

The 5-Layer Supply Chain Risk Checklist

Most China+1 plans move one layer: final assembly. The other four stay exactly where they were. This is a working checklist, not an article. Print it, tick what you can actually prove, and score your product out of 50.

PRODUCT / CATEGORY

CURRENT SITE > TARGET SITE

DATE • REVIEWED BY

THE MAP AT A GLANCE

	LAYER	HOW HARD TO MOVE	THE HONEST TEST
01	Materials & Special Processes	■■■■■	Plating, anodising and heat treatment are a one-hour-drive industry in the Pearl River Delta. Elsewhere they are a flight.
02	Tooling, Molds & Machinery	■■■■■	The mold can be shipped. The mold shop, the steel and the spare parts cannot.
03	Critical Components & Tier-2	■■■■■	Your new plant can be spotless and still assemble parts that ship from China. That is not a moved supply chain.
04	Engineering & Skilled Labour	■■■■■	Yield lives in people, not in drawings. Why 118 A on that weld, why 210 C on that die - it is in someone's hands.
05	Assembly & Packaging	■■■■■	The only layer most companies actually move - and the layer that decides the least about your risk.

WHY THE ORDER MATTERS. Risk travels upward. Move Layer 5 while Layer 3 fails to supply and you own an empty plant with a shipping schedule. The bottom of this stack is where your product really comes from.

Scoring: 10 checkpoints per layer, 50 in total. Your score is the number of boxes you can tick *with evidence*. If you have not received the BOM and tier-2 list yet, score Layer 3 as zero - do not estimate.

HOW TO USE IT

01 PRINT	02 TICK WITH EVIDENCE	03 SCORE EACH LAYER	04 DECIDE
Two copies. One for the plant visit, one for the file.	A box only counts if you can show the document behind it.	Ten boxes per layer. No partial credit, no optimism.	Score maps to MOVE, DUAL-SOURCE or STAY. No third meeting needed.

LAYER 01 Materials & Special Processes



☐ 1. Main material grade and temper stated in writing	e.g. 6061-T6, S136, SPCC - not just "aluminium"
☐ 2. Mill certificate available	Original document, not a photocopy of a customer file
☐ 3. Surface treatment in-house	Plating / anodising / coating on the same site
☐ 4. Subcontractor distance disclosed	If outsourced: within 100 km and open to audit
☐ 5. Salt spray / adhesion / wear reports	Report number, within validity period
☐ 6. Testing lab accredited	Third party (SGS / TUV / CMA / CNAS)
☐ 7. Material-level RoHS and REACH	Substance testing, not only finished-goods report
☐ 8. CBAM carbon data to material level	Specific embedded emissions, not a default value
☐ 9. EU FLR traceability	Wood packaging / rubber: plot coordinates + deforestation-free proof
☐ 10. Second source for key materials	At least two qualified suppliers

▲ RED FLAGS Cannot name the alloy grade. Treatment plant is "a partner" with no name or distance. Reports "came from the customer".

LAYER 02 Tooling, Molds & Machinery



☐ 1. Complete mold list	Number of sets, steel grade, owner
☐ 2. Mold ownership is clear	Factory-owned, or a transferable clause
☐ 3. Mold shop located	On site, or within 50 km
☐ 4. Actual time of last 3 mold changes	Logged, not estimated verbally
☐ 5. Change cycle within your limit	Fits the downtime your market can absorb
☐ 6. Equipment maintenance records	Last 12 months, inspectable
☐ 7. Critical spare parts stocked	Written list with minimum quantities
☐ 8. MTTR (mean time to repair)	Measured in hours, not "quickly"
☐ 9. MTBF or failure log	12 months of data
☐ 10. Mold duplication budgeted	In the relocation cost, not "later"

▲ RED FLAGS Molds are "at a partner factory". Spares bought "when they break". Equipment list shows brands but no service history.

LAYER 03 Critical Components & Tier-2



☐ 1. Full BOM with tier-2 supplier names	Not only the tier-1 assembler
☐ 2. Tier-2 addresses disclosed	Down to city / plant address
☐ 3. All single-source parts flagged	A written list, not a verbal "mostly fine"
☐ 4. Written alternative for each	Model number and supplier for every single source
☐ 5. Re-certification scope defined	Which certificates must be redone, and how long
☐ 6. Safety stock days set in writing	Not "purchase to order"
☐ 7. Localisation rate calculated	Separately by value and by part number
☐ 8. 24-month shortage history logged	Any lead time beyond 8 weeks
☐ 9. Tolerance for long transit	Key parts can absorb 45+ days
☐ 10. Origin opinion obtained	Third-party view on substantial transformation / local value

▲ RED FLAGS Tier-2 refused as "confidential". BOM full of "equivalent". No one can say which parts are single-source.

LAYER 04 Engineering & Skilled Labour



☐ 1. Yield ramp curve available	First 3 months vs today, on one chart
☐ 2. FPY data	12 consecutive months of first-pass yield
☐ 3. Process documented	SOP and control plan for critical operations
☐ 4. Independent setup staff	At least 2 people per critical station
☐ 5. Operator tenure	Average 3+ years at critical stations
☐ 6. ECN process documented	Named owner, defined steps
☐ 7. ECN cycle time acceptable	Request to mass production within your limit
☐ 8. Resident engineer mechanism	Named contact and review cadence
☐ 9. Top defect modes listed	With improvement records
☐ 10. Local training plan	Executable in the destination country

▲ RED FLAGS No yield data, only "our quality is good". Critical stations depend on one or two people. ECN is "just send an email".

LAYER 05

Assembly & Packaging

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☐ 1. OEE measured	Design capacity vs actual output
☐ 2. Pilot yield committed in contract	With a penalty clause
☐ 3. Scale-up path defined	Written answer for a doubled order
☐ 4. Packaging sourced locally	Share confirmed, not 100% imported
☐ 5. Packaging compliance	EU FLR file for cartons and wooden pallets
☐ 6. Infrastructure secured	Power capacity, fire and environmental approvals
☐ 7. Buffer inventory budgeted	Inside the total cost model
☐ 8. Duty saving verified	Origin review done, not just nominal rate maths
☐ 9. Cross-time-zone cost quantified	In money, per unit or per year
☐ 10. Ramp-up quality cost reserved	Rework, scrap and claims funded
▲ RED FLAGS Only labour rate discussed. Duty saving calculated on the headline rate gap. No buffer inventory line in the budget.	

SCORE YOUR PRODUCT

LAYER	TICKED	OF
L1 Materials & Special Processes	_____	10
L2 Tooling, Molds & Machinery	_____	10
L3 Critical Components & Tier-2	_____	10
L4 Engineering & Skilled Labour	_____	10
L5 Assembly & Packaging	_____	10
TOTAL	_____	50

WHAT THE SCORE MEANS

40 - 50	REAL MOVE	Genuinely relocatable. Execute in full. Rare in practice: simple products, flat supply base, mature ecosystem.
30 - 39	PARTIAL MOVE	Move L5. Dual-source L3 and L4. New site 60-70%, China keeps 30-40% as backup and fast-response capacity.
20 - 29	NOMINAL MOVE	You moved the last process only. Risk has not fallen - it has become dispersed and more expensive.
0 - 19	DO NOT MOVE	Deep process dependency. Put the money into second-source qualification and inventory resilience instead.

THE COMBINATION THAT DECIDES IT: if L1 and L3 score 5 or less while L5 scores 8 or more, your real structure is *Chinese sub-assembly, foreign final assembly*. That can still work - but write it into your origin analysis honestly, hold more buffer stock rather than less, and name the shortage liability in the contract.

THE DECISION

LAYER	IF IT SCORES	DECISION	ACCEPTANCE TEST
L5 Assembly & Packaging	8 - 10	MOVE	Yield within 95% of the original line, stable for 3 months
L2 Tooling & Molds	5 - 8	DUAL-SOURCE	Two mold sets, key dimensions Cpk >= 1.33
L4 Engineering & Labour	4 - 7	DUAL-SOURCE	Local team resolves 80% of routine process deviations
L3 Critical Components	0 - 5	STAY	45-60 days buffer on critical parts
L1 Materials & Processes	0 - 5	STAY	Third-party origin opinion on file

12 QUESTIONS TO SEND YOUR SUPPLIER TODAY

Copy these into a formal RFI. Watch how long question 1 takes to answer - that tells you more than the answer.

☐ 1. Full BOM, including tier-2 supplier names and plant cities.	Speed of reply
☐ 2. Which parts are single-source? What is the alternative model?	A real alternative, or a guess
☐ 3. What re-certification does the alternative trigger, and how long?	Whether they costed it
☐ 4. Safety stock in days for critical parts - set on what logic?	Policy vs habit
☐ 5. Localisation rate by value and by part number?	Can they quantify at all
☐ 6. Which operations are in-house, which outsourced, and where?	True capacity boundary
☐ 7. FPY for the past 12 months, and top defect modes?	Data vs adjectives
☐ 8. Mold list, steel grades, and where the mold shop is?	Ownership and depth
☐ 9. Actual duration of the last three mold changes?	Real response capability
☐ 10. MTTR and spare-part stocking policy for key equipment?	Downtime exposure
☐ 11. CBAM data to which level? EU FLR traceability available?	Compliance maturity
☐ 12. Can we enter your plant unannounced within 2 hours, in writing?	The one they cannot bluff

FIVE THINGS TO REMEMBER

- 1. Do not size duty savings on the headline rate gap.** What you save is either duty or a retroactive penalty, and that depends on substantial transformation and local value - not on where the last screw is driven.
- 2. Moving assembly is not moving a supply chain.** If critical parts still ship from China, you have replaced a short chain with a long one.
- 3. Labour cost is the easiest number to calculate and the easiest to overrate.** Standing opposite it: ramp-up yield, buffer inventory, cross-time-zone management and downtime.
- 4. Get evidence before you score.** Without the BOM and the tier-2 list, Layer 3 is zero. Do not award points for optimism.
- 5. Put ramp-up yield into the contract.** A new line usually runs worse than the old one for the first quarter. Fund it, and write a penalty for it.

FACT BOUNDARY. This document is a reusable due-diligence and decision tool. The days, ratios and thresholds shown (e.g. 45 days, Cpk 1.33, 30-40% retained share) are illustrative ranges for explaining structure, not measured industry benchmarks. Replace them with your own project data before external use. Verify CBAM, EU FLR and rules-of-origin against the current official texts. Nothing here is legal, tax or compliance advice.