HALOGLAS™

COMPLETE TECHNOLOGY & BUSINESS DESCRIPTION

Functional-glass material platform, evidence architecture and application ecosystem

HALOGLAS™



HALOGLAS™ — Partner & Technical Reference Guide

A reference document for OEM customers, distributors, product-development teams and technical reviewers evaluating the HALOGLAS™ functional-glass material platform.

Purpose & How to Use This Reference

This document consolidates the HALOGLAS™ technology, evidence, standards and business architecture into a single partner-facing reference. It is intended for **OEM customers, distributors, brand partners, product-development teams and technical/regulatory reviewers** who need a structured overview before engaging with HALOGLAS commercially or technically.

How to use this guide

Use the Contents to move from platform definition and material science through evidence, safety, engineering, manufacturing, applications, partner models and claim-use guidance. For any proposed product or communication, return to the exact material, sample, test method, application and limitations before relying on a performance statement.

Contents

Section	Reference topic
1	Executive Platform Overview
2	Platform Layers and Brand Architecture
3	Material and Technology Overview
4	Evidence Architecture
5	Safety, Regulatory and Responsible-Claims Guidance
6	Engineering and Standards Architecture
7	Manufacturing, Quality and Development History
8	Applications and Product Categories
9	Partner and OEM Business Model
10	Technical Dossier and Partner Reference Requirements
11	Competitive Positioning and Brand Roles
12	Corporate Descriptions and Technology Stack
13	Terminology and Claim-Use Guidance
14	Reference Note, Sources and Limitations

Evidence labels used throughout

Documented / tested evidence	Exploratory research	Technology concept	Future positioning
Results supported by laboratory or technical reports, test standards or documented methods.	Cellular, biophysical or adjacent findings not yet validated as product claims.	Material-science or engineering concepts underlying the platform.	Strategic direction or long-term vision, not a current validated claim.

No medical claims: HALOGLAS is a functional-glass material technology platform. It is not a medicine and must not be presented, marketed or sold as one.

1. Executive Platform Overview

1.1 Executive Definition

HALOGLAS™ is a **functional-glass material and technology platform** developed around specially formulated optical/functional glass materials designed to provide measurable physical characteristics such as **far-infrared emission, thermopiezoelectric behavior, permanent electrical polarity, and selected surface/material performance characteristics**.

HALOGLAS is not positioned primarily as a finished consumer product. It is the **material, technology, evidence, module, standards, and OEM platform** from which different products and applications can be developed.

Platform architecture	Commercial positioning
Material → Module → Object → Body / Application Context → Standard → Evidence	**HALOGLAS™ — Functional Glass Material Platform** **Material first. Evidence always.**

HALOGLAS therefore sits at the foundation, while brands such as **LIVIRIS™** use the material technology to create specific consumer products and systems.

External reference: The official HALOGLAS site similarly describes the platform as a functional-glass material supplier for brands, OEM factories, distributors and product-development teams, with material development, technical documentation and OEM/private-label support.

1.2 Executive Takeaway for Partners

For an external partner, HALOGLAS is best understood as a technology/material platform rather than a single finished product. The relevant evaluation path is to identify the intended object and application, define the applicable module or material, request the supporting evidence, and review the permitted terminology before commercialization.

Evidence boundary

Material performance, human-wear observations and exploratory research are separate evidence layers. A material test does not automatically validate a finished wearable product.

2. Platform Layers and Brand Architecture

2.1 Five Interconnected Platform Layers

HALOGLAS should be understood as **five interconnected layers** rather than simply a type of glass.

Layer	Role
1 — Material	The functional glass itself.
2 — Technology	The physical phenomena and material-engineering principles associated with the glass.
3 — Evidence	Laboratory testing, safety testing, material-performance testing and exploratory research.
4 — Standardization	H1–H6 material/module definitions, traceability and product-specific verification.
5 — Applications	Jewelry, wearable objects, rehabilitation/recovery products, drinkware, wellness objects, cultural products, OEM products and other functional-object applications.

This allows HALOGLAS to remain **technology/material focused**, while different brands and industries can create their own applications.

2.2 HALOGLAS™ and LIVIRIS™

HALOGLAS and LIVIRIS should **not** be treated as the same brand.

Brand or system	Role
HALOGLAS™	Material / technology platform
LIVIRIS™	Consumer product and recovery-oriented brand
LIVIRIS AEGIS™	Sports/recovery wearable object system

HALOGLAS powers LIVIRIS. This is similar to a technology/component brand appearing inside a finished consumer product.

2.3 HALOGLAS INSIDE®

HALOGLAS INSIDE® is the commercial co-branding architecture. It can be used when an OEM integrates HALOGLAS material, a jewelry company incorporates HALOGLAS components, a sports/recovery brand uses HALOGLAS modules, drinkware incorporates HALOGLAS technology, or a partner develops a private-label product.

Partner application

HALOGLAS material + partner product + HALOGLAS INSIDE®

This model does not require every application to carry the LIVIRIS consumer brand.

3. Material and Technology Overview

3.1 Functional Glass

The fundamental product is a specially formulated **functional glass / optical-wave glass material**.

Platform terminology	Use context
Functional Glass	Preferred technical category.
Optical Wave Glass	Technology and material description.
Light-Wave Glass	Technology and application language.
Functional Glass Crystal	Material-system terminology.
Thermopiezoelectric Glass	Technology description combining thermal and piezoelectric characteristics.
Energy Glass	Conceptual or consumer-facing expression; it should not replace the technical material description.
HALOGLAS™ Functional Glass	Platform-branded material description.

Preferred professional description

Functional glass material engineered for controlled optical/thermal and electro-physical characteristics, including far-infrared emission and thermopiezoelectric behavior.

3.2 Material Scientific Basis

One of the material concepts discussed for HALOGLAS is a **synthetic tourmaline-type / Guangboligri monocrystal functional phase incorporated into a glass/material system**.

Characteristic	Technology description
3.2.1 Non-centrosymmetric crystal structure	The relevant crystal structure is described as **triclinic and lacking a center of symmetry**. Non-centrosymmetric materials can exhibit electromechanical coupling phenomena.
3.2.2 Piezoelectric behavior	Mechanical deformation can generate electrical polarization/charge effects. This is the basis of the **piezoelectric** portion of the technology description.
3.2.3 Pyroelectric / thermal response	Changes in temperature can be associated with changes in polarization. This provides the basis for the **thermal-electric / pyroelectric component**.
3.2.4 Thermopiezoelectric concept	**Thermopiezoelectric Glass** describes the combination of thermal and piezoelectric characteristics associated with the functional material. This is a **technology description**, not a medical claim.

3.3 Far-Infrared Technology

One of the most important featured technologies of HALOGLAS is its **far-infrared (FIR) emission characteristic**.

Reported characteristic	Reported value or qualification
FIR-related emission	Approximately **2.5–25 μm**
Reported peak	Around **8.05 μm**
Reported emissivity	Around **0.88 at 40°C**
Earlier conceptual range	**FIR: approximately 8–14 μm**, within a broader 4–25 μm region.

The website presents this as a material-performance characteristic supported by technical documentation. (HALOGLAS) For professional documentation, distinguish the **measurement spectrum** from the commonly discussed **8–14 µm atmospheric/biological FIR window**, rather than presenting them as identical.

3.4 The Core Technology Proposition

Characteristic	Meaning in the platform
Functional optical behavior	Interaction with infrared radiation and thermal energy.
Far-infrared emission	Measured FIR spectral/emissivity characteristics.
Thermopiezoelectric behavior	Thermal and mechanical conditions associated with electrical polarization phenomena.
Permanent polarity	The functional crystal component is discussed as having persistent polarization characteristics.
Material stability	The functional phase is incorporated into a usable glass/material form rather than being presented simply as loose mineral powder.
Surface/material functionality	Certain samples have demonstrated antimicrobial and other material-performance characteristics under defined test conditions.

Core proposition

HALOGLAS converts functional material science into engineered glass components that can be incorporated into designed objects.

4. Evidence Architecture

4.1 Testing & Evidence Architecture

Evidence must be attached to the exact material, sample, test method and application. The platform therefore separates evidence into several levels.

Level 1 — Material Safety

- **Food-contact safety** where applicable
- **Heavy-metal/migration testing**
- **Skin-contact safety**
- **Sensitization/irritation**
- **Material composition and processing documentation**

The current site describes FDA/LFGB-related food-contact testing summaries and ISO-related skin-contact evaluation information. (HALOGLAS)

4.2 Material Performance Evidence

Evidence area	Reported information and boundary
FIR	Emissivity approximately **0.88 at 40°C**, spectral coverage around **2.5–25 μm**, and peak radiation around **8.05 μm**. (HALOGLAS)
Antimicrobial performance	Testing discussed includes **E. coli**, **Staphylococcus aureus** and **Candida albicans**. The current site references **GB/T 30706-2014** testing.
Earlier internal evidence	Approximately **E. coli: ~99%** and **S. aureus: ~97%**. These must be reported with the relevant test standard, sample, exposure conditions and laboratory report, not as universal product claims.

4.3 Human-Wear Evidence

A separate evidence layer concerns actual human wear. One previously discussed wrist-wear study involved **10 healthy volunteers** for approximately **7 days**, with measured blood-flow-related parameters, velocity and infrared temperature.

The reported exploratory findings included approximately **80% increase in blood flow**, **60% increase in flow velocity** and increased IR temperature. These should be described as **exploratory human-wear observations**, not as clinical proof of therapeutic efficacy.

Product-specific verification

A material test does not automatically validate a finished wearable product. This is why HALOGLAS uses a product-specific evidence framework.

4.4 Cellular / Biophysical Exploratory Evidence

The research portfolio discussed includes the following exploratory laboratory findings:

Model or study	Reported result
GABA-related study, GT1-7 model	Approximately **+29.69% at 24 h**, **+79.91% at 48 h**, **+27.50% at 72 h**; reported statistical significance **P < 0.01**.
HSF7 study	ATP approximately **+134.34%**; proliferation approximately **+28.50%**; collagen approximately **+29.53%**.
RAW264.7 model	TNF-α approximately **−62.08%**; IL-6 approximately **−65.10%**; proliferation approximately **+25.61%**.

These are **cell/model-level exploratory results**, not clinical treatment evidence.

4.5 Adjacent Research Evidence

Research area	Reported result
^{17}O-NMR	Approximately **−8.7%**
Ginsenoside-related experiment	Approximately **2.52×**
Beverage chemistry	Approximately **+20.5 / −19.8%**
Wheat germination	**−11.8%**

These belong to the **adjacent/exploratory evidence category**, rather than the core consumer claim set. This distinction is critical for responsible commercialization.

4.6 Evidence Hierarchy

Foundation	Question
1 — Safety	Can the material safely be used in the intended application?
2 — Material Performance	What measurable physical/material properties does it have?
3 — Human Wear	What happens when a defined product is actually worn?
4 — Exploratory Research	What effects have been observed in laboratory/cellular/model systems?
5 — Adjacent B2B Research	What additional phenomena may justify future research?

Safety first → material evidence → product evidence → exploratory research → future applications.

5. Safety, Regulatory and Responsible-Claims Guidance

5.1 No Medical Claim Principle

HALOGLAS should **not** be presented as a medicine.

Avoid unsupported claims	Preferred language
• treating disease • curing disease • healing disease • replacing medical treatment • guaranteed pain relief • guaranteed blood-pressure reduction • guaranteed circulation treatment • clinical therapeutic efficacy unless separately established	• functional material • material performance • thermal interaction • infrared emission • optical/energy characteristics • wearable comfort • recovery-oriented design • wellness application • exploratory research • biophysical research

This keeps the platform positioned as **material science + product technology**, rather than an unapproved medical technology.

5.2 Partner Review Boundary

Every partner communication should distinguish a material-performance statement from a finished-product statement, and an exploratory observation from validated product evidence. Intended markets may require additional regulatory and claim review before launch.

No medical claims

HALOGLAS is a functional-glass material technology platform. It is not a medicine and must not be presented, marketed or sold as one.

6. Engineering and Standards Architecture

6.1 Material-to-Product Architecture

The engineering and standards architecture connects the material to the finished application:

Standardization

H1–H6 material/module definitions, traceability and product-specific verification.

Application path

Material → module → unit → matrix → product

The platform uses standardized functional modules, including H1–H6 / AEGIS modules and bead forms, so that a partner can connect material identity, construction, application context and evidence.

6.2 What Engineering Documentation Should Establish

- **Material identity:** formulation/code, manufacturing batch and physical form.
- **Module identity:** H1–H6, AEGIS or bead configuration where applicable.
- **Construction:** exact product, body zone, construction and AU where applicable.
- **Traceability:** batch/lot information and processing notes.
- **Verification:** test conditions, method, result range and limitations.

6.3 Standards Principle

The standards layer is intended to keep material, module, product and evidence connected. It supports OEM development, technical review, partner reference requirements and market-specific claim review without treating a module-level result as universal evidence for every product.

Engineering boundary

A product-specific claim should identify the exact product, body zone, construction, AU, test conditions and evidence limitations.

7. Manufacturing, Quality and Development History

7.1 Manufacturer / Production Structure

The HALOGLAS business structure is deliberately separated between **global platform ownership** and **OEM manufacturing**.

Organization	Responsibilities
Glasmart Singapore / HALOGLAS platform	IP and technology platform; R&D direction; evidence architecture; standards; brand; commercial strategy; AI/data systems; pricing architecture; inventory strategy; product launch; governance; international business development.
Hebei Mingshangde Glass Technology Co., Ltd.	Raw-material preparation; glass formulation/material processing; production; NPI; process development; QA/QC; procurement; manufacturing cost control; batch production; production traceability.

The platform's international commercial routing is Glasmart, Singapore as the sales/contact organization for pricing, samples and partnership support.

HALOGLAS is the global technology/material platform; the manufacturing organization is the OEM/material-production partner. That distinction is useful when presenting HALOGLAS to investors, OEM customers, distributors and international partners.

7.2 Manufacturing & Quality Philosophy

Material first. Evidence always.

Quality control element	Purpose
TDS	Technical material reference.
Test-report index	Locates supporting reports.
Sample context	Connects results to the tested sample.
Processing notes	Records relevant material and production conditions.
Manufacturing guidance	Supports consistent partner development.
Market-specific claim review	Checks permitted terminology and target-market requirements.
Batch/lot information	Supports traceability.
Evidence limitations	Keeps performance statements appropriately qualified.

The website specifically states that performance statements should be paired with **sample conditions, method, result range and limitations**. This prevents marketing claims from becoming detached from laboratory evidence.

7.3 Development History

The current HALOGLAS site describes a development path beginning around **2020**, followed by material development, application research and commercial system definition.

Period	Development focus
2020	Functional/light-wave glass material research begins.
2020–2023	Material formulation, process exploration and functional validation.
2023–2025	Application research and market testing involving jewelry, drinkware, wellness objects and OEM applications.
2026	Commercial platform architecture becomes more defined: HALOGLAS, HALOGLAS INSIDE, Energy Aesthetics, Lightwave Glass Civilization and OEM/co-branding systems.

This represents the transition from **a material-development project → an integrated material, technology, evidence and application platform.**

8. Applications and Product Categories

8.1 Product Forms

Material forms	Product components	Finished-object direction
Beads	Wearable components	Custom functional-glass objects
Rods	Jewelry components	OEM components
Functional glass elements	Drinkware components	Wellness objects
Cells	Functional modules	Designed consumer objects

The website currently presents jewelry, drinkware and wellness collections as application categories. (HALOGLAS)

8.2 Application Markets

The platform is deliberately broader than sports.

Market	Application direction
1. Sports / Recovery	LIVIRIS AEGIS.
2. Jewelry	Functional glass integrated into bracelets, necklaces, rings, pendants and accessories.
3. Rehabilitation / Wellness	Non-medical functional objects for rehabilitation-oriented environments and wellness programs.
4. Drinkware	Functional glass incorporated into bottles, cups, beverage vessels and infusion objects.
5. Tea / Beverage Culture	Connecting material technology with ritual and daily consumption.
6. Gifts	Premium functional-glass objects.
7. Culture	Objects connecting functional glass with traditional cultural concepts.
8. Home	Functional decorative and lifestyle objects.
9. Research	Universities, laboratories and R&D partners.
10. OEM / Private Label	The strongest B2B expansion route.

8.3 Energy Aesthetics

Energy Aesthetics is not a medical concept. It describes a design philosophy where **functional material + light + touch + form + ritual + culture** are combined into a consumer object.

The idea is that technology does not need to look like medical equipment. Instead, **technology becomes part of the beauty and meaning of the object**. The HALOGLAS site describes Energy Aesthetics as a product language combining functional glass, light, touch and daily ritual.

8.4 Lightwave Glass Civilization

Lightwave Glass Civilization is a longer-term cultural concept representing the vision of making functional glass understandable and culturally meaningful over the long term. It

moves the company narrative beyond “We manufacture a special glass” toward “We are developing a new category of functional-glass objects and applications.”

8.5 Five Elements / Traditional Culture

The platform has explored connections between functional glass and Five Elements, traditional Chinese philosophy, meridian concepts, body constitution concepts, energy aesthetics, traditional ornament, cultural symbolism, jewelry and ritual objects.

These should be presented as **cultural/design frameworks**, not as scientifically proven mechanisms unless independently demonstrated. This allows HALOGLAS to use traditional cultural inspiration without confusing cultural interpretation with laboratory evidence.

8.6 Rehabilitation Concept

A major emerging commercial direction is the **Thailand rehabilitation market**. The preferred professional terminology discussed is **Rehabilitation Hospital** and **Rehabilitation Medicine**, rather than vague terms such as “healing center.”

The HALOGLAS/LIVIRIS technology can potentially be positioned as a **non-medical functional material/product platform** within appropriate rehabilitation, recovery, wellness and lifestyle contexts. HALOGLAS is a material technology; rehabilitation treatment remains the responsibility of qualified healthcare professionals and regulated medical systems.

9. Partner and OEM Business Model

9.1 B2B Business Model

HALOGLAS is designed as a **B2B technology/material platform**, not simply a jewelry brand.

Offer	Partner pathway
Material Supply	Sell functional glass material to manufacturers.
Component Supply	Provide standardized functional components.
Module Supply	Provide H1–H6 / AEGIS modules.
OEM	Manufacture according to customer specifications.
Private Label	Customer owns the consumer brand.
HALOGLAS INSIDE®	Co-branded technology integration.
Standards Program	Partners adopt HALOGLAS standards and product architecture.
Evidence Package	Technical dossier and testing support.
R&D Partnership	Joint development with companies and research institutions.

9.2 What HALOGLAS Supplies

- ☐ **Material:** functional glass and related material documentation.
- ☐ **Components:** standardized functional-glass components and forms.
- ☐ **Modules:** H1–H6 / AEGIS modules and engineering references.
- ☐ **Evidence:** technical dossier, test-report index and evidence limitations.
- ☐ **Development support:** OEM/private-label and R&D partnership pathways.
- ☐ **Commercial architecture:** HALOGLAS INSIDE® co-branding where appropriate.

9.3 Partner/OEM Review Path

1. **Define the application:** object, body zone, use context and target market.
2. **Identify the material or module:** formulation/code, form, H1–H6 or AEGIS configuration where applicable.
3. **Request evidence:** safety, material performance, human wear, exploratory research and product verification as relevant.
4. **Confirm manufacturing:** processing guidance, batch/lot information, QA/QC and traceability requirements.
5. **Review claims:** permitted terminology, prohibited medical claims and target-market requirements.

6. **Choose the brand path:** partner brand, private label, HALOGLAS INSIDE® or LIVIRIS application context.

10. Technical Dossier and Partner Reference Requirements

10.1 Technical Documentation System

The proposed HALOGLAS technical dossier should contain:

Module	Required reference content
A. Material Identity	Material name; formulation/code; manufacturing batch; physical form.
B. Material Properties	FIR spectrum; emissivity; optical properties; thermal properties; electrical/piezoelectric characteristics.
C. Safety	Heavy metals; migration; food contact; skin contact; irritation; sensitization.
D. Functional Testing	Antimicrobial; FIR; other material-performance tests.
E. Human Evidence	Study design; participant number; duration; measurement method; results; limitations.
F. Exploratory Research	Cell models; biochemical research; NMR; plant/food experiments; other exploratory models.
G. Product Verification	Exact product; body zone; construction; AU; test conditions.
H. Regulatory/Claim Review	Permitted terminology; prohibited medical claims; target-market requirements.

10.2 Evidence Request Checklist

- ☐ Exact material, formulation/code, physical form and manufacturing batch

- [ ] Applicable TDS and test-report index
- [ ] Test standard, method, sample context, exposure conditions and result range
- [ ] Processing guidance, manufacturing notes and traceability information
- [ ] Product-specific verification for the exact construction and application
- [ ] Permitted terminology, market-specific claim review and evidence limitations

Reference requirement

Partners should request evidence that is linked to the exact material, sample, test method and application. Supplied figures should remain adjacent to their qualifications and limitations.

11. Competitive Positioning and Brand Roles

11.1 Competitive Positioning

HALOGLAS is better understood as a **material technology company/platform** than as a conventional jewelry or sports-wellness company.

Benchmark group	Companies or learning area
Material/technology-platform level	**Corning**, **SCHOTT** and **CoorsTek**.
Consumer application level	**Colantotte** and **Phiten**.
Strategic learning	Material branding; technology storytelling; product architecture; evidence presentation; consumer education; channel development.

The strategic objective is not to copy their products but to learn from their material branding, technology storytelling, product architecture, evidence presentation, consumer education and channel development.

11.2 Brand Roles

Platform	Primary role	Customer
HALOGLAS™	Material + technology	OEM / brands / manufacturers
HALOGLAS INSIDE®	Technology co-brand	Partner products
LIVIRIS™	Consumer brand	End users
LIVIRIS AEGIS™	Recovery wearable system	Sports/recovery users

This architecture prevents brand confusion and keeps the material platform distinct from the consumer-facing application brand.

12. Corporate Descriptions and Technology Stack

12.1 One-Sentence Corporate Description

HALOGLAS™ is a functional-glass material and technology platform that develops engineered glass materials and standardized functional modules featuring measurable far-infrared and electro-physical characteristics, supported by safety, material-performance and exploratory research evidence, and supplied to brands, OEM manufacturers and product-development partners for wearable, jewelry, rehabilitation-oriented, wellness, drinkware, cultural and lifestyle applications.

12.2 Full Corporate Description

HALOGLAS™ is a functional-glass material technology platform developed to bridge advanced material science, measurable physical performance, product engineering, evidence and contemporary design. Its technology program focuses on specially formulated functional glass incorporating a non-centrosymmetric functional crystal phase and associated thermopiezoelectric characteristics, together with measurable far-infrared emission and other material-performance properties. HALOGLAS is developed as a material and component platform rather than a single finished product, enabling the technology to be incorporated into jewelry, wearable objects, recovery-oriented products, drinkware, wellness objects, cultural products and OEM/private-label applications.

The platform is organized around an evidence-first architecture: material safety → material performance → human wear → exploratory research → application verification. Technical documentation includes TDS, test-report indexes, processing guidance, traceability and market-specific claim review. Reported technical evidence includes FIR emissivity measurements, antimicrobial testing, food-contact and skin-contact evaluations, human-wear observations and exploratory cellular/biophysical studies. Each result is intended to remain linked to its sample, method, conditions and limitations.

HALOGLAS provides the technology foundation, while LIVIRIS™ serves as a consumer-facing application brand. HALOGLAS INSIDE® enables OEM and partner brands to integrate the technology into their own products.

The long-term vision is to establish functional glass as a new material category in which science, evidence, aesthetics, culture and everyday ritual can coexist. Through the concepts of Energy Aesthetics and Lightwave Glass Civilization, HALOGLAS seeks to make advanced functional materials visible not as medical devices, but as beautifully designed objects with clearly defined material characteristics, documented evidence and responsible applications.

12.3 The HALOGLAS Technology Stack

The complete platform can be represented as:

Layer	Elements
Functional material	HALOGLAS™; functional glass / optical-wave glass; FIR + thermopiezoelectric + electro-physical characteristics.
Evidence	Safety; material performance; antimicrobial; FIR; human wear; cellular research; exploratory research.
Engineering	H1–H6; bead.
Standards	Traceability; TDS; technical dossier.
Applications	Jewelry; Sports / Recovery; Rehabilitation-oriented wellness; Drinkware; Tea / beverage; Culture; Home; Gifts; Research; OEM / Private Label.
Brands	HALOGLAS INSIDE®; LIVIRIS™; LIVIRIS AEGIS™.
Vision	Energy Aesthetics; Lightwave Glass Civilization.

The current public HALOGLAS site is already aligned with much of this architecture: it describes HALOGLAS as a functional-glass material platform, provides OEM/private-label support, emphasizes technical evidence, and identifies Energy Aesthetics, Lightwave Glass Civilization and HALOGLAS INSIDE as part of the 2026 commercial system.

13. Terminology and Claim-Use Guidance

13.1 Core Concept

The simplest expression of the entire HALOGLAS philosophy is:

> **HALOGLAS turns functional material science into measurable, standardized and designable glass objects.**

For a more commercial presentation:

HALOGLAS™ is a functional-glass technology platform that combines material science, far-infrared performance, thermopiezoelectric characteristics, evidence-based testing and standardized module architecture to enable a new generation of wearable, lifestyle, wellness, jewelry, drinkware and OEM products.

13.2 Brand Philosophy

Principle	Meaning
Material First	The technology begins with the material.
Evidence Always	Every performance statement should have supporting evidence.
Safety First	Safety precedes performance claims.
Product-Specific Evidence	Evidence must correspond to the actual product and application.
Standardized Architecture	Material → module → unit → matrix → product.
Technology Without Medicalization	The material can support wellness/recovery-oriented products without being presented as a medicine.
Beauty + Technology	Functional technology should be integrated naturally into beautiful objects.
Culture + Science	Traditional cultural concepts can inspire product meaning while scientific claims remain evidence-based.

13.3 Recommended Claim-Use Sequence

1. **Name the material accurately:** functional glass material or HALOGLAS™ Functional Glass.
2. **Describe the measured property:** for example, reported FIR emission or a defined material-performance result.
3. **Identify the evidence level:** documented/tested evidence, exploratory research, technology concept, future positioning or partner application.
4. **State the boundary:** retain sample conditions, method, result range, limitations and product-specific context.
5. **Complete the claim review:** remove medical claims and confirm target-market requirements before publication.

14. Reference Note, Sources and Limitations

14.1 Reference Note

This guide consolidates the supplied HALOGLAS™ technology, evidence, standards, manufacturing, application and business architecture into an external-facing partner reference. It is intended to support informed discussion, not to replace a material-specific technical dossier, laboratory report, regulatory review or product-specific verification process.

14.2 Sources Referenced in the Supplied Material

- **HALOGLAS public website:** platform description, functional-glass material positioning, OEM/private-label support, technical documentation, Energy Aesthetics, Lightwave Glass Civilization and HALOGLAS INSIDE commercial architecture.
- **HALOGLAS technical presentation:** reported FIR-related emission across approximately 2.5–25 μm, reported peak around 8.05 μm, and reported emissivity around 0.88 at 40°C.
- **Referenced testing information:** FDA/LFGB-related food-contact testing summaries, ISO-related skin-contact evaluation information and GB/T 30706-2014 antimicrobial testing references. (HALOGLAS)
- **Previously discussed internal and exploratory research:** human-wear observations, cellular/model findings, ^{17}O-NMR, ginsenoside-related, beverage chemistry and wheat germination experiments.
- **Business and development discussions:** Glasmart Singapore / HALOGLAS platform, Hebei Mingshangde Glass Technology Co., Ltd., H1–H6 / AEGIS modules, partner/OEM pathways and 2020–2026 development history.

14.3 Evidence and Claim Limitations

Label	Meaning in this guide
Documented / tested evidence	Results supported by laboratory or technical reports, test standards or documented methods. The relevant sample, method, conditions and limitations still apply.
Exploratory research	Cellular, biophysical, human-wear or adjacent findings that are not yet validated as universal or clinical product claims.
Technology concept	Material-science or engineering concepts underlying the platform, including thermopiezoelectric descriptions and functional crystal discussion.
Future positioning	Strategic direction or long-term vision, including Energy Aesthetics and Lightwave Glass Civilization, not a current validated claim.
Partner application	Guidance relevant to OEM, distributor or brand-partner use and subject to product-specific and market-specific review.

Final boundary

Do not invent claims, add unsupported data, or upgrade exploratory findings into validated product evidence. HALOGLAS is a material technology; rehabilitation treatment remains the responsibility of qualified healthcare professionals and regulated medical systems.

14.4 Closing Reference

The governing principle for external use is:

Safety first → material evidence → product evidence → exploratory research → future applications.

Material first. Evidence always.