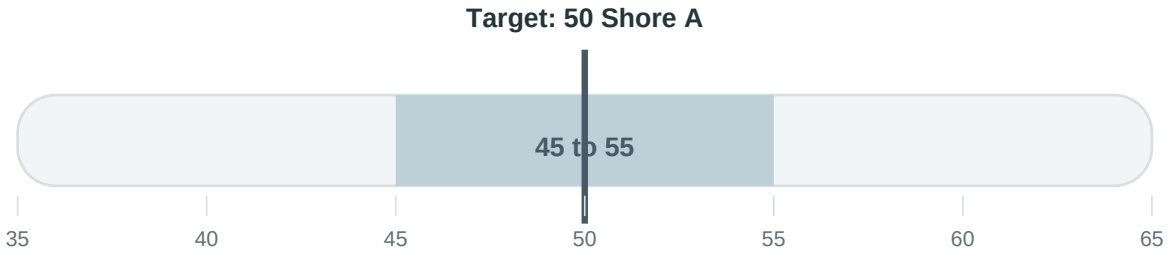
# Hardness Tolerance in Custom Silicone Production

# What Does +/-5 Shore A Mean?

OEM buyer & quality engineer field guide | Measurement controls, sample plaques, batch records and acceptance decisions




The specified range applies only to results obtained by the agreed test method and acceptance rule.

> **The direct answer:** 50 +/-5 Shore A describes an agreed allowable result range of **45-55 Shore A points** when measured by the specified method on a suitable specimen. It does not mean 5% of 50, and the tolerance is not automatically imposed by ASTM D2240 or ISO 48-4.

## ENGINEERING SCOPE

This guide separates material hardness control from finished-part function. It helps buyers avoid disputes caused by thin-wall measurement, different dwell times, temperature, and undefined lot acceptance rules.

Document: RM-MAT-261 | Version: 1.0 | October 2026

For: purchasing, supplier quality, product engineering and silicone molding teams.

Prepared by Shenzhen Reemane Silicone Technology Co., Ltd.

www.siliconefactories.com | Project quotation

# 01 / What the drawing must control

A hardness callout must define more than the number. Shore A is an empirical indentation measure, not a direct measure of modulus, elongation, tear resistance, installed squeeze force, or long-term recovery.

| Drawing element | Practical agreement |
|---|---|
| Target / tolerance | 50 +/-5 Shore A; target and allowable interval stated |
| Method / scale | Specify ASTM D2240 Type A or ISO 48-4 Type A; do not mix without agreement |
| Test specimen | Approved flat plaque/coupon of sufficient thickness, or separately validated part location |
| Timing / condition | Agreed reading time, conditioning, test temperature, cure/post-cure state |
| Lot acceptance | Number of samples, locations, statistic (e.g., median), retest/hold procedure |

# 02 / Where the measurement happens

Finished silicone parts may be curved, ribbed, hollow or thin. A handheld reading taken on a 2 mm flexible wall may not match a reading on a flat, appropriately thick reference plaque. A rigid backing can bias some thin specimens; bending or a curved contact surface can produce other unreliable readings.




Use an agreed material-control plaque where finished-part geometry cannot support the stated method. Finished-part fit, flexibility, sealing, grip or comfort should be separately checked against the approved physical sample.

> **Important:** Do not compare a plaque value to a thin finished-wall value as though they were taken under identical conditions. ISO 48-4 includes Type AM for thin samples; the applicable method must be agreed before testing.

## 03 / Why readings vary in production

Two valid measurements are comparable only when the scale, specimen, device, conditioning and reading procedure match.

| Variable | What it can change / response |
|---|---|
| Material formulation | Polymer, filler, pigment and mixing consistency; confirm compound identity |
| Cure and post-cure | Crosslink state and conditioning history; preserve approved process |
| Thickness / support | Thin, stacked, curved or hollow parts may give geometry-dependent readings |
| Temperature / time | Reading depends on viscoelastic response; record temperature and dwell |
| Operator / gauge | Foot contact, specimen position, calibration, stand and spacing matter |
| Storage / aging | Time and exposure can change material response; define when testing occurs |

## 04 / Example disagreement: supplier 50A, buyer 57A

**Before rejecting or accepting a shipment:** check whether both labs used the same specimen thickness, agreed scale, post-cure condition, temperature and read time. Compare instrument calibration status and the actual acceptance statistic.

Suggested investigation sequence:

1. Quarantine disputed lot records; record who tested what, when and where.
2. Repeat on agreed retained plaques/coupons using the same method.
3. Compare a second trained operator or independent qualified laboratory if necessary.
4. Review molding/material records and the finished part's functional test results.
5. Apply the contract's specified acceptance and retest rules, not an improvised standard.

> **Boundary:** A 57A result on a comparable, accepted test method is outside a 45-55 acceptance range; a 57A reading on a different or unsuitable specimen is not enough, on its own, to establish a material nonconformity.

## 05 / Supplier-QC record template

Agree these fields before the first mass-production run; keep the same approach for repeat orders.

| Record field | Example entry / fill-in prompt |
|---|---|
| Drawing revision | Part / revision: _____ |
| Compound + cure state | Compound: _____ ; post-cure: _____ |
| Target and method | 50 +/-5 Shore A ; Type A ; method/version: ____ |
| Specimen details | Plaque thickness/size/location: _____ |
| Conditioning / reading | Temperature: _____ ; conditioning: _____ ; time: _____ |
| Instrument | Durometer ID / calibration date: _____ |
| Lot and readings | Lot ID: _____ ; measurements: __ / __ / __ |
| Acceptance rule | Specified median/range/sample plan: _____ |
| Function check | Fit / seal / flexibility test result: _____ |
| Disposition | Accepted / hold / retest / corrective action |

## 06 / Sample and mass-production checkpoints

**At RFQ:** send drawing, material intent, functional risks and the requested measurement procedure. **At sampling:** approve plaque hardness and the actual product in its intended assembly. **At pre-production:** freeze material grade, cure condition, inspection instructions and approved sample. **At repeat production:** identify lots, maintain retained samples where agreed and record results under the same method.

> **No universal +/-5 guarantee:** A tighter or wider tolerance may be suitable depending on material, test method, customer risk and verified process capability. Specify it deliberately and confirm feasibility before purchase orders.

## 07 / Copy-ready buyer specification

> **Example wording (customize before contract):**
> Material hardness: 50 +/-5 Shore A, measured on an agreed flat, adequately thick reference specimen produced from the approved compound and cure state, using ASTM D2240 Type A [or ISO 48-4 Type A; select one]. Define conditioning temperature, read time, sampling plan and result statistic in the inspection specification. Do not use direct measurements on thin or irregular finished-product regions as the sole material acceptance criterion unless an approved method has been validated.

## 08 / What to include with your RFQ

| Needed detail | Buyer note |
|---|---|
| Product definition | STEP/STP or 2D drawing + part revision |
| Material target | Compound grade, Shore A target, agreed range |
| Critical function | Seal, grip, assembly, cushioning, tear, comfort |
| Test approach | Method, plaque, conditioning, read time, QC plan |
| Environment | Temperature, fluid/chemical contact, cleaning or aging |
| Commercial | Sample count, first order, annual usage, target lead time |

## Reemane material and production review

Shenzhen Reemane Silicone Technology Co., Ltd. supports custom silicone manufacturing from drawings or samples, including material-option discussion, mold feasibility, prototype approval and project-specific quality requirements. The exact testing scope and records should be agreed for each project.

**Material options:** siliconefactories.com/food-grade-and-material-options/

**Project RFQ:** siliconefactories.com/get-a-quote/

Technical note: This document is a purchasing and QC checklist, not a substitute for the full normative test method or an application-specific validation plan.