.52 |
| TC2717 | 2.70×1.70 | 3 | 5 | 4.59 | 22.95 |
| TC2723 | 2.70×2.30 | 2 | 3 | 6.21 | 18.63 |
| TC2726 | 2.70×2.60 | 1 | 4 | 7.02 | 28.08 |
| TC3026 | 3.00×2.60 | 1 | 3 | 7.80 | 23.40 |
| TC3323 | 3.30×2.30 | 4 | 7 | 7.59 | 53.13 |
| TC3623 | 3.60×2.30 | 4 | 1 | 8.28 | 8.28 |
| TC3923 | 3.60×2.30 | 4 | 3 | 8.28 | 24.84 |
| TC4226 | 4.20×2.60 | 1 | 2 | 10.92 | 21.84 |
| TC4227 | 4.20×2.70 | 2 | 2 | 11.34 | 22.68 |
| 东向 218.26 | C0521 | 0.50×2.10 | 1 | 2 | 1.05 | 2.10 |
| C0721 | 0.70×2.10 | 1 | 1 | 1.47 | 1.47 |
| C1021 | 1.00×2.10 | 1 | 1 | 2.10 | 2.10 |
| C1930 | 1.90×3.00 | 4 | 1 | 5.70 | 5.70 |
| C2230 | 2.20×3.00 | 4 | 2 | 6.60 | 13.20 |
| C3021 | 3.00×2.10 | 1 | 1 | 6.30 | 6.30 |
| C3230 | 3.20×3.00 | 4 | 2 | 9.60 | 19.20 |
| C3330 | 3.30×3.00 | 4 | 1 | 9.90 | 9.90 |
| C3430 | 3.40×3.00 | 4 | 3 | 10.20 | 30.60 |
| C3530a | 3.55×3.00 | 4 | 1 | 10.65 | 10.65 |
| C3830 | 3.80×3.00 | 4 | 1 | 11.40 | 11.40 |
| C5730 | 5.70×3.00 | 4 | 2 | 17.10 | 34.20 |
| TC1527 | 1.50×2.70 | 2 | 2 | 4.05 | 8.10 |
| TC1923 | 1.90×2.30 | 4 | 3 | 4.37 | 13.11 |
| TC2517 | 2.50×1.70 | 3 | 1 | 4.25 | 4.25 |
| TC2523 | 2.50×2.30 | 2 | 1 | 5.75 | 5.75 |
| TC3326 | 3.00×2.60 | 1 | 2 | 7.80 | 15.60 |
| TC4527 | 4.50×2.70 | 2 | 1 | 12.15 | 12.15 |
| TC4826 | 4.80×2.60 | 1 | 1 | 12.48 | 12.48 |
| 西向 300.01 | C0321a | 0.35×2.10 | 1 | 2 | 0.74 | 1.47 |
| C0721 | 0.70×2.10 | 1 | 1 | 1.47 | 1.47 |
| C0815 | 0.80×1.50 | 1 | 1 | 1.20 | 1.20 |
| C1930 | 1.90×3.00 | 4 | 1 | 5.70 | 5.70 |
| C2230 | 2.20×3.00 | 4 | 2 | 6.60 | 13.20 |
| C5730 | 5.70×3.00 | 4 | 2 | 17.10 | 34.20 |
| GC0404 | 0.40×0.40 | 1~4 | 12 | 0.16 | 1.92 |
| GC0504 | 0.50×0.40 | 5~6 | 6 | 0.20 | 1.20 |
| MC-4' | 2.74×1.50 | 1 | 1 | 4.10 | 4.10 |
| TC1223 | 1.20×2.30 | 5~6 | 2 | 2.76 | 5.52 |
| TC1527 | 1.50×2.70 | 2 | 2 | 4.05 | 8.10 |
| TC2416 | 2.40×1.60 | 5 | 1 | 3.84 | 3.84 |
| TC2423 | 2.40×2.30 | 4 | 1 | 5.52 | 5.52 |
| TC2517 | 2.50×1.70 | 3 | 1 | 4.25 | 4.25 |
| TC2523 | 2.50×2.30 | 2,4 | 2 | 5.75 | 11.50 |
| TC2716 | 2.70×1.60 | 4,6 | 2 | 4.32 | 8.64 |
| TC2717 | 2.70×1.70 | 3 | 4 | 4.59 | 18.36 |
| TC2723 | 2.70×2.30 | 2,5 | 8 | 6.21 | 49.68 |
| TC3016 | 3.00×1.60 | 2 | 1 | 4.80 | 4.80 |
| TC3017 | 3.00×1.70 | 3 | 1 | 5.10 | 5.10 |
| TC3023 | 3.00×2.30 | 4~6 | 13 | 6.90 | 89.70 |
| TC3126 | 3.10×2.60 | 1 | 1 | 8.06 | 8.06 |
| TC4826 | 4.80×2.60 | 1 | 1 | 12.48 | 12.48 |

## 天窗

### 天窗屋顶比

本工程无此项内容

### 天窗类型

本工程无此项内容

## 屋顶构造

### 屋顶相关构造

#### 屋顶构造一

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 材料名称 （由上到下） | 厚度δ | 导热系数λ | 蓄热系数S | 修正系数 | 热阻R | 热惰性指标 |
| (mm) | W/(m.K) | W/(㎡.K) | α | (㎡K)/W | D=R\*S |
| 浮石混凝土(ρ=1100)(水泥焦渣) | 20 | 0.420 | 6.130 | 1.00 | 0.048 | 0.292 |
| 挤塑聚苯乙烯泡沫塑料（带表皮） | 20 | 0.030 | 0.340 | 1.20 | 0.556 | 0.227 |
| 挤塑聚苯乙烯泡沫塑料（带表皮） | 20 | 0.030 | 0.340 | 1.20 | 0.556 | 0.227 |
| 保温砂浆 | 30 | 0.290 | 4.440 | 1.00 | 0.103 | 0.459 |
| 加气混凝土、泡沫混凝土(ρ=700) | 80 | 0.180 | 3.100 | 1.00 | 0.444 | 1.378 |
| 钢筋混凝土 | 120 | 1.740 | 17.200 | 1.00 | 0.069 | 1.186 |
| 保温砂浆 | 20 | 0.290 | 4.440 | 1.00 | 0.069 | 0.306 |
| 各层之和∑ | 310 | － | － | － | 1.845 | 4.075 |
| 外表面太阳辐射吸收系数 | 0.75 | | | | | |
| 传热系数K=1/(0.16+∑R) | 0.50 | | | | | |

#### 屋顶防火隔离带构造一

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 材料名称 （由上到下） | 厚度δ | 导热系数λ | 蓄热系数S | 修正系数 | 热阻R | 热惰性指标 |
| (mm) | W/(m.K) | W/(㎡.K) | α | (㎡K)/W | D=R\*S |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 聚苯颗粒保温砂浆 | 20 | 0.060 | 0.950 | 1.20 | 0.278 | 0.317 |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 钢筋混凝土 | 200 | 1.740 | 17.200 | 1.00 | 0.115 | 1.977 |
| 石灰砂浆 | 20 | 0.810 | 10.070 | 1.00 | 0.025 | 0.249 |
| 各层之和∑ | 280 | － | － | － | 0.460 | 3.031 |
| 外表面太阳辐射吸收系数 | 0.75 | | | | | |
| 传热系数K=1/(0.16+∑R) | 1.61 | | | | | |

### 屋顶平均热工特性

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 构造名称 | 面积(㎡) | 面积所占比例 | 传热系数K W / (㎡K) | 热惰性指标D | 太阳辐射吸收系数 |
| 屋顶构造一 | 2911.18 | 0.880 | 0.50 | 4.08 | 0.75 |
| 屋顶防火隔离带构造一 | 395.78 | 0.120 | 1.61 | 3.03 | 0.75 |
| 合计 | 3306.96 | 1.000 | 0.63 | 3.95 | 0.75 |
| 标准依据 | 《福建省公共建筑节能设计标准》DBJ 13-305-2019第4.3.1条 | | | | |
| 标准要求 | K<=0.9 | | | | |
| 结论 | 满足 | | | | |

## 外墙构造

### 外墙构造一

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 材料名称 （由外到内） | 厚度δ | 导热系数λ | 蓄热系数S | 修正系数 | 热阻R | 热惰性指标 |
| (mm) | W/(m.K) | W/(㎡.K) | α | (㎡K)/W | D=R\*S |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 挤塑聚苯乙烯泡沫塑料（带表皮） | 20 | 0.030 | 0.340 | 1.20 | 0.556 | 0.227 |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 钢筋混凝土 | 200 | 1.740 | 17.200 | 1.00 | 0.115 | 1.977 |
| 石灰砂浆 | 20 | 0.810 | 10.070 | 1.00 | 0.025 | 0.249 |
| 各层之和∑ | 280 | － | － | － | 0.738 | 2.941 |
| 外表面太阳辐射吸收系数 | 0.75 | | | | | |
| 传热系数K=1/(0.16+∑R) | 1.11 | | | | | |
| 标准依据 | 《福建省公共建筑节能设计标准》DBJ 13-305-2019第4.3.1条 | | | | | |
| 标准要求 | K<=1.5 | | | | | |
| 结论 | 满足 | | | | | |

## 挑空楼板构造

### 挑空楼板构造一

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 材料名称 （由上到下） | 厚度δ | 导热系数λ | 蓄热系数S | 修正系数 | 热阻R | 热惰性指标 |
| (mm) | W/(m.K) | W/(㎡.K) | α | (㎡K)/W | D=R\*S |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 钢筋混凝土 | 120 | 1.740 | 17.200 | 1.00 | 0.069 | 1.186 |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 挤塑聚苯乙烯泡沫塑料（带表皮） | 20 | 0.030 | 0.340 | 1.20 | 0.556 | 0.227 |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 各层之和∑ | 200 | － | － | － | 0.689 | 2.146 |
| 传热系数K=1/(0.16+∑R) | 1.18 | | | | | |

## 外窗热工

### 外窗构造

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 序号 | 构造名称 | 构造编号 | 传热系数 | 太阳得热系数 | 可见光透射比 | 备注 |
| 1 | 断热铝合金窗--Low-E中空玻璃 | 74 | 2.80 | 0.65 | 1.000 | 摘自《福建省居住建筑节能设计标准实施细则》55页 |

### 外遮阳类型

#### 百叶遮阳



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 序号 | 编号 | 挑出 A (m) | 百叶间距 D (m) | 下垂 C (m) |
| 1 | 百叶遮阳0 | 0.244 | 0.400 | 0.141 |

### 平均传热系数

1. 南向：

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 传热系数 |
| 1 | C0815 | 3 | 1 | 1.200 | 1.200 | 74 | 2.800 |
| 2 | C1621a | 4 | 2 | 3.465 | 6.930 | 74 | 2.800 |
| 3 | GC0404 | 4,6 | 6 | 0.160 | 0.960 | 74 | 2.800 |
| 4 | GC0504 | 5 | 3 | 0.200 | 0.600 | 74 | 2.800 |
| 5 | GC4815 | 2 | 2 | 7.200 | 14.400 | 74 | 2.800 |
| 6 | TC2217 | 5 | 6 | 3.740 | 22.440 | 74 | 2.800 |
| 7 | TC2223 | 2~4 | 18 | 5.060 | 91.080 | 74 | 2.800 |
| 8 | TC2226 | 1 | 6 | 5.720 | 34.320 | 74 | 2.800 |
| 9 | TC2423 | 6~7 | 5 | 5.520 | 27.600 | 74 | 2.800 |
| 10 | TC2523 | 3~4 | 2 | 5.750 | 11.500 | 74 | 2.800 |
| 11 | TC2616 | 2~4 | 3 | 4.160 | 12.480 | 74 | 2.800 |
| 12 | TC2617 | 5 | 1 | 4.420 | 4.420 | 74 | 2.800 |
| 13 | TC2716 | 7 | 1 | 4.320 | 4.320 | 74 | 2.800 |
| 14 | TC3016 | 4~5 | 2 | 4.800 | 9.600 | 74 | 2.800 |
| 15 | TC3017 | 6 | 12 | 5.100 | 61.200 | 74 | 2.800 |
| 16 | TC3023 | 4~5,7 | 25 | 6.900 | 172.500 | 74 | 2.800 |
| 17 | TC3623 | 7 | 10 | 8.280 | 82.800 | 74 | 2.800 |
| 18 | TC3717 | 5 | 1 | 6.290 | 6.290 | 74 | 2.800 |
| 19 | TC3723 | 3~4 | 2 | 8.510 | 17.020 | 74 | 2.800 |
| 朝向总面积(㎡) | | | 581.660 | 朝向平均传热系数 | | | 2.800 |

2. 北向：

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 传热系数 |
| 1 | C1321a | 1 | 2 | 2.835 | 5.670 | 74 | 2.800 |
| 2 | C1515 | 5 | 1 | 2.850 | 2.850 | 74 | 2.800 |
| 3 | C1515 | 6~7 | 2 | 2.250 | 4.500 | 74 | 2.800 |
| 4 | C3021 | 2 | 1 | 6.300 | 6.300 | 74 | 2.800 |
| 5 | C3430a | 4 | 8 | 10.350 | 82.800 | 74 | 2.800 |
| 6 | C4530 | 4 | 2 | 13.500 | 27.000 | 74 | 2.800 |
| 7 | C7221 | 2 | 1 | 15.120 | 15.120 | 74 | 2.800 |
| 8 | GC0404 | 5 | 1 | 0.160 | 0.160 | 74 | 2.800 |
| 9 | MC-7 | 3~4 | 2 | 3.990 | 7.980 | 74 | 2.800 |
| 10 | TC0926 | 1 | 1 | 2.340 | 2.340 | 74 | 2.800 |
| 11 | TC1526 | 1 | 1 | 3.900 | 3.900 | 74 | 2.800 |
| 12 | TC2417 | 3 | 7 | 4.080 | 28.560 | 74 | 2.800 |
| 13 | TC2423 | 2,4 | 8 | 5.520 | 44.160 | 74 | 2.800 |
| 14 | TC2626 | 1 | 2 | 6.760 | 13.520 | 74 | 2.800 |
| 15 | TC2717 | 3 | 5 | 4.590 | 22.950 | 74 | 2.800 |
| 16 | TC2723 | 2 | 3 | 6.210 | 18.630 | 74 | 2.800 |
| 17 | TC2726 | 1 | 4 | 7.020 | 28.080 | 74 | 2.800 |
| 18 | TC3026 | 1 | 3 | 7.800 | 23.400 | 74 | 2.800 |
| 19 | TC3323 | 4 | 7 | 7.590 | 53.130 | 74 | 2.800 |
| 20 | TC3623 | 4 | 1 | 8.280 | 8.280 | 74 | 2.800 |
| 21 | TC3923 | 4 | 3 | 8.280 | 24.840 | 74 | 2.800 |
| 22 | TC4226 | 1 | 2 | 10.920 | 21.840 | 74 | 2.800 |
| 23 | TC4227 | 2 | 2 | 11.340 | 22.680 | 74 | 2.800 |
| 朝向总面积(㎡) | | | 468.690 | 朝向平均传热系数 | | | 2.800 |

3. 东向：

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 传热系数 |
| 1 | C0521 | 1 | 2 | 1.050 | 2.100 | 74 | 2.800 |
| 2 | C0721 | 1 | 1 | 1.470 | 1.470 | 74 | 2.800 |
| 3 | C1021 | 1 | 1 | 2.100 | 2.100 | 74 | 2.800 |
| 4 | C1930 | 4 | 1 | 5.700 | 5.700 | 74 | 2.800 |
| 5 | C2230 | 4 | 2 | 6.600 | 13.200 | 74 | 2.800 |
| 6 | C3021 | 1 | 1 | 6.300 | 6.300 | 74 | 2.800 |
| 7 | C3230 | 4 | 2 | 9.600 | 19.200 | 74 | 2.800 |
| 8 | C3330 | 4 | 1 | 9.900 | 9.900 | 74 | 2.800 |
| 9 | C3430 | 4 | 3 | 10.200 | 30.600 | 74 | 2.800 |
| 10 | C3530a | 4 | 1 | 10.650 | 10.650 | 74 | 2.800 |
| 11 | C3830 | 4 | 1 | 11.400 | 11.400 | 74 | 2.800 |
| 12 | C5730 | 4 | 2 | 17.100 | 34.200 | 74 | 2.800 |
| 13 | TC1527 | 2 | 2 | 4.050 | 8.100 | 74 | 2.800 |
| 14 | TC1923 | 4 | 3 | 4.370 | 13.110 | 74 | 2.800 |
| 15 | TC2517 | 3 | 1 | 4.250 | 4.250 | 74 | 2.800 |
| 16 | TC2523 | 2 | 1 | 5.750 | 5.750 | 74 | 2.800 |
| 17 | TC3326 | 1 | 2 | 7.800 | 15.600 | 74 | 2.800 |
| 18 | TC4527 | 2 | 1 | 12.150 | 12.150 | 74 | 2.800 |
| 19 | TC4826 | 1 | 1 | 12.480 | 12.480 | 74 | 2.800 |
| 朝向总面积(㎡) | | | 218.260 | 朝向平均传热系数 | | | 2.800 |

4. 西向：

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 传热系数 |
| 1 | C0321a | 1 | 2 | 0.735 | 1.470 | 74 | 2.800 |
| 2 | C0721 | 1 | 1 | 1.470 | 1.470 | 74 | 2.800 |
| 3 | C0815 | 1 | 1 | 1.200 | 1.200 | 74 | 2.800 |
| 4 | C1930 | 4 | 1 | 5.700 | 5.700 | 74 | 2.800 |
| 5 | C2230 | 4 | 2 | 6.600 | 13.200 | 74 | 2.800 |
| 6 | C5730 | 4 | 2 | 17.100 | 34.200 | 74 | 2.800 |
| 7 | GC0404 | 1~4 | 12 | 0.160 | 1.920 | 74 | 2.800 |
| 8 | GC0504 | 5~6 | 6 | 0.200 | 1.200 | 74 | 2.800 |
| 9 | MC-4' | 1 | 1 | 4.104 | 4.104 | 74 | 2.800 |
| 10 | TC1223 | 5~6 | 2 | 2.760 | 5.520 | 74 | 2.800 |
| 11 | TC1527 | 2 | 2 | 4.050 | 8.100 | 74 | 2.800 |
| 12 | TC2416 | 5 | 1 | 3.840 | 3.840 | 74 | 2.800 |
| 13 | TC2423 | 4 | 1 | 5.520 | 5.520 | 74 | 2.800 |
| 14 | TC2517 | 3 | 1 | 4.250 | 4.250 | 74 | 2.800 |
| 15 | TC2523 | 2,4 | 2 | 5.750 | 11.500 | 74 | 2.800 |
| 16 | TC2716 | 4,6 | 2 | 4.320 | 8.640 | 74 | 2.800 |
| 17 | TC2717 | 3 | 4 | 4.590 | 18.360 | 74 | 2.800 |
| 18 | TC2723 | 2,5 | 8 | 6.210 | 49.680 | 74 | 2.800 |
| 19 | TC3016 | 2 | 1 | 4.800 | 4.800 | 74 | 2.800 |
| 20 | TC3017 | 3 | 1 | 5.100 | 5.100 | 74 | 2.800 |
| 21 | TC3023 | 4~6 | 13 | 6.900 | 89.700 | 74 | 2.800 |
| 22 | TC3126 | 1 | 1 | 8.060 | 8.060 | 74 | 2.800 |
| 23 | TC4826 | 1 | 1 | 12.480 | 12.480 | 74 | 2.800 |
| 朝向总面积(㎡) | | | 300.014 | 朝向平均传热系数 | | | 2.800 |

### 综合太阳得热系数

1. 南向：

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 窗太阳得热系数 | 外遮阳编号 | 外遮阳系数 | 综合太阳得热系数 |
| 1 | C0815 | 3 | 1 | 1.200 | 1.200 | 74 | 0.652 | 百叶遮阳0 | 0.605 | 0.394 |
| 2 | C1621a | 4 | 2 | 3.465 | 6.930 | 74 | 0.652 | 百叶遮阳0 | 0.596 | 0.389 |
| 3 | GC0404 | 4,6 | 6 | 0.160 | 0.960 | 74 | 0.652 | 百叶遮阳0 | 0.622 | 0.406 |
| 4 | GC0504 | 5 | 3 | 0.200 | 0.600 | 74 | 0.652 | 百叶遮阳0 | 0.615 | 0.401 |
| 5 | GC4815 | 2 | 2 | 7.200 | 14.400 | 74 | 0.652 | 百叶遮阳0 | 0.591 | 0.385 |
| 6 | TC2217 | 5 | 6 | 3.740 | 22.440 | 74 | 0.652 | 百叶遮阳0 | 0.594 | 0.387 |
| 7 | TC2223 | 2~4 | 18 | 5.060 | 91.080 | 74 | 0.652 | 百叶遮阳0 | 0.594 | 0.387 |
| 8 | TC2226 | 1 | 6 | 5.720 | 34.320 | 74 | 0.652 | 百叶遮阳0 | 0.594 | 0.387 |
| 9 | TC2423 | 6~7 | 5 | 5.520 | 27.600 | 74 | 0.652 | 百叶遮阳0 | 0.593 | 0.387 |
| 10 | TC2523 | 3~4 | 2 | 5.750 | 11.500 | 74 | 0.652 | 百叶遮阳0 | 0.593 | 0.387 |
| 11 | TC2616 | 2~4 | 3 | 4.160 | 12.480 | 74 | 0.652 | 百叶遮阳0 | 0.593 | 0.387 |
| 12 | TC2617 | 5 | 1 | 4.420 | 4.420 | 74 | 0.652 | 百叶遮阳0 | 0.593 | 0.387 |
| 13 | TC2716 | 7 | 1 | 4.320 | 4.320 | 74 | 0.652 | 百叶遮阳0 | 0.593 | 0.386 |
| 14 | TC3016 | 4~5 | 2 | 4.800 | 9.600 | 74 | 0.652 | 百叶遮阳0 | 0.592 | 0.386 |
| 15 | TC3017 | 6 | 12 | 5.100 | 61.200 | 74 | 0.652 | 百叶遮阳0 | 0.592 | 0.386 |
| 16 | TC3023 | 4~5,7 | 25 | 6.900 | 172.500 | 74 | 0.652 | 百叶遮阳0 | 0.592 | 0.386 |
| 17 | TC3623 | 7 | 10 | 8.280 | 82.800 | 74 | 0.652 | 百叶遮阳0 | 0.591 | 0.386 |
| 18 | TC3717 | 5 | 1 | 6.290 | 6.290 | 74 | 0.652 | 百叶遮阳0 | 0.591 | 0.386 |
| 19 | TC3723 | 3~4 | 2 | 8.510 | 17.020 | 74 | 0.652 | 百叶遮阳0 | 0.591 | 0.386 |
| 朝向总面积(㎡) | | | | | 581.660 | 综合太阳得热系数 | | | 0.593 | 0.386 |

2. 北向：

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 窗太阳得热系数 | 外遮阳编号 | 外遮阳系数 | 综合太阳得热系数 |
| 1 | C1321a | 1 | 2 | 2.835 | 5.670 | 74 | 0.652 | 百叶遮阳0 | 0.683 | 0.445 |
| 2 | C1515 | 5 | 1 | 2.850 | 2.850 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.445 |
| 3 | C1515 | 6~7 | 2 | 2.250 | 4.500 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.445 |
| 4 | C3021 | 2 | 1 | 6.300 | 6.300 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.445 |
| 5 | C3430a | 4 | 8 | 10.350 | 82.800 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.444 |
| 6 | C4530 | 4 | 2 | 13.500 | 27.000 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.444 |
| 7 | C7221 | 2 | 1 | 15.120 | 15.120 | 74 | 0.652 | 百叶遮阳0 | 0.681 | 0.444 |
| 8 | GC0404 | 5 | 1 | 0.160 | 0.160 | 74 | 0.652 | 百叶遮阳0 | 0.686 | 0.447 |
| 9 | MC-7 | 3~4 | 2 | 3.990 | 7.980 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.445 |
| 10 | TC0926 | 1 | 1 | 2.340 | 2.340 | 74 | 0.652 | 百叶遮阳0 | 0.683 | 0.446 |
| 11 | TC1526 | 1 | 1 | 3.900 | 3.900 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.445 |
| 12 | TC2417 | 3 | 7 | 4.080 | 28.560 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.445 |
| 13 | TC2423 | 2,4 | 8 | 5.520 | 44.160 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.445 |
| 14 | TC2626 | 1 | 2 | 6.760 | 13.520 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.445 |
| 15 | TC2717 | 3 | 5 | 4.590 | 22.950 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.445 |
| 16 | TC2723 | 2 | 3 | 6.210 | 18.630 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.445 |
| 17 | TC2726 | 1 | 4 | 7.020 | 28.080 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.445 |
| 18 | TC3026 | 1 | 3 | 7.800 | 23.400 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.445 |
| 19 | TC3323 | 4 | 7 | 7.590 | 53.130 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.444 |
| 20 | TC3623 | 4 | 1 | 8.280 | 8.280 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.444 |
| 21 | TC3923 | 4 | 3 | 8.280 | 24.840 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.444 |
| 22 | TC4226 | 1 | 2 | 10.920 | 21.840 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.444 |
| 23 | TC4227 | 2 | 2 | 11.340 | 22.680 | 74 | 0.652 | 百叶遮阳0 | 0.682 | 0.444 |
| 朝向总面积(㎡) | | | | | 468.690 | 综合太阳得热系数 | | | 0.682 | 0.445 |

3. 东向：

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 窗太阳得热系数 | 外遮阳编号 | 外遮阳系数 | 综合太阳得热系数 |
| 1 | C0521 | 1 | 2 | 1.050 | 2.100 | 74 | 0.652 | 百叶遮阳0 | 0.580 | 0.378 |
| 2 | C0721 | 1 | 1 | 1.470 | 1.470 | 74 | 0.652 | 百叶遮阳0 | 0.575 | 0.375 |
| 3 | C1021 | 1 | 1 | 2.100 | 2.100 | 74 | 0.652 | 百叶遮阳0 | 0.572 | 0.373 |
| 4 | C1930 | 4 | 1 | 5.700 | 5.700 | 74 | 0.652 | 百叶遮阳0 | 0.568 | 0.371 |
| 5 | C2230 | 4 | 2 | 6.600 | 13.200 | 74 | 0.652 | 百叶遮阳0 | 0.568 | 0.370 |
| 6 | C3021 | 1 | 1 | 6.300 | 6.300 | 74 | 0.652 | 百叶遮阳0 | 0.567 | 0.370 |
| 7 | C3230 | 4 | 2 | 9.600 | 19.200 | 74 | 0.652 | 百叶遮阳0 | 0.567 | 0.369 |
| 8 | C3330 | 4 | 1 | 9.900 | 9.900 | 74 | 0.652 | 百叶遮阳0 | 0.567 | 0.369 |
| 9 | C3430 | 4 | 3 | 10.200 | 30.600 | 74 | 0.652 | 百叶遮阳0 | 0.566 | 0.369 |
| 10 | C3530a | 4 | 1 | 10.650 | 10.650 | 74 | 0.652 | 百叶遮阳0 | 0.566 | 0.369 |
| 11 | C3830 | 4 | 1 | 11.400 | 11.400 | 74 | 0.652 | 百叶遮阳0 | 0.566 | 0.369 |
| 12 | C5730 | 4 | 2 | 17.100 | 34.200 | 74 | 0.652 | 百叶遮阳0 | 0.566 | 0.369 |
| 13 | TC1527 | 2 | 2 | 4.050 | 8.100 | 74 | 0.652 | 百叶遮阳0 | 0.569 | 0.371 |
| 14 | TC1923 | 4 | 3 | 4.370 | 13.110 | 74 | 0.652 | 百叶遮阳0 | 0.568 | 0.371 |
| 15 | TC2517 | 3 | 1 | 4.250 | 4.250 | 74 | 0.652 | 百叶遮阳0 | 0.567 | 0.370 |
| 16 | TC2523 | 2 | 1 | 5.750 | 5.750 | 74 | 0.652 | 百叶遮阳0 | 0.567 | 0.370 |
| 17 | TC3326 | 1 | 2 | 7.800 | 15.600 | 74 | 0.652 | 百叶遮阳0 | 0.567 | 0.370 |
| 18 | TC4527 | 2 | 1 | 12.150 | 12.150 | 74 | 0.652 | 百叶遮阳0 | 0.566 | 0.369 |
| 19 | TC4826 | 1 | 1 | 12.480 | 12.480 | 74 | 0.652 | 百叶遮阳0 | 0.566 | 0.369 |
| 朝向总面积(㎡) | | | | | 218.260 | 综合太阳得热系数 | | | 0.567 | 0.370 |

4. 西向：

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 窗太阳得热系数 | 外遮阳编号 | 外遮阳系数 | 综合太阳得热系数 |
| 1 | C0321a | 1 | 2 | 0.735 | 1.470 | 74 | 0.652 | 百叶遮阳0 | 0.595 | 0.388 |
| 2 | C0721 | 1 | 1 | 1.470 | 1.470 | 74 | 0.652 | 百叶遮阳0 | 0.584 | 0.380 |
| 3 | C0815 | 1 | 1 | 1.200 | 1.200 | 74 | 0.652 | 百叶遮阳0 | 0.582 | 0.380 |
| 4 | C1930 | 4 | 1 | 5.700 | 5.700 | 74 | 0.652 | 百叶遮阳0 | 0.576 | 0.376 |
| 5 | C2230 | 4 | 2 | 6.600 | 13.200 | 74 | 0.652 | 百叶遮阳0 | 0.576 | 0.375 |
| 6 | C5730 | 4 | 2 | 17.100 | 34.200 | 74 | 0.652 | 百叶遮阳0 | 0.574 | 0.374 |
| 7 | GC0404 | 1~4 | 12 | 0.160 | 1.920 | 74 | 0.652 | 百叶遮阳0 | 0.592 | 0.386 |
| 8 | GC0504 | 5~6 | 6 | 0.200 | 1.200 | 74 | 0.652 | 百叶遮阳0 | 0.588 | 0.383 |
| 9 | MC-4' | 1 | 1 | 4.104 | 4.104 | 74 | 0.652 | 百叶遮阳0 | 0.575 | 0.375 |
| 10 | TC1223 | 5~6 | 2 | 2.760 | 5.520 | 74 | 0.652 | 百叶遮阳0 | 0.579 | 0.377 |
| 11 | TC1527 | 2 | 2 | 4.050 | 8.100 | 74 | 0.652 | 百叶遮阳0 | 0.578 | 0.377 |
| 12 | TC2416 | 5 | 1 | 3.840 | 3.840 | 74 | 0.652 | 百叶遮阳0 | 0.576 | 0.375 |
| 13 | TC2423 | 4 | 1 | 5.520 | 5.520 | 74 | 0.652 | 百叶遮阳0 | 0.576 | 0.375 |
| 14 | TC2517 | 3 | 1 | 4.250 | 4.250 | 74 | 0.652 | 百叶遮阳0 | 0.575 | 0.375 |
| 15 | TC2523 | 2,4 | 2 | 5.750 | 11.500 | 74 | 0.652 | 百叶遮阳0 | 0.575 | 0.375 |
| 16 | TC2716 | 4,6 | 2 | 4.320 | 8.640 | 74 | 0.652 | 百叶遮阳0 | 0.575 | 0.375 |
| 17 | TC2717 | 3 | 4 | 4.590 | 18.360 | 74 | 0.652 | 百叶遮阳0 | 0.575 | 0.375 |
| 18 | TC2723 | 2,5 | 8 | 6.210 | 49.680 | 74 | 0.652 | 百叶遮阳0 | 0.575 | 0.375 |
| 19 | TC3016 | 2 | 1 | 4.800 | 4.800 | 74 | 0.652 | 百叶遮阳0 | 0.575 | 0.375 |
| 20 | TC3017 | 3 | 1 | 5.100 | 5.100 | 74 | 0.652 | 百叶遮阳0 | 0.575 | 0.375 |
| 21 | TC3023 | 4~6 | 13 | 6.900 | 89.700 | 74 | 0.652 | 百叶遮阳0 | 0.575 | 0.375 |
| 22 | TC3126 | 1 | 1 | 8.060 | 8.060 | 74 | 0.652 | 百叶遮阳0 | 0.575 | 0.375 |
| 23 | TC4826 | 1 | 1 | 12.480 | 12.480 | 74 | 0.652 | 百叶遮阳0 | 0.574 | 0.374 |
| 朝向总面积(㎡) | | | | | 300.014 | 综合太阳得热系数 | | | 0.575 | 0.375 |

### 总体热工性能

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 朝向 | 面积 | 传热系数 | 综合太阳得热系数 | 窗墙比 | 标准要求 | 结论 |
| 南向 | 581.66 | 2.80 | 0.39 | 0.25 | K≤3.00, SHGC(不要求) | 满足 |
| 北向 | 468.69 | 2.80 | 0.44 | 0.30 | K≤3.00, SHGC(不要求) | 满足 |
| 东向 | 218.26 | 2.80 | 0.37 | 0.16 | K≤3.00, SHGC(不要求) | 满足 |
| 西向 | 300.01 | 2.80 | 0.38 | 0.18 | K≤3.00, SHGC(不要求) | 满足 |
| 综合平均 | 1568.62 | 2.80 | 0.40 | 0.23 |  |  |
| 标准依据 | 《福建省公共建筑节能设计标准》DBJ 13-305-2019第4.3.1条 | | | | | |
| 标准要求 | 外窗传热系数和综合太阳得热系数应满足表4.3.1-2的要求 | | | | | |
| 结论 | 满足 | | | | | |

注：本表所统计的外窗包含凸窗。

## 有效通风换气面积

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 楼层 | 房间编号 | 房间面积（㎡） | | 立面面积（㎡） | 门窗编号 | 门窗面积（㎡） | 有效通风面积比 | 门窗类型 | 有效通风面积/外窗面积 | 有效通风面积/立面面积 | 结论 |
| 4 | 4005(最不利房间) | 113.76 | | 105.30 | TC3023 | 6.90 | 0.90 | 外窗 | 0.90 | 0.12 | 适宜 |
| TC3023 | 6.90 | 0.90 | 外窗 |
| 通风换气装置 | | | 无 | | | | | | | | |
| 标准依据 | | | 《福建省公共建筑节能设计标准》DBJ 13-305-2019第4.1.8条 | | | | | | | | |
| 标准要求 | | | 甲类建筑外窗有效通风换气面积不宜小于所在房间立面面积的10% | | | | | | | | |
| 结论 | | | 适宜 | | | | | | | | |

注：达标时只列出一项，不达标时列出全部不达标项

## 非中空窗面积比

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 朝向 | 非中空玻璃面积(㎡) | 透光面积(㎡) | 非中空面积比 | 限值 | 结论 |
| 南向 | 0.00 | 581.66 | 0.00 | 0.15 | 满足 |
| 北向 | 0.00 | 468.69 | 0.00 | 0.15 | 满足 |
| 东向 | 0.00 | 218.26 | 0.00 | 0.15 | 满足 |
| 西向 | 0.00 | 300.01 | 0.00 | 0.15 | 满足 |
| 《标准》依据 | | 《福建省公共建筑节能设计标准》DBJ 13-305-2019第4.2.7条 | | | |
| 标准要求 | | 非中空玻璃的面积不应超过同一立面透光面积的15% | | | |
| 结论 | | 满足 | | | |

## 外窗气密性

|  |  |  |
| --- | --- | --- |
| 层数 | 1～9层 | 10层以上 |
| 最不利气密性等级 | 6级 C0321a | － |
| 外窗气密性措施 |  |  |
| 标准依据 | 《福建省公共建筑节能设计标准》DBJ 13-305-2019第4.2.5条，分级与检测方法《建筑幕墙、门窗通用技术条件》GB/T 31433-2015 | 《福建省公共建筑节能设计标准》DBJ 13-305-2019第4.2.5条 |
| 标准要求 | 10层以下外窗气密性应满足《建筑幕墙、门窗通用技术条件》GB/T 31433-2015中的6级 | 10层及以上外窗气密性应满足《建筑幕墙、门窗通用技术条件》GB/T 31433-2015的7级 |
| 结论 | 满足 | － |

## 幕墙气密性

|  |  |
| --- | --- |
| 最不利气密性等级 | － |
| 幕墙气密性措施 |  |
| 通风换气装置 | 无 |
| 标准依据 | 《福建省公共建筑节能设计标准》DBJ 13-305-2019第4.2.6条 |
| 标准要求 | 幕墙气密性应满足《建筑幕墙、门窗通用技术条件》GB/T 31433-2015的3级 |
| 结论 | － |

## 综合权衡

### 计算条件

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | 设计建筑 | | | 参照建筑 | | |
| 屋顶传热系数K [W/(m2·K)] | | | 0.63(D:3.95) | | | 0.50 | | |
| 外墙（包括非透明幕墙）传热系数K [W/(m2·K)] | | | 1.11(D:2.94) | | | 1.50 | | |
| 屋顶透光部分传热系数  K [W/(m2·K)] | | | － | | | － | | |
| 屋顶透光部分太阳得热系数 | | | － | | | － | | |
| 屋顶透明部分面积与屋顶面积之比 | | | 0.00 | | | 0.00 | | |
| 底面接触室外的架空或外挑楼板传热系数K [W/(m2·K)] | | | 1.18 | | | 1.50 | | |
| 外窗（包括透明幕墙） | 朝向 | 立面 | 窗墙比 | 传热  系数 | 太阳得热系数 | 窗墙比 | 传热  系数 | 太阳得热系数 |
| 南向 | 立面3 | 0.25 | 2.80 | 0.39 | 0.25 | 3.00 | 0.44 |
| 北向 | 立面4 | 0.30 | 2.80 | 0.44 | 0.30 | 3.00 | 0.52 |
| 东向 | 立面1 | 0.16 | 2.80 | 0.37 | 0.16 | 3.00 | 0.52 |
| 西向 | 立面2 | 0.18 | 2.80 | 0.38 | 0.18 | 3.00 | 0.52 |
| 室内参数和气象条件设置 | | | 按《公共建筑节能设计标准》附录B设置 | | | | | |

备注：1. — 代表本工程无对应项; 2. ——代表参照建筑不要求，取值同设计建筑。

### 房间类型

#### 房间表

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 房间类型 | 空调温度 ℃ | 供暖温度 ℃ | 新风量 | 人员密度 | 照明功率 密度 | 电器设备 功率 |
| 办公-普通办公室 | 26 | 20 | 30(m3/h.人) | 10(㎡/人) | 9(W/㎡) | 15(W/㎡) |
| 空房间 | － | － | 20(m3/h.人) | 50(㎡/人) | 0(W/㎡) | 0(W/㎡) |

#### 作息时间表

详见附录

### 综合权衡

|  |  |  |
| --- | --- | --- |
|  | 设计建筑 | 参照建筑 |
| 全年供暖和空调总耗电量(kWh/㎡) | 12.94 | 13.38 |
| 供冷耗电量(kWh/㎡) | 10.38 | 10.69 |
| 供热耗电量(kWh/㎡) | 2.56 | 2.69 |
| 耗冷量(kWh/㎡) | 25.95 | 26.73 |
| 耗热量(kWh/㎡) | 5.63 | 5.93 |
| 标准依据 | 《福建省公共建筑节能设计标准》DBJ 13-305-2019第4.3.2条 | |
| 标准要求 | 设计建筑的能耗不大于参照建筑的能耗 | |
| 结论 | 满足 | |

## 综合权衡判断结论

|  |  |  |
| --- | --- | --- |
| 序号 | 检查项 | 结论 |
| 1 | 可见光透射比 | 满足 |
| 2 | 天窗类型 | 无屋顶透光部分 |
| 3 | 屋顶构造 | 满足 |
| 4 | 外墙构造 | 满足 |
| 5 | 外窗热工 | 满足 |
| 6 | 有效通风换气面积 | 适宜 |
| 7 | 非中空窗面积比 | 满足 |
| 8 | 外窗气密性 | 满足 |
| 9 | 幕墙气密性 | 满足 |
| 10 | 综合权衡 | 满足 |
| 结论 | | 满足 |

■说明：本工程设计建筑的采暖和空气调节能耗不大于参照建筑的采暖和空气调节能耗。权衡判断**满足**《福建省公共建筑节能设计标准》DBJ 13-305-2019的要求。

## 附录

### 工作日/节假日室内空调温度时间表(℃)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 房间类型 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 办公-普通办公室 | 37 | 37 | 37 | 37 | 37 | 37 | 29 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 37 | 37 | 37 | 37 | 37 | 37 |
| 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 |
| 空房间 | 37 | 37 | 37 | 37 | 37 | 37 | 28 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 37 | 37 | 37 | 37 | 37 | 37 |
| 37 | 37 | 37 | 37 | 37 | 37 | 28 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 37 | 37 | 37 | 37 | 37 | 37 |

注：上行：工作日；下行：节假日

### 工作日/节假日室内供暖温度时间表(℃)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 房间类型 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 办公-普通办公室 | 10 | 10 | 10 | 10 | 10 | 12 | 16 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 18 | 10 | 10 | 10 | 10 | 10 |
| 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| 空房间 | 12 | 12 | 12 | 12 | 12 | 12 | 18 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 12 | 12 | 12 | 12 | 12 | 12 |
| 12 | 12 | 12 | 12 | 12 | 12 | 18 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 12 | 12 | 12 | 12 | 12 | 12 |

注：上行：工作日；下行：节假日

### 工作日/节假日人员逐时在室率(%)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 房间类型 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 办公-普通办公室 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 50 | 100 | 100 | 100 | 30 | 100 | 100 | 100 | 100 | 50 | 20 | 10 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 空房间 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 50 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 70 | 50 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 50 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 70 | 50 | 0 | 0 | 0 |

注：上行：工作日；下行：节假日

### 工作日/节假日照明开关时间表(%)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 房间类型 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 办公-普通办公室 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 36 | 62 | 56 | 54 | 43 | 53 | 55 | 58 | 67 | 40 | 18 | 10 | 10 | 10 | 10 | 10 | 10 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 空房间 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 50 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 80 | 90 | 100 | 100 | 100 | 10 | 10 | 10 |
| 10 | 10 | 10 | 10 | 10 | 10 | 10 | 50 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 80 | 90 | 100 | 100 | 100 | 10 | 10 | 10 |

注：上行：工作日；下行：节假日

### 工作日/节假日设备逐时使用率(%)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 房间类型 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 办公-普通办公室 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 50 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 50 | 20 | 10 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 空房间 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 50 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 70 | 50 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 50 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 70 | 50 | 0 | 0 | 0 |

注：上行：工作日；下行：节假日

### 工作日/节假日空调系统运行时间表(1:开,0:关)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 系统编号 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 默认 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

注：上行：工作日；下行：节假日