

7 个质控节点总览 7-Node Quality Control Framework Overview

节点 / Node	主要控制目的 / Core Objective	核心质控要素 / Key Focus Areas	典型记录输出 / Output Records
Node 01 项目质量策划 Project Quality Planning	锁定“按什么标准做、按什么标准验” Standardize specs, artwork, BOM & tolerances before production	规格书、BOM表、图稿版次、充气与保压基准、包装与AQL判定标准	Project Quality Plan (QIP), Customer BOM, Artwork Approval Sheet, Sample Ref
Node 02 来料检验 (IQC) Incoming Quality Control	防止不合格材料与配件进入产线 Prevent non-conforming materials/parts entering production	Drop-stitch拉丝基布、PVC卷材、加强带、EVA垫、阀门、尾鳍系统、泵/桨配件	IQC Inspection Report, Material Release Label, Supplier Lot Register, NCR
Node 03 制程检验 (IPQC) In-Process & First Article	首件确认与防止制造过程偏差扩散 First Article Inspection (FAI) & inline workstation monitoring	板体成型尺寸、胶合/熔接轨道均匀度、EVA与配件对位定位、Logo印刷版次	First Article Approval (FAI), IPQC Route Checklist, Rework & Re-check Log
Node 04 充气与气密检验 Inflation & Air-Tightness	验证板体密封性与关键承压结构 Critical release gate: verify pressure retention & seams	阀门密封、轨道接缝全周、鼻部/尾部搭接处、加压保压周期压降监测	Air-Tightness Test Record, Pressure-Drop Log, Re-Test Certification
Node 05 成品检验 (FQC) Final Quality Control	验证板体、外观、尺寸与功能符合性 Verify final product against specs, aesthetics & functionality	长宽高厚尺寸允差、表面外观(胶痕/气泡)、配件装配、尾鳍锁紧、泵桨功能	FQC Final Inspection Report, Dimension Check Log, Visual & Photo Records
Node 06 包装与出货前检验 Packaging & PSI	防止错装、漏装、错标与运输损毁 Prevent missing items, wrong barcodes, wrong cartons & damage	单套配件核对、多语言说明书、条码扫描可读性、外箱唛头、箱规毛净重	Packing & PSI Report, Barcode Verification Log, AQL Sampling Checklist
Node 07 出货放行与追溯 Shipment Release & Trace	确保已验收放行并具备全链路追溯 Authorize release & ensure lot traceability across 4 questions	全阶段记录闭环核查、第三方验货报告、装柜状态、批次-图稿-材料全链路追溯	Shipment Release Authorization, Traceability Dossier, Container Loading Log

01 项目质量策划 Node 01: Project Quality Planning

原则：非检查实物节点，核心在于统一技术语言与版本控制。所有PSI、保压时长、抽检比例以项目SOP及批准样为准。

检验/确认对象 (Object)	检验/确认方法 (Method)	判定依据 (Criteria)	记录输出 (Output)
项目工程规格与配置 Technical Specs & Configuration	工程图纸评审、BOM交叉核对、容积与尺寸公差界定、工作/测试压力基准设定。	Approved Technical Specification, Customer Approved BOM, Contract Annex.	Project Quality Plan (QIP), BOM Release Sheet, Document Revision Log.
图稿、包装与合规要求 Artwork, Packaging & Compliance	Pantone色号比对、Logo位置比例校验、多语言警示核对、第三方合规要求导入。	Customer Approved Artwork, Packaging Specification, Market Compliance Req.	Artwork Sign-off Sheet, Packaging Master Spec, Inspection Sample Sign-off.

02 来料检验 (IQC) Node 02: Incoming Quality Control

检验对象 (Object)	检验方法 (Method)	判定依据 (Criteria)	记录输出 (Output)
Drop-Stitch基布 / PVC卷材 / 轨道带 Drop-Stitch, PVC Fabric & Rail Tapes	卷材开卷目视抽检表面划伤/孔洞/折痕，卡尺测厚度/幅宽，色卡比对批次色差。	Raw Material TDS, Approved Fabric Sample, Thickness/Weight Spec ($\pm$ Tolerance).	IQC Fabric Inspection Record, Material Release Label, Roll Defect Map.
EVA防滑垫 / 胶粘剂 / 辅助物料 EVA Deck Pads & Adhesives	硬度计抽检密度/硬度，核对裁切尺寸与粘贴背胶状态；核查胶粘剂批次保质期与COA。	EVA Approved Color/Pattern Sample, Adhesive Shelf-Life Spec, COA Certificate.	EVA Inspection Form, Chemical Material Inbound Verification Log.
阀门 / 尾鳍座 / D环 / 金属塑料件 Valves, Fin Boxes, D-Rings & Hardwares	装配配合试插、螺纹配合测试、金属表面毛刺/盐雾防锈检查、塑料件缩水裂纹目视。	Hardware Technical Drawing, Fitting Tolerance Spec, Approved Golden Sample.	Hardware IQC Report, Non-Conformance Report (NCR if rejected).
套装配件 (泵/桨/包/脚绳) 与包材 Accessories & Packaging Material	泵充气试压抽测、桨叶锁紧卡扣测试、拉链启闭测试、外箱尺寸/瓦楞材质/条码核查。	Accessory Spec Sheet, Barcode Readability Spec, Packaging Artwork Version.	Accessory IQC Checklist, Carton Quality Inbound Record.

03 制程检验 (首件 + IPQC) Node 03: In-Process Quality Control & FAI

检验对象 (Object)	检验方法 (Method)	判定依据 (Criteria)	记录输出 (Output)
首件确认 (FAI) First Article Inspection	换批/换款/换图/复工首件全项测量：轮廓对称性、Logo方向、EVA位置与配件齐全度。	Approved Sample, Project Artwork Revision, Customer Approved BOM.	First Article Inspection (FAI) Report, Golden Board Sign-off Tag.
板体成型与轨道熔接/粘接 Board Shaping, Seam & Rail Gluing	工位巡检轨道胶缝均匀度，检查有无断胶、起翘、气泡、错位；核查加固带贴合质量。	SOP Shaping Standards, Seam Alignment Tolerance, Rail Lamination Guide.	IPQC Routing Inspection Sheet, Workstation Defect / Rework Log.
EVA铺贴、阀座与配件定位 EVA Decking & Component Positioning	治具/基准线测量EVA边缘平整度与气泡，量规核对D环、把手、尾鳍座、相机座坐标位置。	Assembly Layout Drawing, Positioning Tolerance Drawing ($\pm$ mm specs).	In-Process Assembly Check Record, Re-Inspection Record after rework.

04 充气与气密检验 Node 04: Inflation & Air-Tightness Verification

放行关键节点：严禁仅做表面检查。严格依照项目规定测试压力与保压时长（如15-20 PSI / 24-48h）进行压降记录与复验。

检验对象 (Object)	检验方法 (Method)	判定依据 (Criteria)	记录输出 (Output)
充气初始检查与压力加载 Initial Inflation & Pressure Setup	校验压力表加压至项目规定测试压力，记录初始时间/环境温度/压力值；阀芯与密封圈初检。	Project SOP Pressure Spec, Gauge Calibration Standard, Cleanliness Spec.	Inflation Start Log, Pressure Gauge Calibration Record.
关键承压区与全周接缝检漏 Critical Seams & High-Stress Areas	重点对阀座底板、板头板尾弯曲弧度轨道、加强带搭接处实施皂液气泡法/听音/电子探伤。	Zero-Leakage Standard (无持续溢出气泡、无接缝微裂、无鼓包开胶).	Seam Leakage Inspection Log, Critical Area Defect Marker.
保压周期与压降复核判定 Holding Period & Pressure Drop Check	达到规定保压时长后二次测量压力表读数，温差修正计算压降；不合格板返修后必须全流程复测。	Allowable Pressure Drop Criteria ($\leq$ Specified Max ΔP), Pass/Hold Standard.	Air-Tightness Test Record, Batch Pressure Release Certificate.

05 成品检验 (FQC) Node 05: Final Quality Control

检验对象 (Object)	检验方法 (Method)	判定依据 (Criteria)	记录输出 (Output)
尺寸、板型轮廓与对称性 Dimensions, Rocker & Symmetry	充气状态下使用激光/卷尺测量长、宽、厚度、板头翘度 (Rocker)，核对板体平整度与扭曲度。	Project Dimension Tolerance Spec (L/W/H), Symmetric Profile Standard.	FQC Dimensional Check Report, Profile Verification Sheet.
表面外观、印刷与工艺细节 Cosmetics, Artwork & Craftsmanship	强光检验表面：无溢胶/胶印、无明显擦伤、EVA无毛边/起翘、Logo印刷无重影错位与拼写错误。	Defect Classification Standard (Critical/Major/Minor), Approved Artwork.	Visual Inspection Sheet, Finished Product Photo Record.
配件装配功能与套装完整性 Hardware Function & Package Match	尾鳍插拔锁定顺畅度、D环拉力可靠性、脚绳接头活动度、充气泵与阀门配合气密性抽测。	Functional Fit Standard, Customer BOM Configuration List.	FQC Function Test Log, Full Set Match Verification Sheet.

06 包装与出货前检验 (OQC / PSI) Node 06: Outgoing QC & Pre-Shipment Inspection

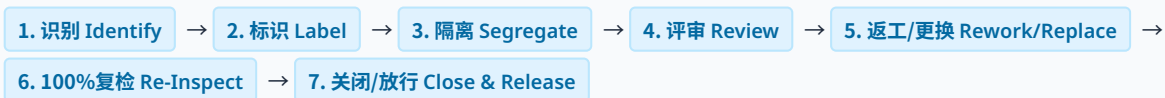
检验对象 (Object)	检验方法 (Method)	判定依据 (Criteria)	记录输出 (Output)
套装附件、折叠与内包装 Full Kit Verification & Inner Packaging	对照BOM清点附件(板/桨/泵/绳/包/修补筒/说明书)；检查折叠规范性及易损件防护膜。	Packaging BOM, Folding SOP, Protection Packing Standard.	Inner Packing Checklist, Kit Completeness Verification Form.
彩盒/外箱、唛头与条码系统 Cartons, Shipping Marks & Barcodes	手持PDA扫描条码核对EAN/UPC数据；核对外箱正侧唛、PO号、SKU、箱号及毛净重称重。	Barcode Readability Standard (Grade A/B), Approved Shipping Mark Layout.	Barcode Verification Report, Weight & Carton Check Record.
AQL出货前终检抽样 (PSI) Pre-Shipment AQL Sampling	依据ISO 2859-1 (MIL-STD-105E) 单次抽样方案开箱抽检，核查外箱跌落抗压与封箱稳固性。	Agreed AQL Level (e.g. Critical 0, Major 1.5, Minor 4.0), PSI Standard.	Pre-Shipment Inspection (PSI) Report, Batch Release Sign-off.

07 出货放行与批次追溯 Node 07: Shipment Release & Full Traceability

检验/核对对象 (Object)	检验/核对方法 (Method)	判定依据 (Criteria)	记录输出 (Output)
质量闭环审查与放行签批 Quality Loop Audit & Authorization	核查01-06节点记录完整性，确认所有NCR异常已纠正并关闭；核对第三方验货报告。	100% Quality Records Signed, Zero Unresolved NCR, Final Release Criteria.	Shipment Release Authorization (SRA), QA Final Sign-off.
全链路追溯系统 (4个问题) Full-Chain Traceability System	建立“板体序列号 → 生产批次 → 原材料批号 → 作业人员 → 检验责任人 → 货柜号”映射表。	Traceability SOP (Batch, Spec Rev, Artwork Rev, Operator, Inspector).	Batch Traceability Log, Golden Sample Retention Record.
装柜与集装箱状态检查 Container Inspection & Loading	检查货柜干燥、清洁、无异味、无破损缝隙；监控装柜堆叠层数、封条号核对并全程拍照记录。	Container Inspection Standard, Loading Quantity & Weight Distribution Plan.	Container Loading Inspection Report (CLIR), Container Seal Photos.

不合格品控制流程与追溯字段定义 Non-Conformance Workflow & Traceability

不合格品处置逻辑 / NCR Control Protocol (贯穿7大节点):



"Products or components that do not meet the defined acceptance criteria are identified and controlled to prevent unintended use or shipment. Rework or replacement is followed by re-inspection before release."

核心追溯数据字段 (Traceability Fields):

- Customer Project Code (客户项目代号)
- PO Number & SKU (订单号与品号)
- Artwork & BOM Revision (图稿与BOM版次)
- Raw Material Lot No. (基布/胶水/PVC批号)
- Production Batch & Date (生产批次与日期)
- Inspector & Test Records (质检员与报告单号)
- Container & Seal No. (货柜号与封条号)

官网展示合规建议 (Supsfactory.com Web Version):

- 脱敏原则：不公开内部具体压降公式、胶水配方及供应商明细。
- 模块布局：7个节点各配1张高清真实工位图 + 3-5条买家关注点。
- 标准承诺话术：“严格依据客户批准样、技术规格书、BOM及包装标准实施全节点验收”。
- 背书标识：ISO 9001体系认证、CE标准与第三方AQL验货支持。