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| --- | --- | --- | --- | --- | --- | --- | --- |
| **SP立式容器板式吊耳强度校核** | | | 计算单位 |  | | | |
| 计算所依据的标准 | | | | **HG/T 21574-2008 附录 A** | | | |
| **计 算 条 件** | | | | **吊 耳 简 图** | | | |
| 吊耳板 | 材料标准号 | **$$001** | | FV  $02  $01  A  A  $03  衬板  $04  $05  $06  $07  $08  $09  TL  WL  100  B  B  $10  $11  吊耳板  $12  垫板  $13  $15  $16  R20  $14  $17  $18  FV | | | |
| 材料牌号 | **$$002** | |
| 厚度, δdn | mm | **$$003** |
| 吊孔直径, Dd | mm | **$$004** |
| 宽度, Hd | mm | **$$005** |
| 尺寸, Ld | mm | **$$006** |
| 尺寸, Gd | mm | **$$007** |
| 尺寸, Fd | mm | **$$008** |
| 与垫板焊缝角高, a | mm | **$$009** |
| 圆角半径, rd | mm | **$$010** |
| 腐蚀裕量, Cd2 | mm | **$$011** |
| 衬板 | 材料标准号 | **$$012** | |
| 材料牌号/名称 | **$$013** | |
| 厚度, δcn | mm | **$$014** |
| 外直径, Dc | mm | **$$015** |
| 腐蚀裕量, Cc2 | mm | **$$016** |
| 垫板 | 材料标准号 | **$$017** | |
| 材料牌号/名称 | **$$018** | |
| 厚度, δpn | mm | **$$019** |
| 宽度, Hp | mm | **$$020** |
| 高度, Lp | mm | **$$021** |
| 腐蚀裕量, Cp2 | mm | **$$022** |
| 单个吊耳吊重, m | | kg | **$$023** |
| **材 料 特 性** | | | | | | | |
| 吊耳板 | 密度, ρd | kg/m³ | **$$024** | 衬板 | 密度, ρc | kg/m³ | **$$025** |
| 常温屈服点, RdeL | MPa | **$$026** | 常温下屈服点, RceL | MPa | **$$027** |
| 负偏差, Cd1 | mm | **$$028** | 负偏差, Cc1 | mm | **$$029** |
| 垫板 | 密度, ρp | kg/m³ | **$$030** | 常温屈服点, RpeL | | MPa | **$$031** |
| 负偏差, Cp1 | mm | **$$032** | / | | | |
| **过 程 参 数 计 算** | | | | | | | |
| 吊耳板 | 厚度附加量, Cd | mm | Cd = Cd1 + Cd2 | | | | **$$033** |
| 有效厚度, δde | mm | δde = δdn – Cd | | | | **$$034** |
| 许用拉应力, [σ]d | MPa | [σ]d = RdeL /1.6 | | | | **$$035** |
| 许用剪应力, [τ]d | MPa | [τ]d =0.6×[σ]d | | | | **$$036** |
| 衬板 | 厚度附加量, Cc | mm | Cc = Cc1 + Cc2 | | | | **$$037** |
| 有效厚度, δce | mm | δce = δcn – Cc | | | | **$$038** |
| 许用应力, [σ]c | MPa | [σ]c = RceL /1.6 | | | | **$$039** |
| 许用剪应力, [τ]c | MPa | [τ]c =0.6×[σ]c | | | | **$$040** |
| 垫板 | 厚度附加量, Cp | mm | Cp = Cp1 + Cp2 | | | | **$$041** |
| 有效厚度, δpe | mm | δpe = δpn – Cp | | | | **$$042** |
| 许用拉应力, [σ]p | MPa | RpeL /1.6 | | | | **$$043** |
| 许用剪应力, [τ]p | MPa | [τ]p =0.6×[σ]p | | | | **$$044** |
| **载 荷 计 算** | | | | | | | |
| 综合影响系数, K | | / | 考虑动载荷冲击、多个吊耳吊装时的不均匀性, K = 1.65 | | | | **1.65** |
| 竖向载荷, Fv | | N | FV = m×9.81×K | | | | **$$047** |
| **吊 耳 板 强 度 校 核** | | | | | | | |
| A-A截面 | 拉应力, σL | MPa |  | | | | **$$048** |
| 许用拉应力, [σL] | MPa | [σL] = min{[σ]d, [σ]c} | | | | **$$049** |
| 拉应力校核 | / | σL <= [σL] | | | | **$$050** |
| B-B截面 | 剪应力, τL | MPa | τL = σL | | | | **$$051** |
| 许用剪应力, [τL] | MPa | [τL] = min{[τ]d, [τ]c} | | | | **$$052** |
| 剪应力校核 | / | τL <= [τL] | | | | **$$053** |
| **焊 缝 校 核** | | | | | | | |
| 角焊缝系数, Φ | | / | Φ = 0.7 | | | | **0.7** |
| 吊耳焊缝 | 剪应力, τw | MPa |  | | | | **$$054** |
| 许用剪应力, [τw] | MPa | [τw] =Φ×min{[τ]d, [τ]p} | | | | **$$055** |
| 剪应力校核 | / | τw <= [τw] | | | | **$$056** |
| 垫板焊缝 | 剪应力, τb | MPa |  | | | | **$$057** |
| 许用剪应力, [τb] | MPa | [τb] =Φ×[τ]d | | | | **$$058** |
| 剪应力校核 | / | τb <= [τb] | | | | **$$059** |

注1：衬板与吊耳板材料相同，垫板一般与壳体材料相同。

注2：吊耳垫板厚度不应大于设备壳体厚度。

注3：吊耳垫板与壳体角焊缝高度不小于0.8倍垫板厚度。

注4：本表为设备垂直状态的顶部吊耳强度校核，且需保证吊耳仅承受竖向载荷。