HIGH ALUMINA REFRACTORY BRICK

HAB Series · Al_2O_3 48–85% · Multi-Industry Application · 1420°C – 1790°C

PRODUCT OVERVIEW

Vuulcan HAB Series are high alumina refractory bricks engineered for blast furnaces, hot blast stoves, cement kilns, ladle linings, and glass tanks. Al_2O_3 content from 48% to 85% with refractoriness under load (RUL) ranging 1420–1650°C. Five core grades plus anti-spalling, alkali-resistant, and low-creep variants ensure precise zone matching. Factory-direct from Zibo refractory cluster with heritage-quality control.

KEY FEATURES

- ✓ Al_2O_3 48–85% — five application-matched grades
- ✓ RUL 1420–1650°C — proven refractoriness under load
- ✓ ±2% alumina accuracy vs. ±5% typical from volume suppliers
- ✓ Anti-spalling grades for thermal shock zones
- ✓ Dimensional tolerance ±2mm for tight lining fit
- ✓ Full COA every shipment — ASTM C27 compliant

TECHNICAL SPECIFICATIONS (5 CORE GRADES)

GRADE	AL_2O_3	FE_2O_3	BULK DENSITY	CCS	RUL (0.2MPA)	TYPICAL APPLICATION
HAB-48	≥ 48%	≤ 2.5%	2.25 g/cm³	≥ 45 MPa	≥ 1420°C	BF shaft upper, cement preheater
HAB-55	≥ 55%	≤ 2.3%	2.35 g/cm³	≥ 55 MPa	≥ 1450°C	Hot blast stove checker, ladle bottom
HAB-65	≥ 65%	≤ 2.0%	2.45 g/cm³	≥ 65 MPa	≥ 1500°C	BF bosh, kiln transition zone
HAB-75	≥ 75%	≤ 1.5%	2.55 g/cm³	≥ 75 MPa	≥ 1550°C	Ladle sidewall, glass tank superstructure
HAB-85	≥ 85%	≤ 1.0%	2.70 g/cm³	≥ 90 MPa	≥ 1650°C	Ladle slag line (critical zones)

RUL = Refractoriness Under Load — temperature at which brick begins to deform under 0.2 MPa pressure. Critical metric for structural refractory applications.

PHYSICAL & THERMAL PROPERTIES

GRADE	APPARENT POROSITY	THERMAL CONDUCTIVITY (1000°C)	LINEAR CHANGE (1450°C, 2H)	MAX SERVICE TEMP
HAB-48	≤ 22%	1.8 W/m·K	-0.3 ~ +0.1%	1500°C
HAB-55	≤ 21%	2.0 W/m·K	-0.3 ~ +0.1%	1550°C
HAB-65	≤ 20%	2.2 W/m·K	-0.2 ~ +0.1%	1650°C
HAB-75	≤ 19%	2.5 W/m·K	-0.2 ~ 0%	1750°C
HAB-85	≤ 18%	2.8 W/m·K	-0.1 ~ 0%	1790°C

SPECIAL GRADES & VARIANTS

Anti-Spalling (AS)
Engineered for rapid thermal cycling — hot blast stove combustion chambers, ladle preheaters. Enhanced thermal shock resistance through controlled microcracking.

Alkali-Resistant (AR)
For cement preheater, blast furnace upper shaft, glass tank. Special formulation resists volatile alkali attack (K_2O, Na_2O) that causes conventional brick spalling.

Low-Creep (LC)
Glass crown, sustained load applications. Reduced creep deformation under prolonged temperature + pressure. Optimized mullite phase distribution.

Special grades available in HAB-55, HAB-65, and HAB-75 base formulations. Consult Vuulcan engineering for zone-specific recommendations.

APPLICATION MATRIX — INDUSTRY × ZONE × GRADE

INDUSTRY / FURNACE	ZONE / LOCATION	TEMP RANGE	RECOMMENDED	SELECTION RATIONALE
Blast Furnace	Shaft upper section	**900–1200°C**	**HAB-48**	Alkali vapor resistance, moderate refractoriness requirement
	Shaft lower section	**1200–1400°C**	**HAB-55**	Balance of thermal + alkali resistance in transition zone
	Bosh area	**1400–1600°C**	**HAB-65**	High refractoriness, initial slag contact, mechanical load
Hot Blast Stove	Combustion chamber	**1350–1500°C**	**HAB-65 AS**	Rapid temp cycling — anti-spalling critical for lining life
	Checker brick	**1200–1400°C**	**HAB-55 / 65**	Heat storage, moderate alkali exposure, good thermal shock
Cement Rotary Kiln	Preheater section	**800–1100°C**	**HAB-48 AR**	Volatile alkali attack from raw meal (K_2O, Na_2O, SO_3)
	Feed end / inlet	**1100–1300°C**	**HAB-55**	Moderate temp, alkali environment, mechanical abrasion
Steel Ladle	Slag line	**1550–1650°C**	**HAB-85**	Severe slag corrosion — highest alumina for maximum resistance
	Sidewall / bottom	**1500–1600°C**	**HAB-75 / 85**	High temp, moderate slag, thermal shock from tapping
Glass Tank	Superstructure crown	**1400–1550°C**	**HAB-75 LC**	Alkali vapor, thermal shock, sustained load — low-creep critical
Aluminum Furnace	Melting / holding	**1200–1450°C**	**HAB-65 / 75**	Molten aluminum attack resistance, moderate thermal shock

* Not sure which grade fits your application? Share your furnace type, zone, and operating temperature — Vuulcan engineering will provide application-matched recommendations within 6 hours.

STANDARD SHAPES & DIMENSIONS

SHAPE TYPE	DIMENSIONS (MM)	DIMENSIONS (IN)	TYPICAL APPLICATION
Straight Brick	230 × 114 × 65	9" × 4.5" × 2.5"	Standard furnace lining, flat walls, backup layers
Arch Brick	230 × 114 × 65/55	9" × 4.5" × 2.5"/2.2"	Arched roofs, crowns, dome structures
Wedge Brick	230 × 114 × 76/65	9" × 4.5" × 3"/2.5"	Circular kilns, rotary furnaces, tapered zones
Custom Shapes	Per drawing	Per drawing	Complex geometries, checker brick, special fitments

Dimensional Tolerance: ±2mm (vs. ±3mm typical from volume suppliers) — ensures tight fit, reduces mortar joints, minimizes heat loss. Custom shapes available with MOQ 10 tons per design.

QUALITY CONTROL & TESTING (EVERY BATCH)

1	Al_2O_3, Fe_2O_3, SiO_2 chemical analysis	ASTM C573	**2**	Bulk density & apparent porosity	ASTM C20
3	Cold crushing strength (room temp)	ASTM C133	**4**	Refractoriness under load (RUL)	ASTM C16
5	Linear change after heat treatment	ASTM C113	**6**	Dimensional inspection (±2mm)	Internal QC

Batch Traceability: Every brick stamped with production date code. Full COA (Certificate of Analysis) ships with every order — no exceptions.

APPLICABLE STANDARDS & CERTIFICATIONS

PRIMARY STANDARD	CHINESE NATIONAL	ISO EQUIVALENT
ASTM C27	GB/T 2988	ISO 10081-1
QUALITY SYSTEM	**THIRD-PARTY**	**DOCUMENTATION**
ISO 9001:2015	SGS Verified	Full COA per batch

ISO 9001 | ASTM C27 | GB/T 2988 | COA INCLUDED | SGS AVAILABLE

INSTALLATION & LINING DESIGN NOTES

Mortar Selection: Use high alumina refractory mortar matched to brick grade (e.g., 55% alumina mortar for HAB-55). Joint thickness 1–3mm. Air-setting mortars preferred for ease of installation; heat-setting for critical zones.

Expansion Joints: Allow 0.5–1.0% expansion at maximum service temperature. Typical expansion joint spacing: every 6–10 meters of lining. Fill with ceramic fiber or vermiculite.

Heat-Up Schedule: Controlled drying and heat-up critical for anti-spalling grades. Recommended: 50°C/hour to 300°C (moisture removal), then 100°C/hour to working temperature. Hold at 900°C for 2 hours to complete ceramic bond formation.

Backup Insulation: For energy efficiency, use insulating firebrick (IFB) or ceramic fiber behind HAB hot face. Reduces shell temperature and fuel consumption. Vuulcan can supply complete lining systems.

ORDERING INFORMATION

Model nomenclature: `VRF — HAB-65 — AS — STR`

VRF = Vuulcan Refractory · **HAB-XX** = Grade (48/55/65/75/85) · **AS / AR / LC / ST** = Anti-Spalling / Alkali-Resistant / Low-Creep / Standard · **STR / ARCH / WEDGE / CUST** = Shape

Packaging: Wooden pallet, PE film wrapped, strapped. ~400–500 pcs/pallet depending on size. Container load: 20–25 tons/FCL · **Lead Time:** 25–35 days production + shipping · **MOQ:** 10 tons/grade (mixed shapes OK) · **Pricing:** FOB Qingdao or CIF destination · **Contact:** sales@vuulcanrefractories.com · WhatsApp: +86 130 5488 5665