Connecting Engineers to Material Information

Where material information meets design innovation and sustainability

Total Materia®

Total Materia AG: A global company

A history of growth

- Founded in 1999
- 70 employees
- 5200 contracted users in 106 countries
- 20 multinational corporations using Integrator as MLM
- Turnover over 6 Meuro
- 30% Share of turnover in R&D spending

Worldwide presence

- Direct presence in :
  - Switzerland
  - Serbia
  - Italy
  - Germany
  - North America
  - Japan
  - China
- 13 different languages supported

Total Materia®

Compliance and Sustainability

Gain a competitive advantage through compliant, recall-free, and sustainable material selection informed by data.

Reliable Digitized Data

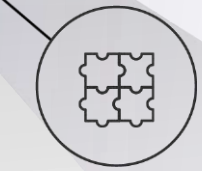
Unlock precision and innovation, streamline selection, and cut sourcing and testing costs with the world's top materials information solution.

Enterprise Integration

Integrate and connect materials data to core business tools in CAX, PLM, ERP, and sustainability tools.

AI for Materials Properties

Use AI to forecast material properties, enhance performance, and slash testing costs.



Platform Connectivity

Share material decisions within and to the supply chain, bolstering knowledge and confidence in usage.

Manage Internal Materials Information

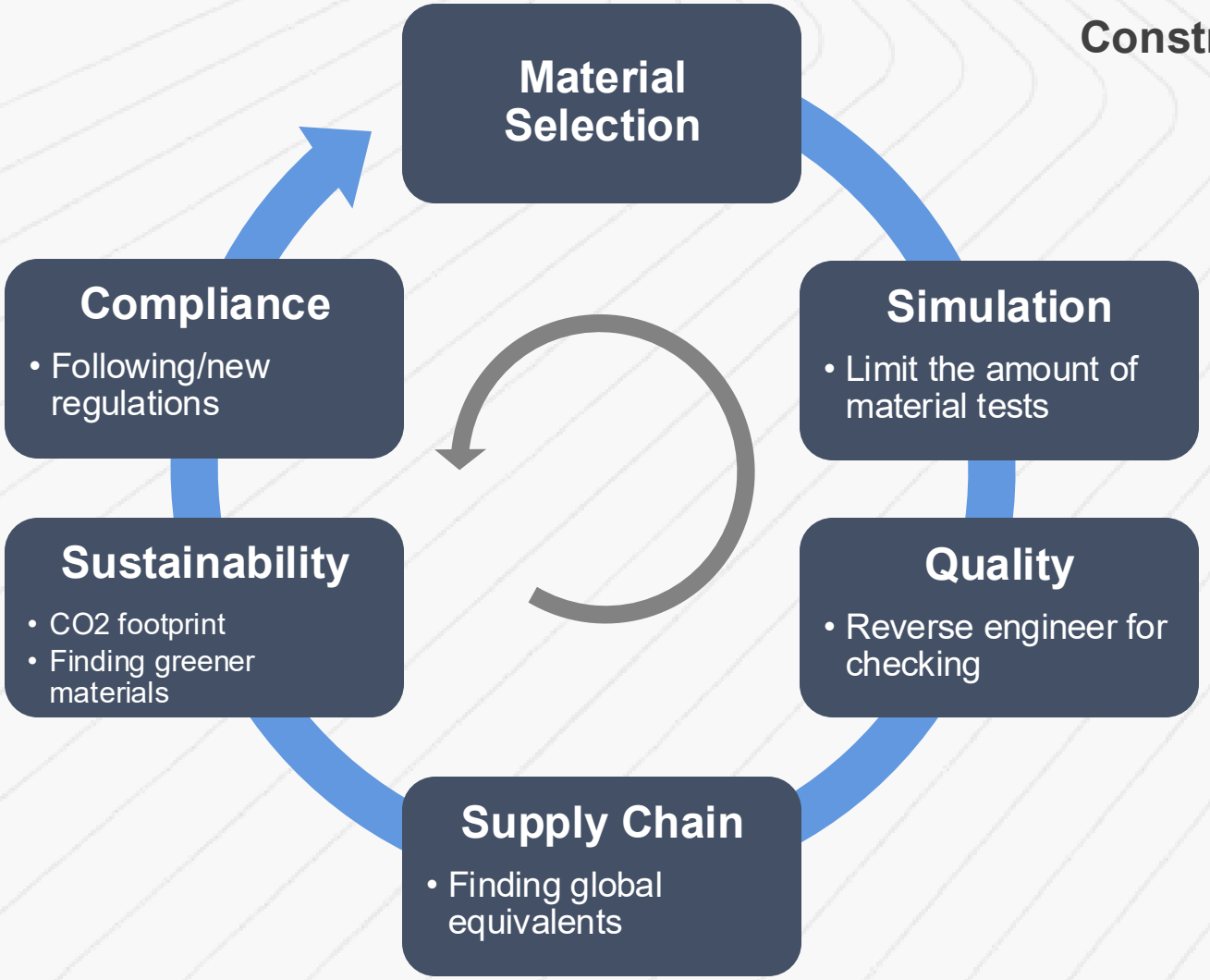
Seamless integration of global and private materials information into a single source of truth delivered securely to the enterprise.

Changing the Process of Material Selection

Engineering Focus

Classic

Is it:
Suitable for the task?
Reliable?
At the right price?

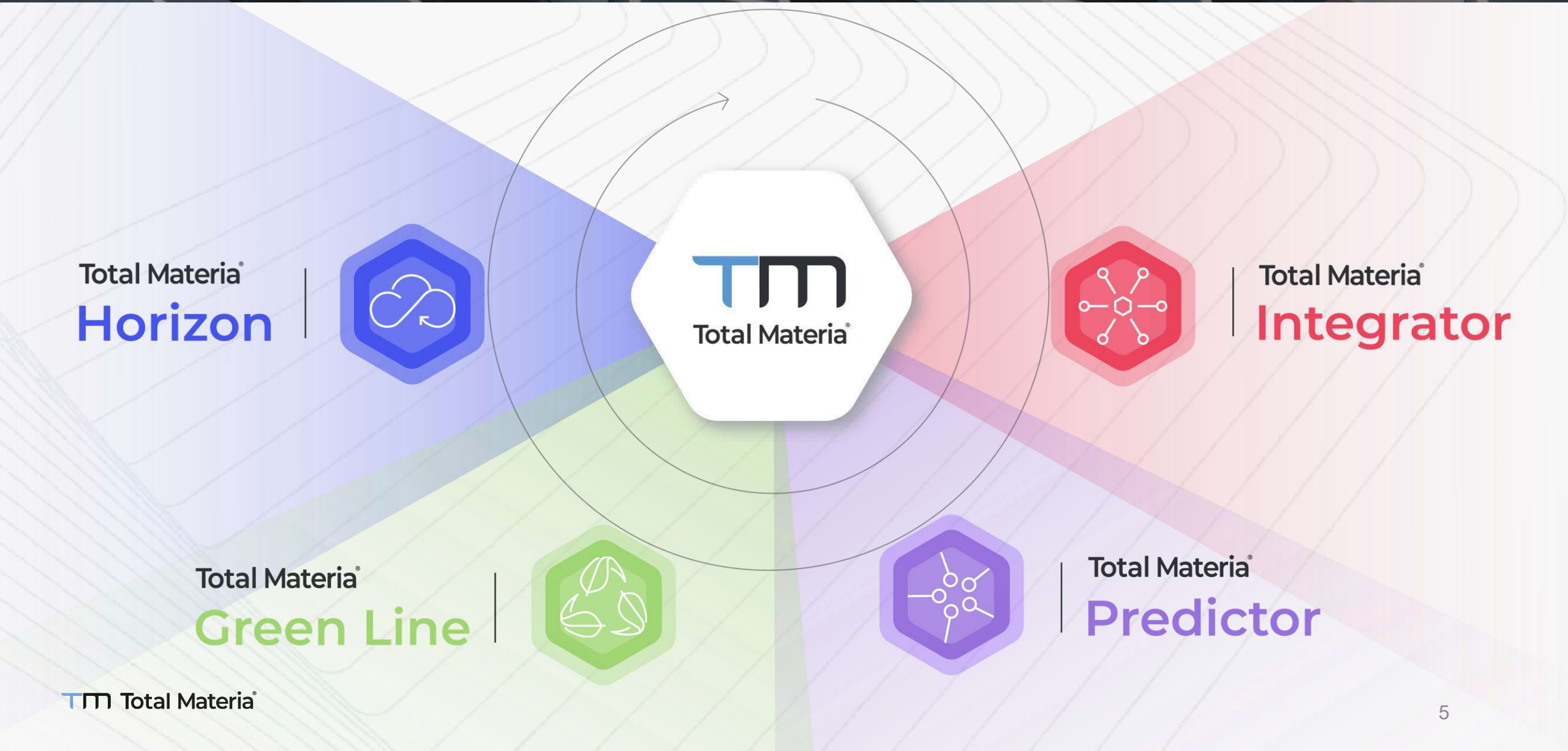


Constraints in the business focus

Today

Can I:
Sell in the markets I need?
Meet my corporate goals?
Deliver good quality?
Validate my product accurately?

The Total Materia Platform



Departments and People We Help

Supply Chain
Finding material suppliers

Materials Engineer
Subject Expert

CAE Simulation Specialist
Material property simulators

Purchasing
Interpret requests from engineering

Compliance & Sustainability
Monitor legislation, validate compliance, and find greener alternatives

Sales & Applications Engineer
Bridge between customers and engineering teams, assuring customers of capability

CAD/Manufacturing
Validate product & process capability

Quality
Quality assurance and control

Total Materia®

...is a must-have for "Precision Engineering"

Use Cases from the Automotive Industry

Feel free to check out some of our references here; https://www.totalmateria.com/customers/
and see what other Total Materia users are saying here; https://www.totalmateria.com/customer-stories/

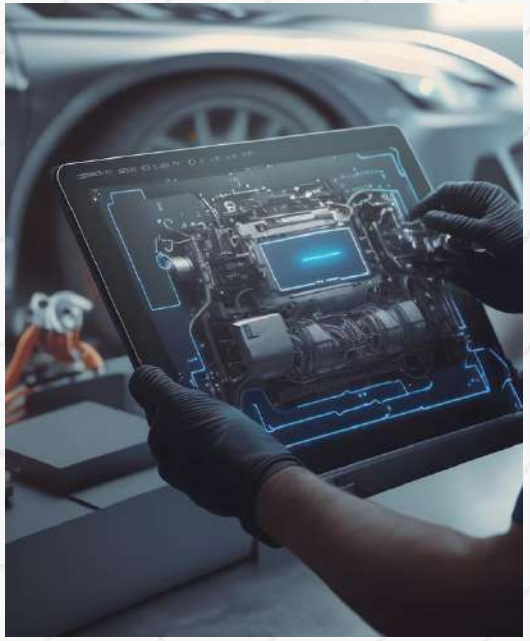
PIAGGIO

CHALLENGES

Piaggio's CAE analysts encountered challenges related to the lack of durability and stress-strain curve data for materials used in their products.

SOLUTION

Sourcing materials from a diverse set of suppliers across geographical locations led to inconsistencies and inaccuracies in material data.



GESTAMP

CHALLENGES

Addressing the Material Maze: Ongoing Challenges and Solutions. Embracing Reliable Solutions: Accessibility, Scalability, and Impact

SOLUTION

This solution, evolving and adapting to the company's needs, offers an extensive, intuitive interface that streamlines search functionalities.

Single Use Case from the Oil & Gas Industry

The Total Materia Platform

Total Materia
Horizon

Total Materia

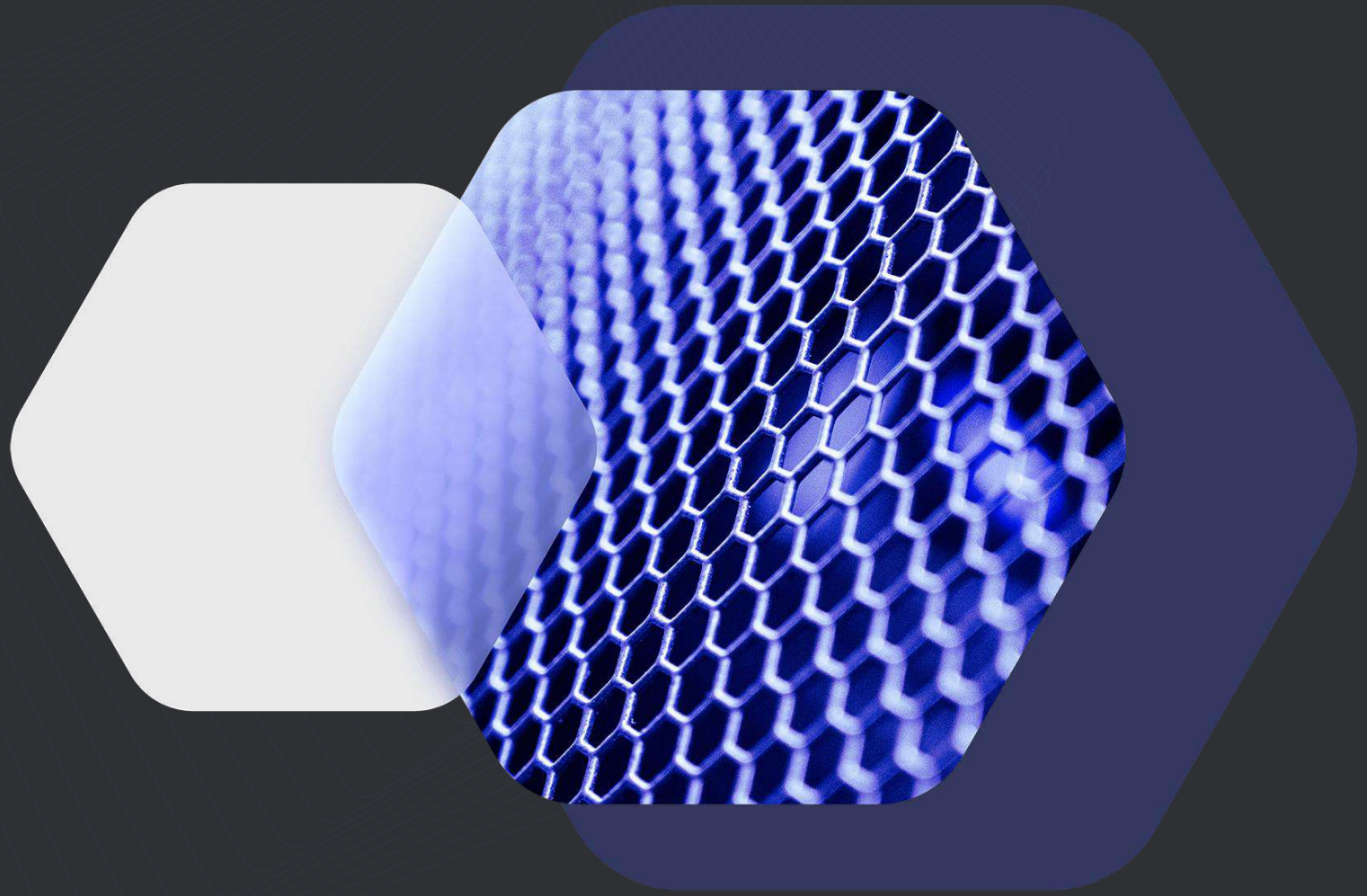
Total Materia
Integrator

Total Materia
Green Line

Total Materia
Predictor

Total Materia®

Horizon

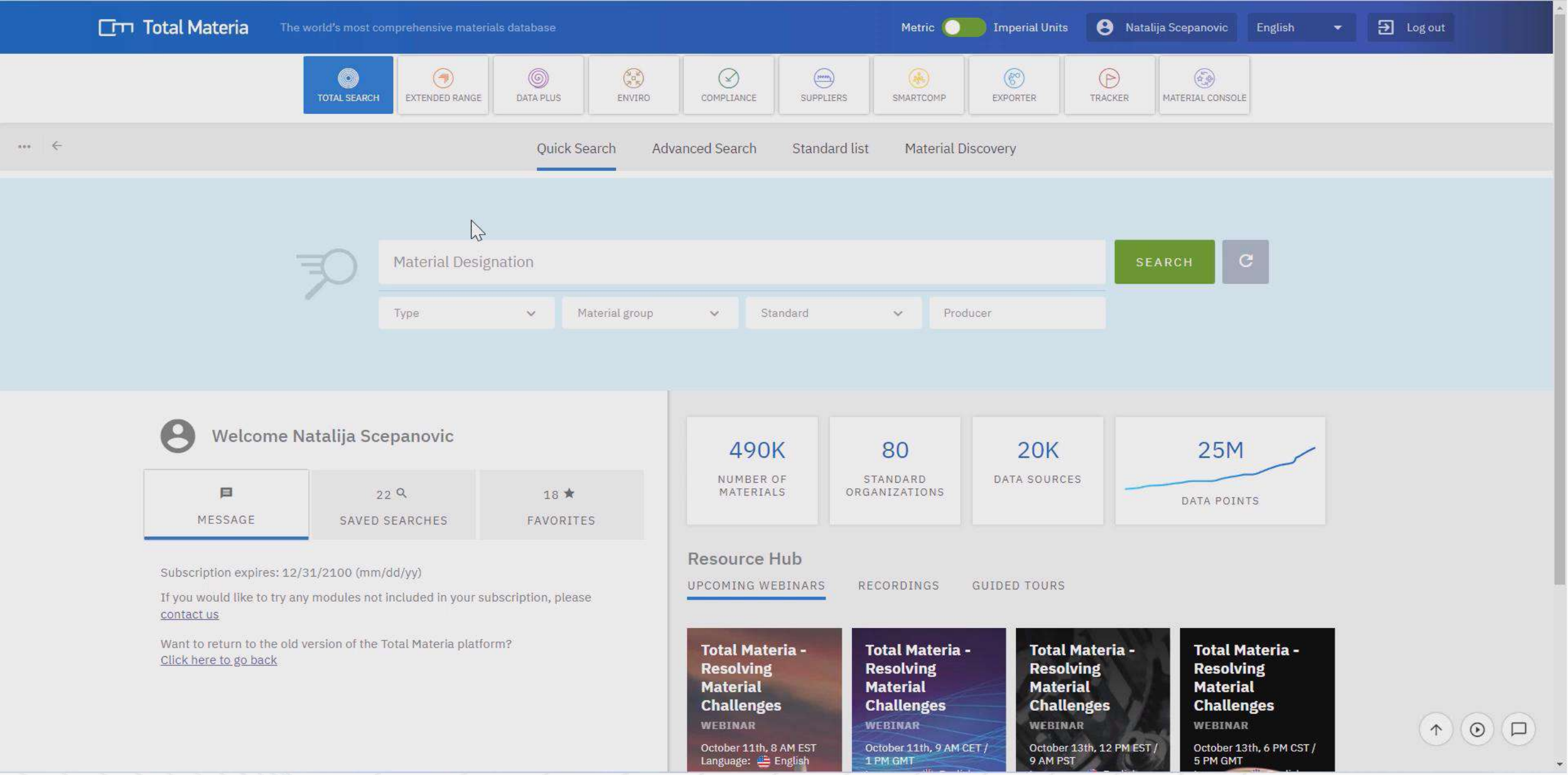


A Global Inventory of Materials Properties

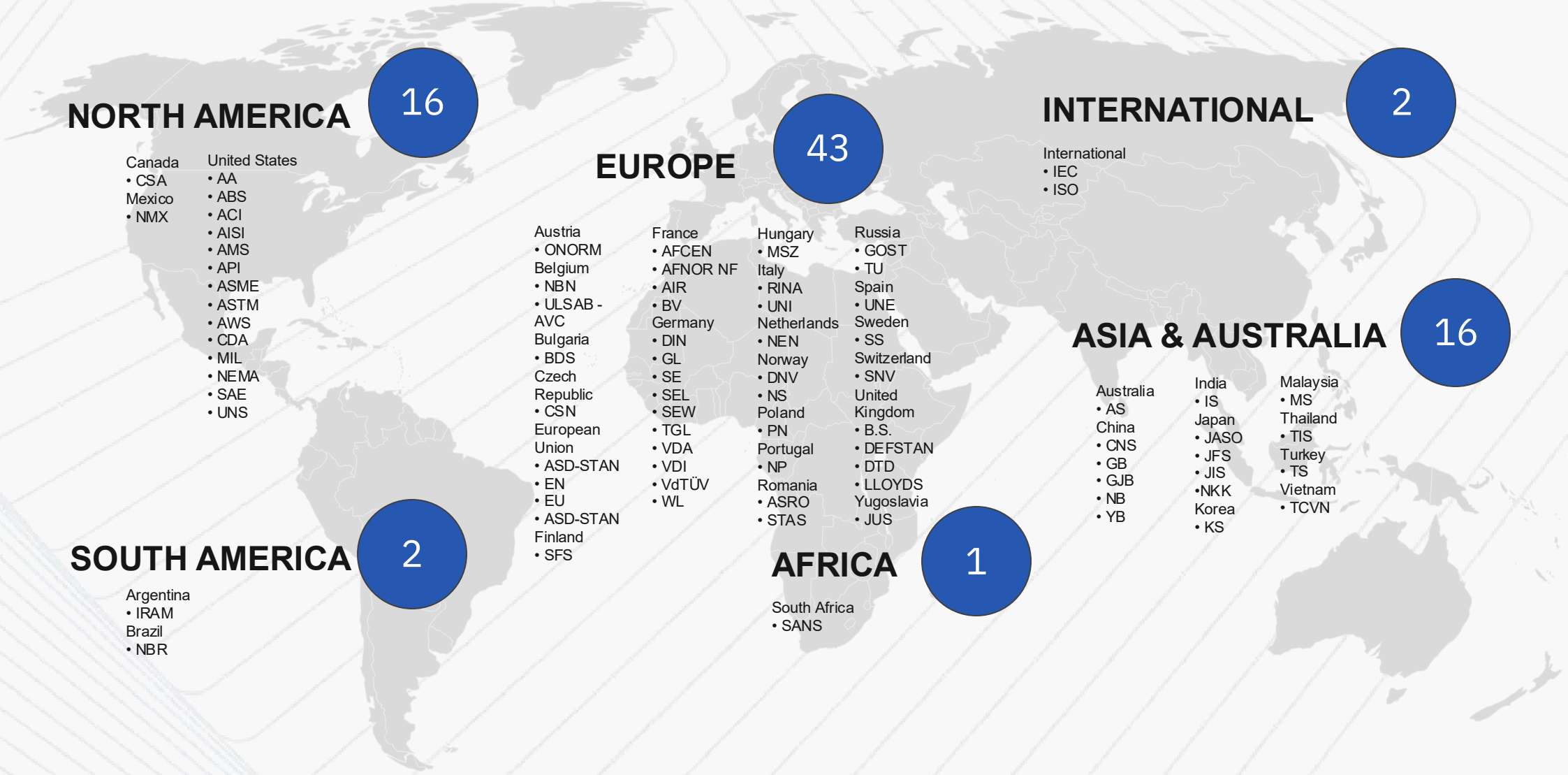
A Global Inventory of Materials Properties

Curated:

- Over 540,000 materials with comprehensive data on mechanical and physical properties
- 80+ Global standards and their equivalencies
- Precision tools for comparison and analytics, thus streamlining the selection process.
- Stress-strain, formability, fatigue, creep and fracture mechanics data
- Export to over 25 CAx formats


Total Materia
The world's most comprehensive materials database
Metric
Imperial Units
Natalija Scepanovic
English
Log out
TOTAL SEARCH
EXTENDED RANGE
DATA PLUS
ENVIRO
COMPLIANCE
SUPPLIERS
SMARTCOMP
EXPORTER
TRACKER
MATERIAL CONSOLE
Quick Search
Advanced Search
Standard list
Material Discovery
Material Designation
SEARCH
Type
Material group
Standard
Producer
Welcome Natalija Scepanovic
MESSAGE
22
SAVED SEARCHES
18
FAVORITES
Subscription expires: 12/31/2100 (mm/dd/yy)
If you would like to try any modules not included in your subscription, please contact us
Want to return to the old version of the Total Materia platform?
Click here to go back
490K
NUMBER OF MATERIALS
80
STANDARD ORGANIZATIONS
20K
DATA SOURCES
25M
DATA POINTS
Resource Hub
UPCOMING WEBINARS
RECORDINGS
GUIDED TOURS
Total Materia - Resolving Material Challenges
WEBINAR
October 11th, 8 AM EST
Language: English
Total Materia - Resolving Material Challenges
WEBINAR
October 11th, 9 AM CET / 1 PM GMT
Total Materia - Resolving Material Challenges
WEBINAR
October 13th, 12 PM EST / 9 AM PST
Total Materia - Resolving Material Challenges
WEBINAR
October 13th, 6 PM CST / 5 PM GMT

Over 83 Standards Organizations and 39,000 Standards



NORTH AMERICA

16

Canada
- CSA

Mexico
- NMX

United States
- AA
- ABS
- ACI
- AISI
- AMS
- API
- ASME
- ASTM
- AWS
- CDA
- MIL
- NEMA
- SAE
- UNS

EUROPE

43

Austria
- ONORM

Belgium
- NBN
- ULSAB - AVC

Bulgaria
- BDS

Czech Republic
- CSN

European Union
- ASD-STAN
- EN
- EU

Finland
- ASD-STAN
- SFS

France
- AFCEN
- AFNOR NF
- AIR
- BV

Germany
- DIN
- GL
- SE
- SEL
- SEW
- TGL
- VDA
- VDI
- VdTÜV
- WL

Hungary
- MSZ

Italy
- RINA
- UNI

Netherlands
- NEN

Norway
- DNV
- NS

Poland
- PN

Portugal
- NP

Romania
- ASRO
- STAS

Russia
- GOST
- TU

Spain
- UNE

Sweden
- SS

Switzerland
- SNV

United Kingdom
- B.S.
- DEFSTAN
- DTD
- LLOYDS

Yugoslavia
- JUS

INTERNATIONAL

2

International
- IEC
- ISO

ASIA & AUSTRALIA

16

Australia
- AS

China
- CNS
- GB
- GJB
- NB
- YB

India
- IS

Japan
- JASO
- JFS
- JIS
- NKK

Korea
- KS

Malaysia
- MS

Thailand
- TIS

Turkey
- TS

Vietnam
- TCVN

SOUTH AMERICA

2

Argentina
- IRAM

Brazil
- NBR

AFRICA

1

South Africa
- SANS

1000's of Producer Data Sheets

Cross referencing capabilities between international standards

Patented algorithms to find similar materials based on properties

Cross-Reference

Equivalents Finder

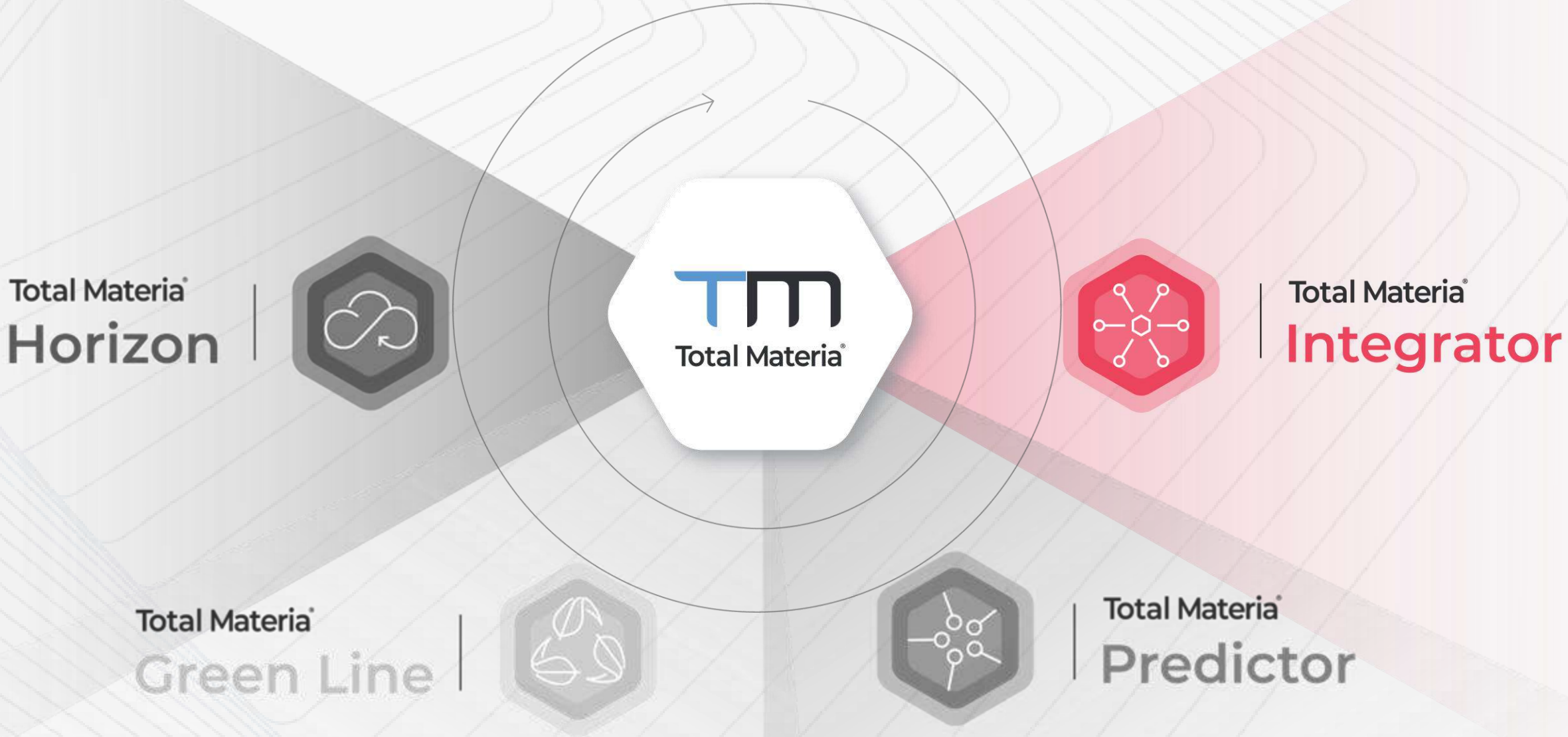
Comparison View

Analytics

References listed for every data value

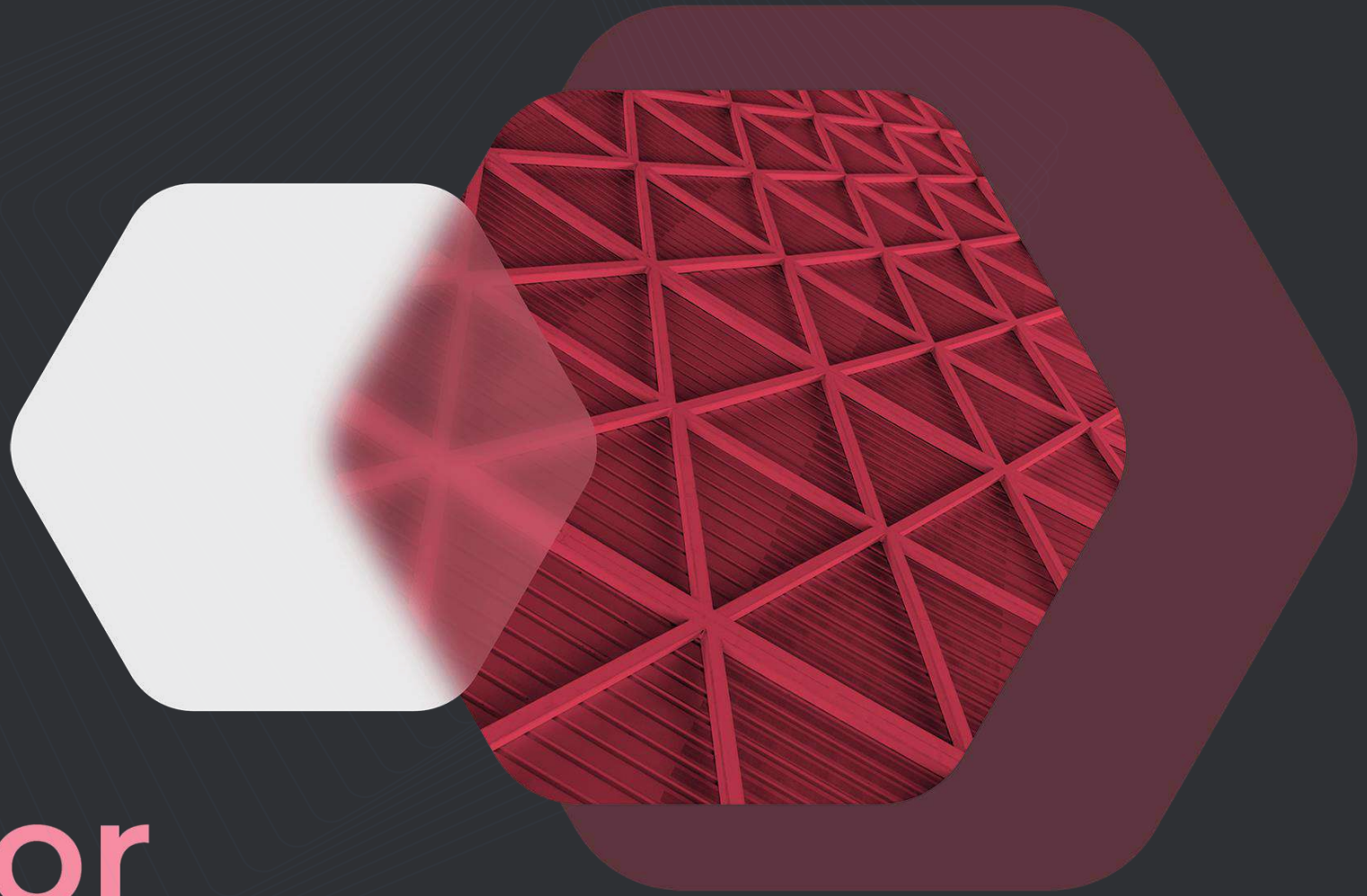
100% of data compiled by subject experts

The Total Materia Platform

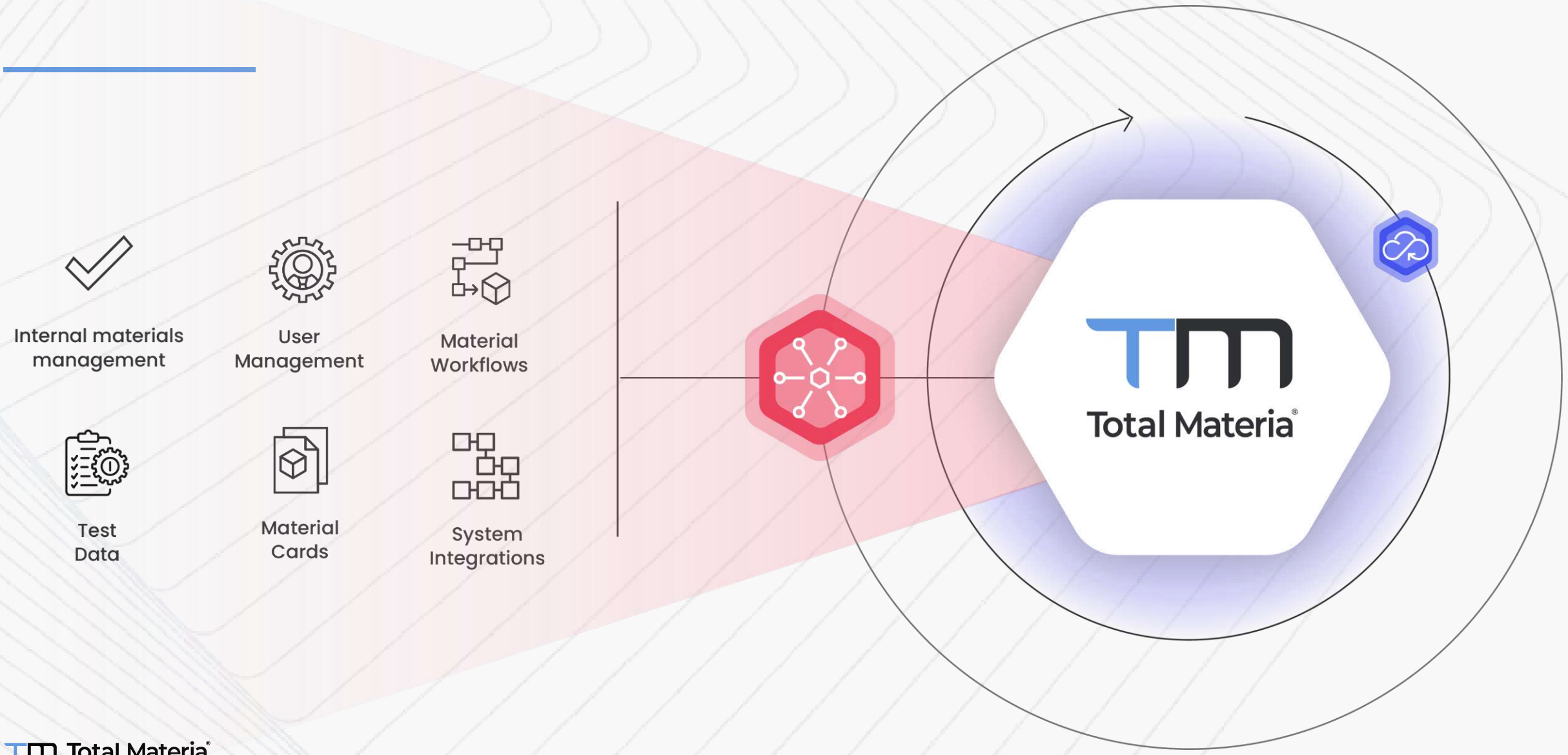


Total Materia®

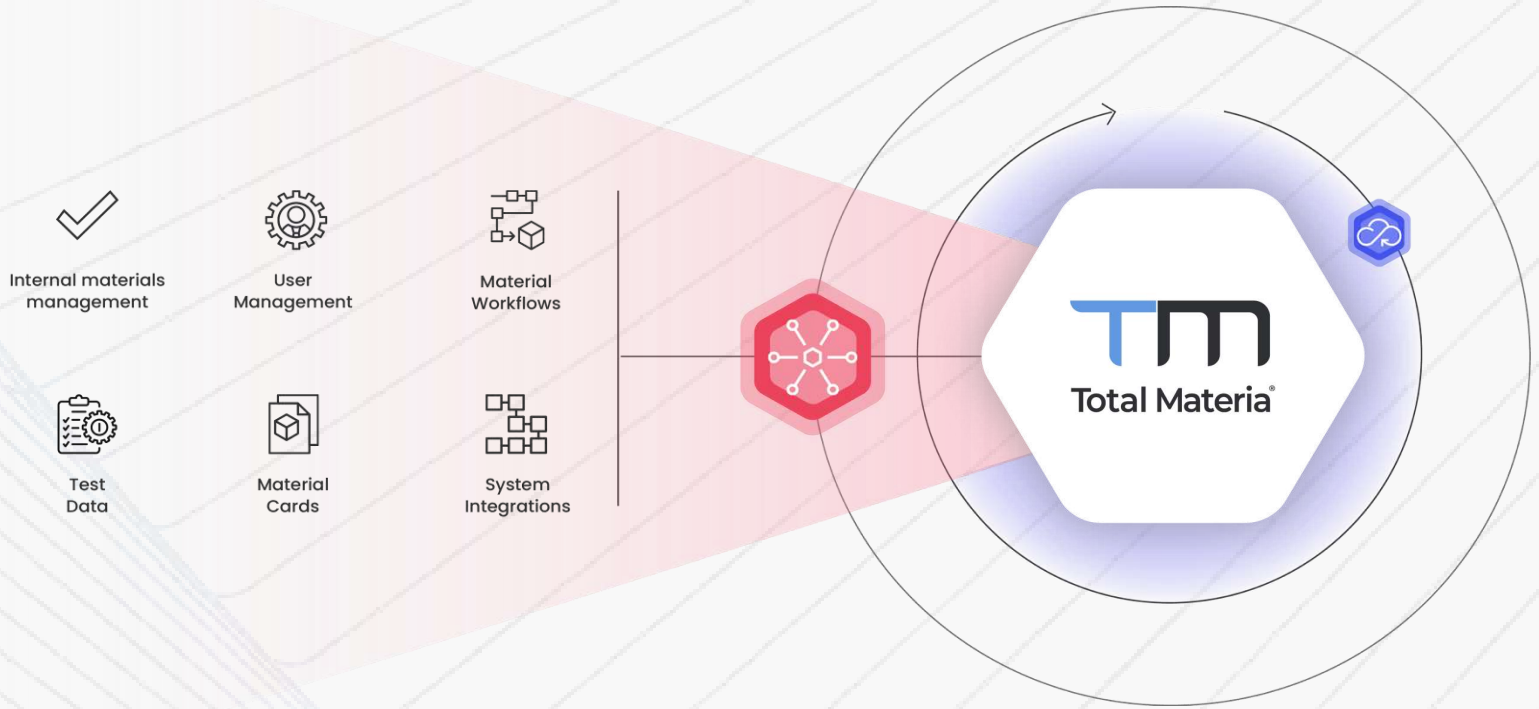
Integrator



Connecting Our World with Yours

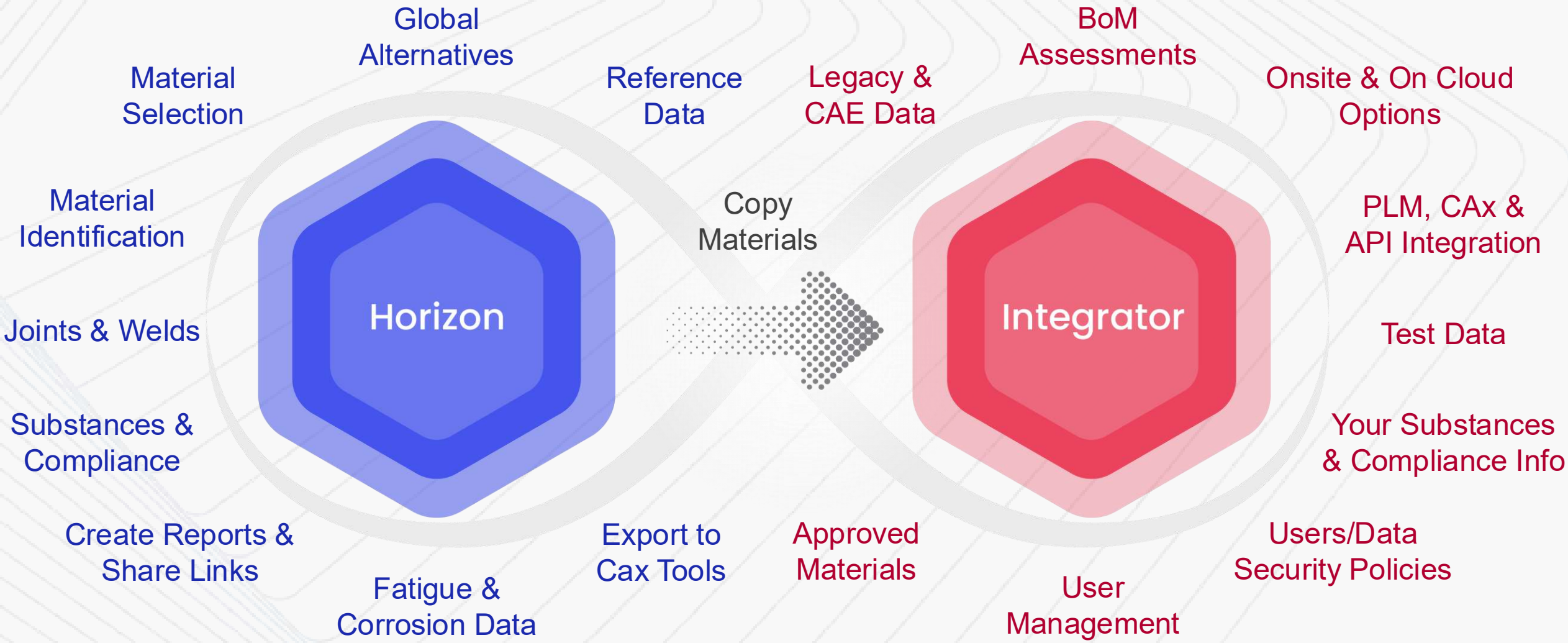


Connecting Our World with Yours



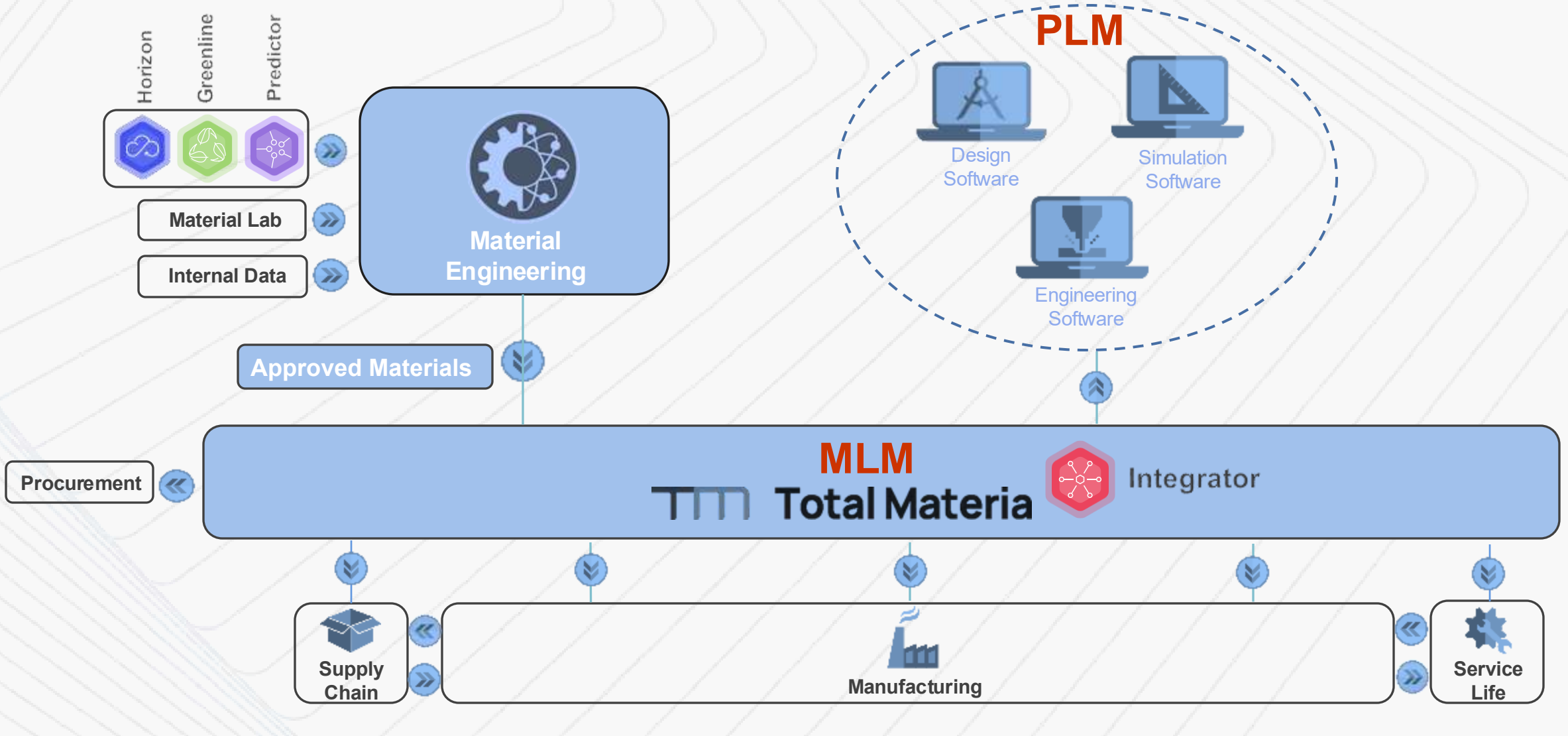
- Seamless connection to >540K reference materials
- Manage users and deliver accurate data for their profile
- Connect your materials to global equivalents to maintain selection consistency
- Approval and release workflows to maintain control and integrity
- Integrate with CAE, CAD, PLM, ERP and other business tools
- Flexible implementation through access to restful API

Stronger Together

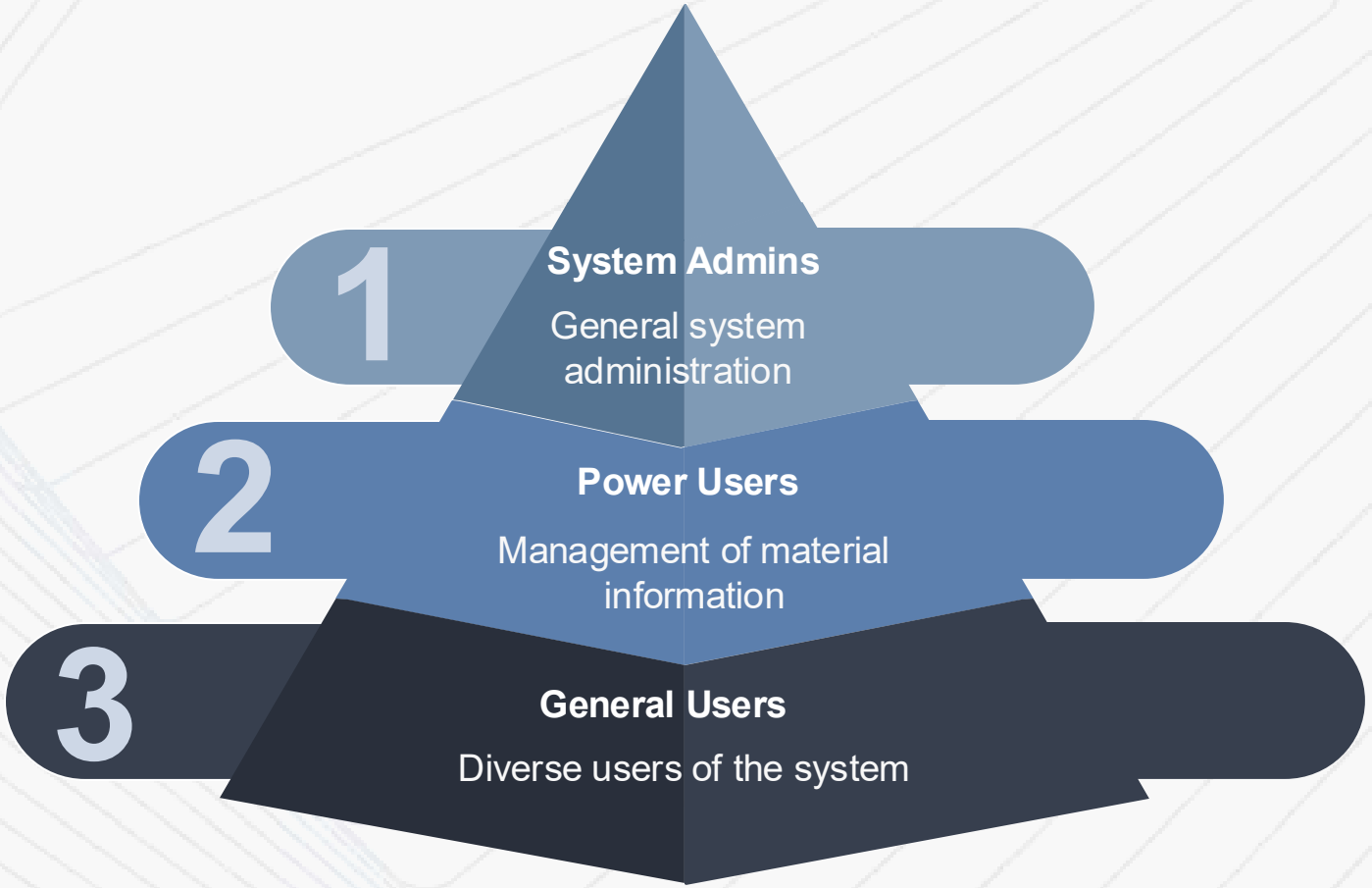


Total Materia®

MLM helps to connect Digital to Real World



Your System to Fit Your Users, Processes



System Admins

- IT, integration, user admin
- Adds users, locations, partners
- Releases approved material updates

Power Users

- Understands team, application, data
- Ensures correct materials are approved
- Collates key data from sources

General Users

- Diverse users
- Infrequent use, needs simplicity
- Trusts system, uses approved materials
- Requests additional data from Power Users

Total Materia®
Integrator

Guided Tours

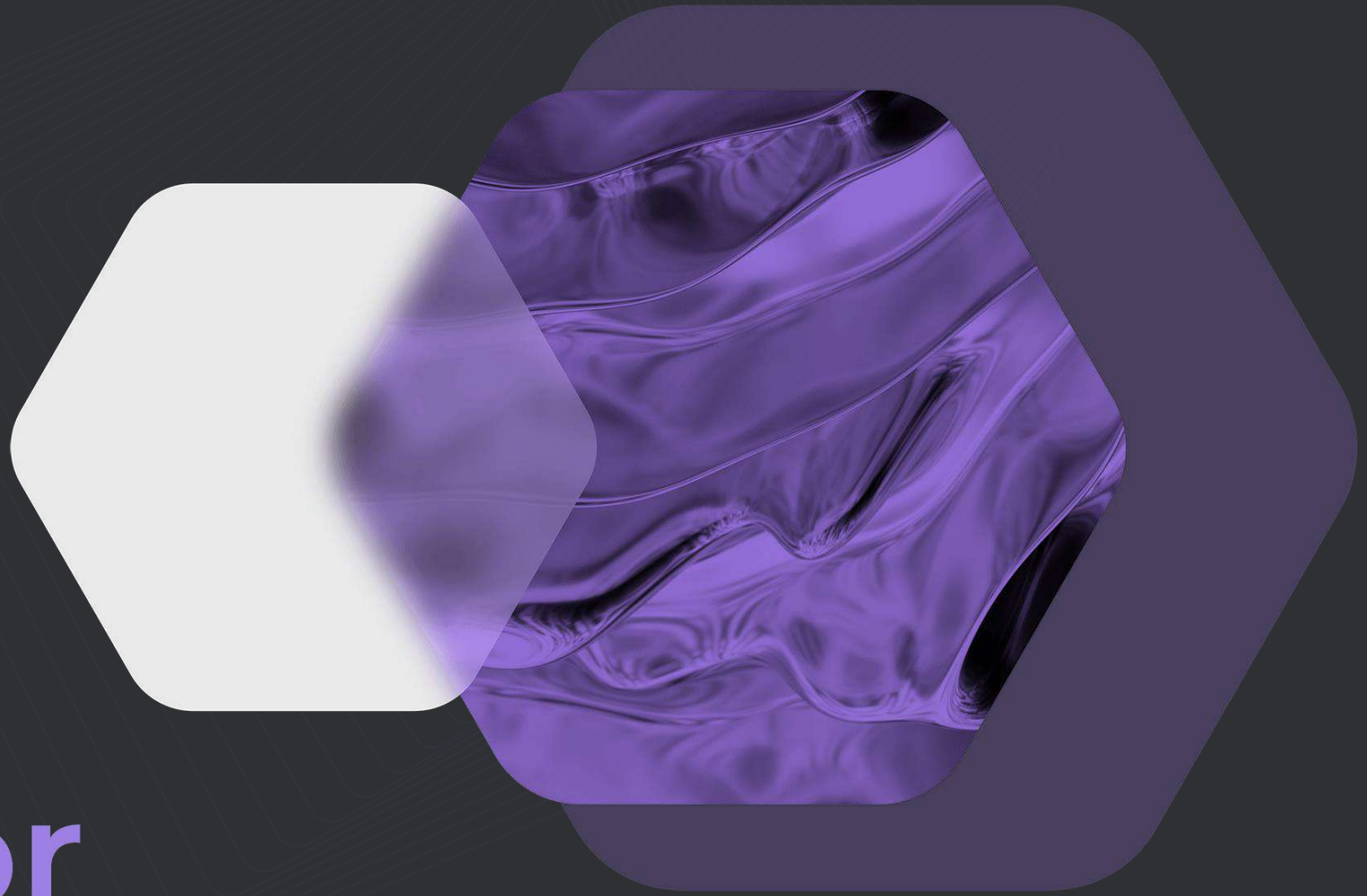
Introduction to Integrator

In-Depth Material Search: Inconel 718 Case Study

The Total Materia Platform

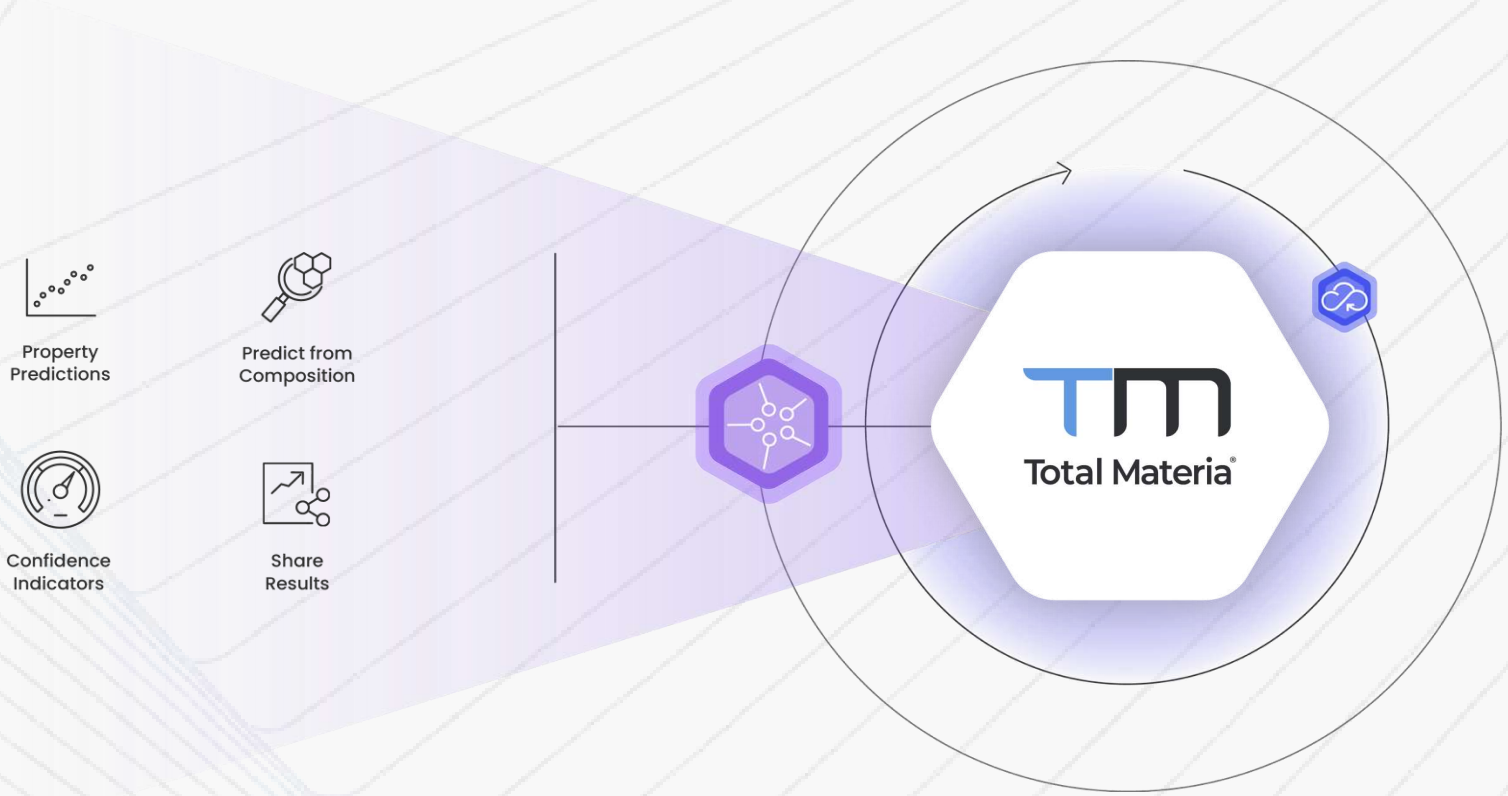
Total Materia®

Predictor



Filling the Gaps: Predicting Material Properties

Filling the Gaps: Predicting Material Properties



Properties Covered:

- Mechanical and physical properties
- Stress-strain curves
- Fatigue data points

- Single and multi-point predictions from 160+ ML models across 300,000 materials
- Predict 20+ properties
- Predict properties and behaviors from chemical composition
- Share results with reports internally and externally

Creating and Executing the Models

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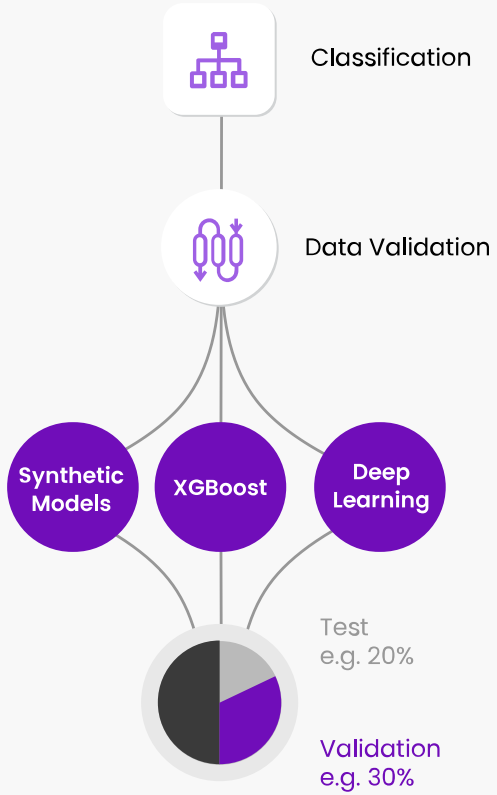
Horizon



Total Materia AI
Synthetic Models

Total Materia AI
XGBoost

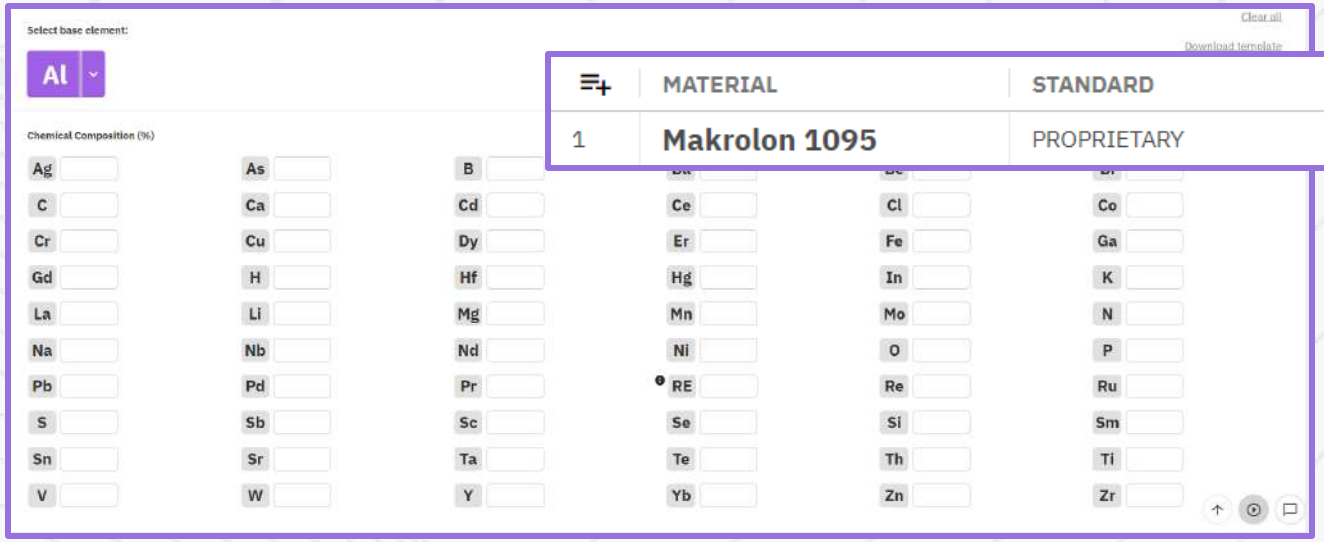
Total Materia AI
Deep Learning (TabNet)

1. Designation or Composition
2. Select Model
3. Define Parameters Temperature Dependency
4. Results with Confidence Parameters

How do we classify material groups?

Metallic Materials

Classified using chemical composition data



Non-Metallic Materials

Classified in generic material groups, fillers and densities provided

	MATERIAL	STANDARD	COUNTRY / PRODUCER	CLASSIFICATION
1	**Makrolon 1095**	PROPRIETARY	Covestro AG (former Bayer MaterialScience AG)	Polymers / (PC) Polycarbonate plastics

Selected material: Makrolon 1095 (PROPRIETARY)

Filler

15% glass fiber reinforced

Density (kg/dm³)

1.29

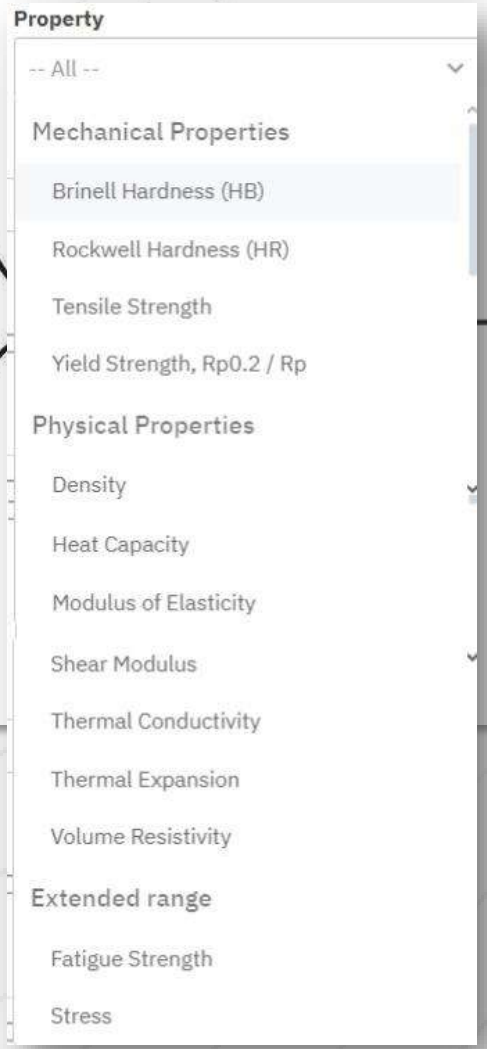
STEP 1.

Select **designation**

or provide **chemical composition** for metallic materials

STEP 2.

Select **property** (model)

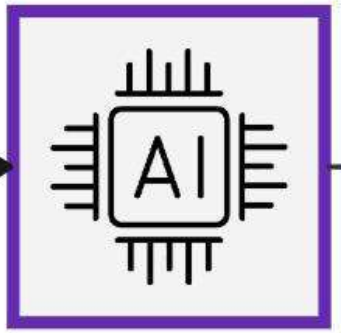


STEP 3.

Set **additional model inputs**

STEP 4.

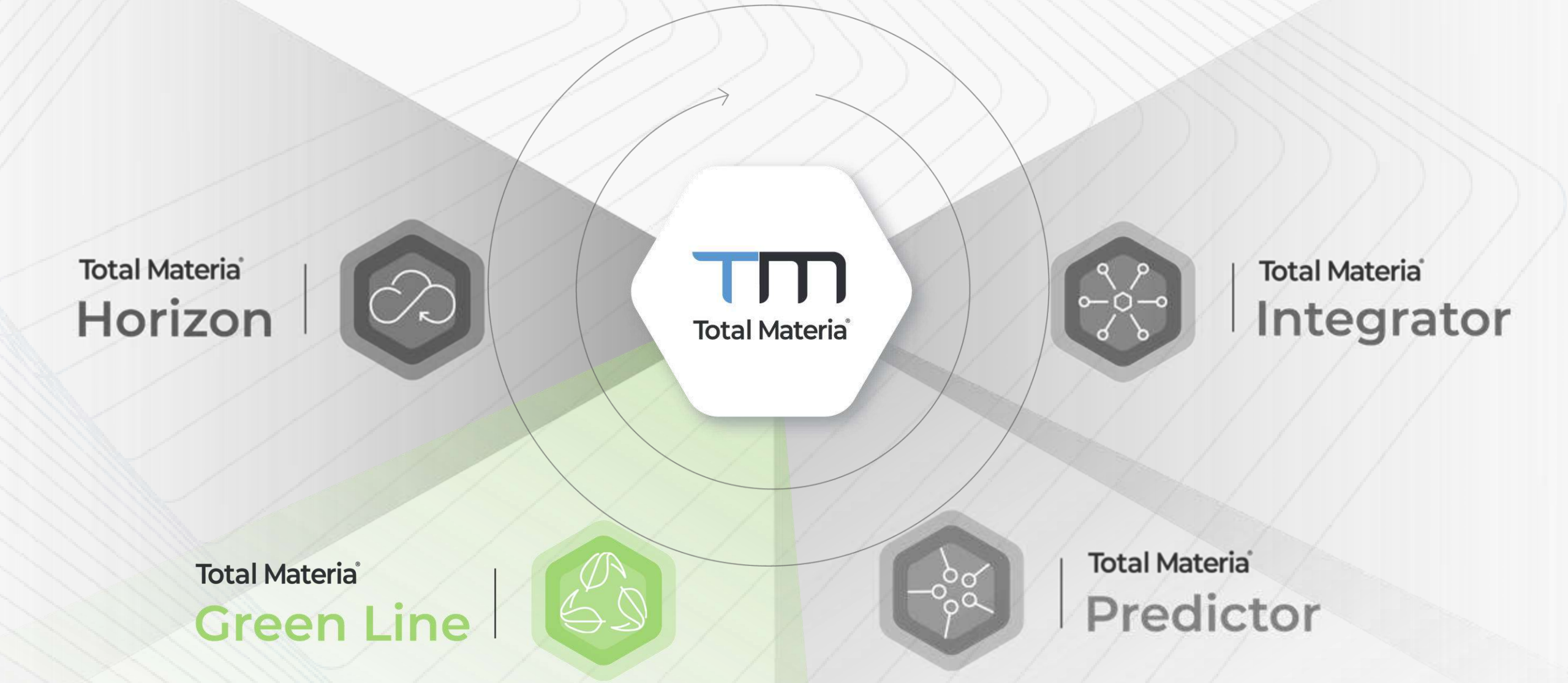
Apply **the selected model**



Prediction for selected property and specified conditions with models QA


Total Materia
Predictor
Guided Tours
Applied machine learning
for metal property predictions
Predictor

The Total Materia Platform



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Green Line

Materials Compliance and Sustainability

Compliance Assessments

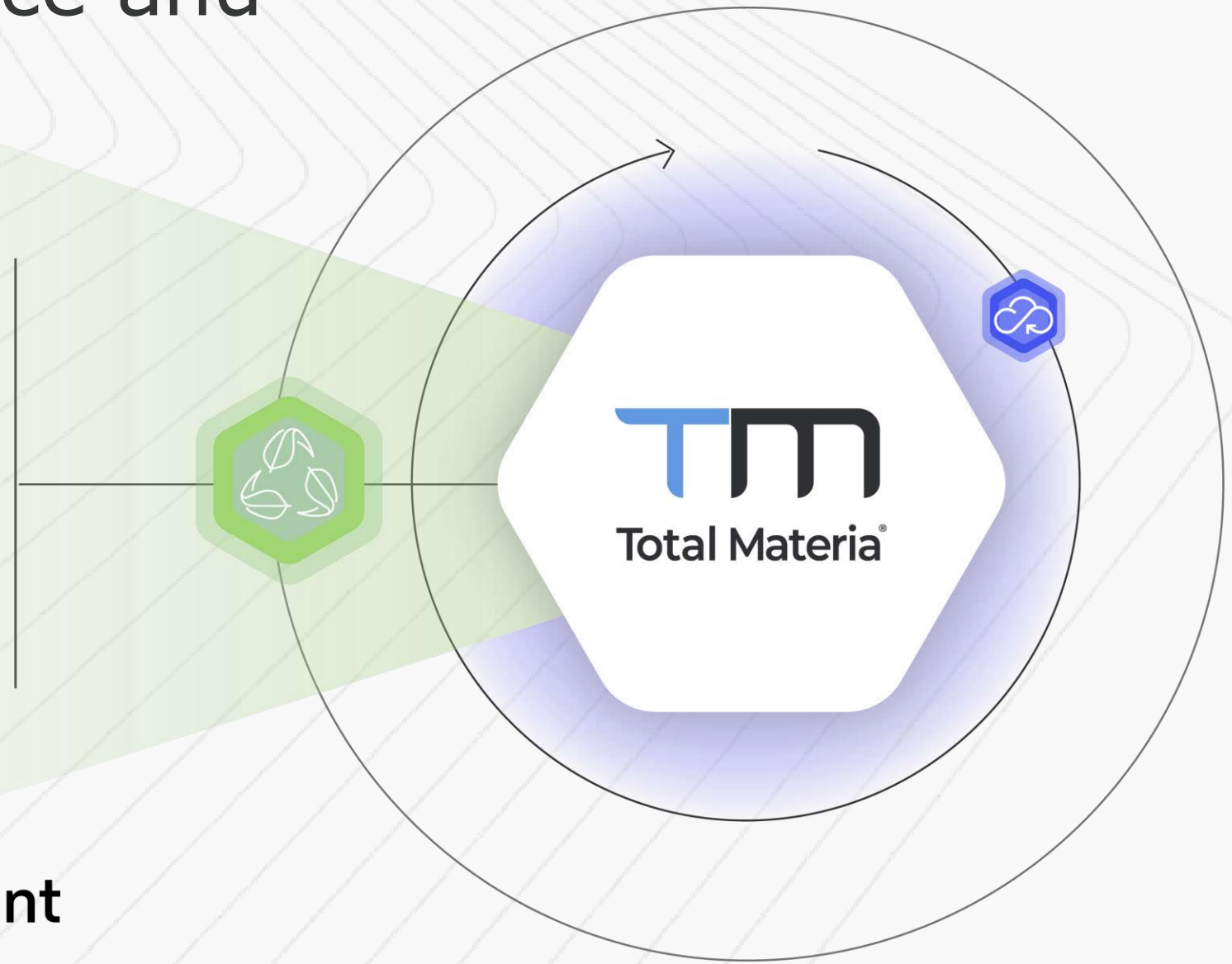
Compliant Equivalents

Restricted Substances

BOM Assessments

LCA & CO_2 Calculations

Sustainable Material Selections



Primary source of data ecoinvent

Materials Compliance and Sustainability

- Access over 300+ updated global regulations
- Covering REACH, RoHS as well as regional, federal, and state inventories
- Biocompatibility, food contact, and industry regulations e.g., ELV, WEEE, etc.
- Assess compliance of materials simultaneously against multiple regulations
- BOM assessment of substances, materials, and parts
- Assess Life Cycle Assessment for 40+ Indicators
- Accurate CO2 assessment with defined parameters
- Find sustainable and compliant alternatives

Primary source of data ecoinvent

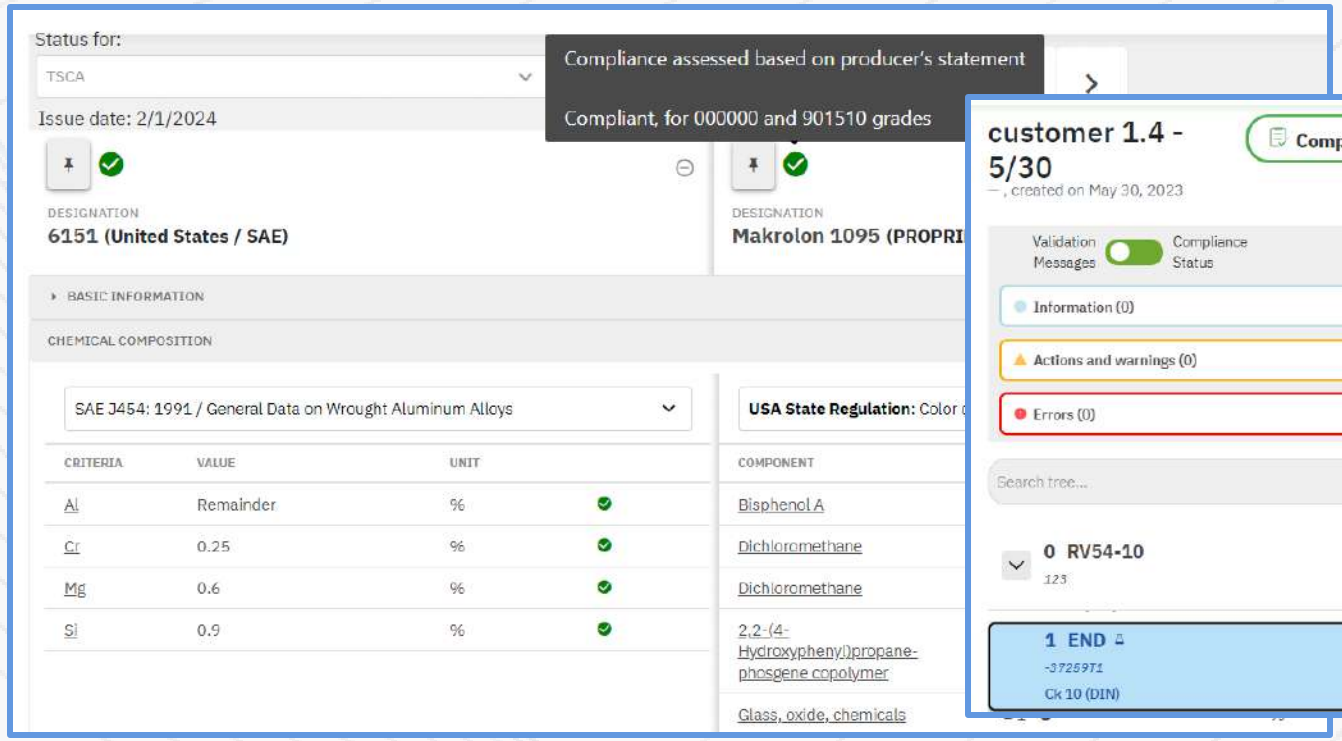
Reporting material compliance statuses

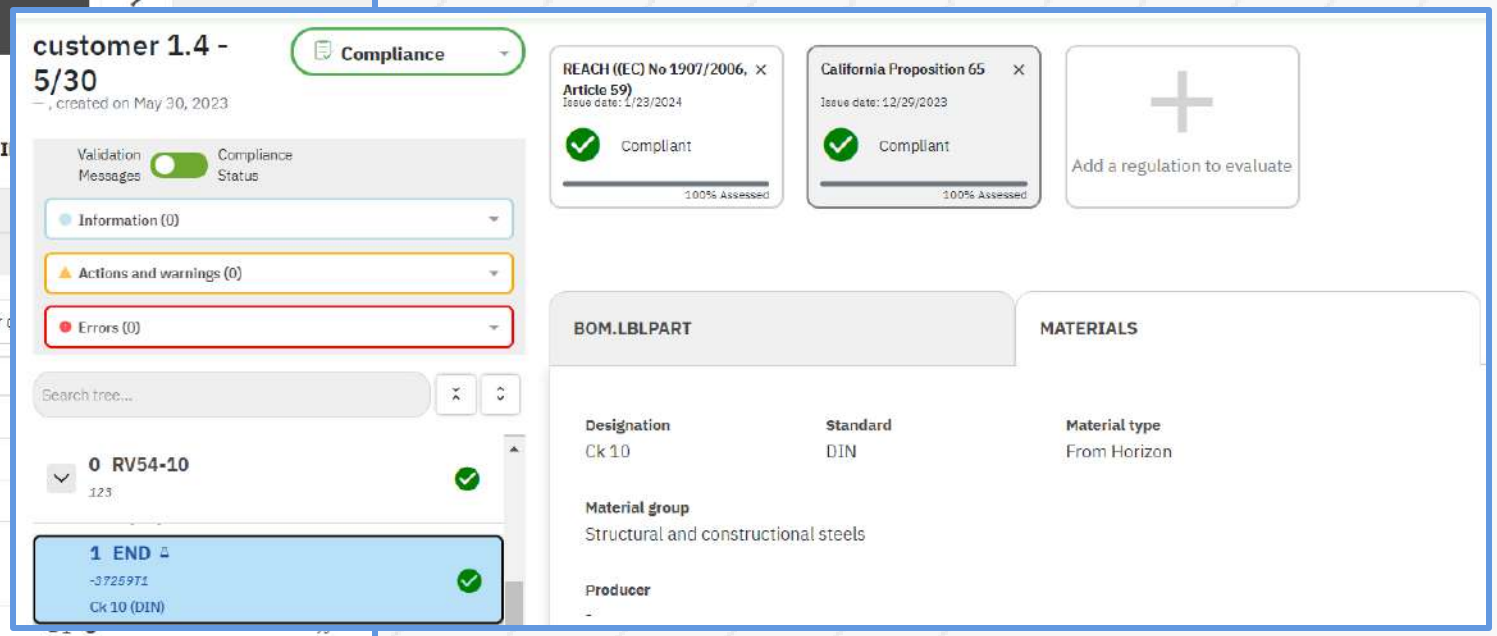
Metallic Materials

Assessed using chemical composition

Non-Metallic Materials

Rely on producer data sheets and restrictive substances lists





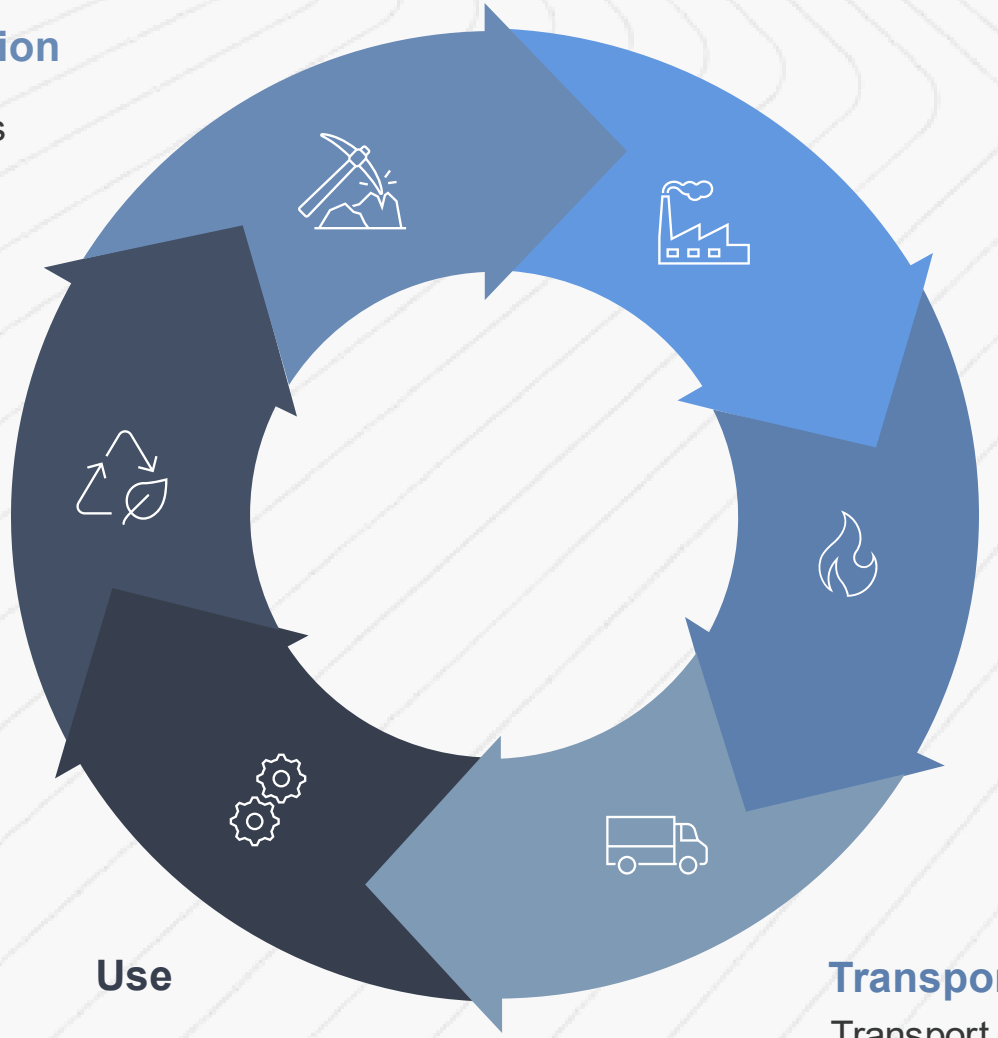
Sustainability Parameters We Cover

Raw Material Extraction

Data used from standards and producer data sheets

Manufacturing

Country specific manufacturing routes and specific recycled content



End of Life

Process

Country specific processing parameters

Helping engineers:

- Find greener alternatives
- Calculate Carbon Footprint

Use

Transportation

Transport types and distance specific

Total Materia®

How do we calculate these parameters?

Metallic Materials

Calculated using chemical composition (weights)

AISI 304 steel

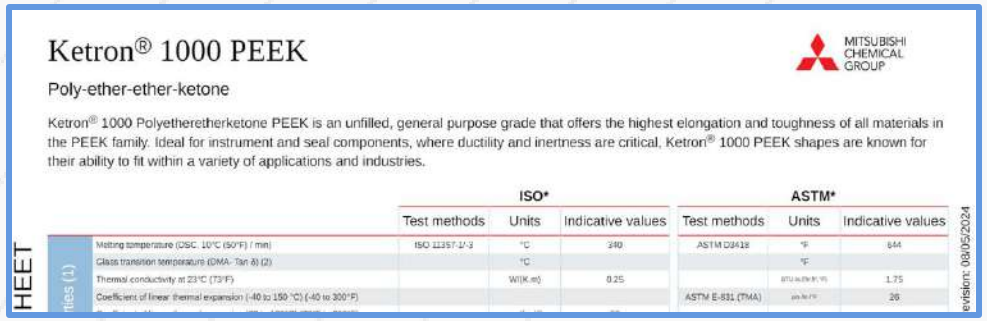
	C (6, Carbon, 12.0107)	Cr (24, Chromium, 51.9961)	Mn (25, Manganese, 54.938)	Ni (28, Nickel, 58.6934)	Si (14, Silicon, 28.0855)	Fe (26, Iron, 55.845) — Base element			
Chemical composition	**0.04%**	**19%**	**1%**	**10%**	**0.5%**	**69.46%**			
	X	X	X	X	X	X			
GWP 100a (IPCC 2013 no LT) (element specific LCIA values)	4.99	4.99	2.956	8.50 (for Ni<25%)	10.86	1.891			
	=	=	=	=	=	=			
GWP 100a (IPCC 2013 no LT) For AISI 304	0.002	+ 0.95	+ 0.03	+ 0.85	+ 0.05	+ 1.31	=	**3.20**	**kg CO2-Eq**

Non-Metallic Materials

Polymer family classifications and averages from ecoinvent

or

Information found directly from producer data sheets and other sources


Ketron® 1000 PEEK

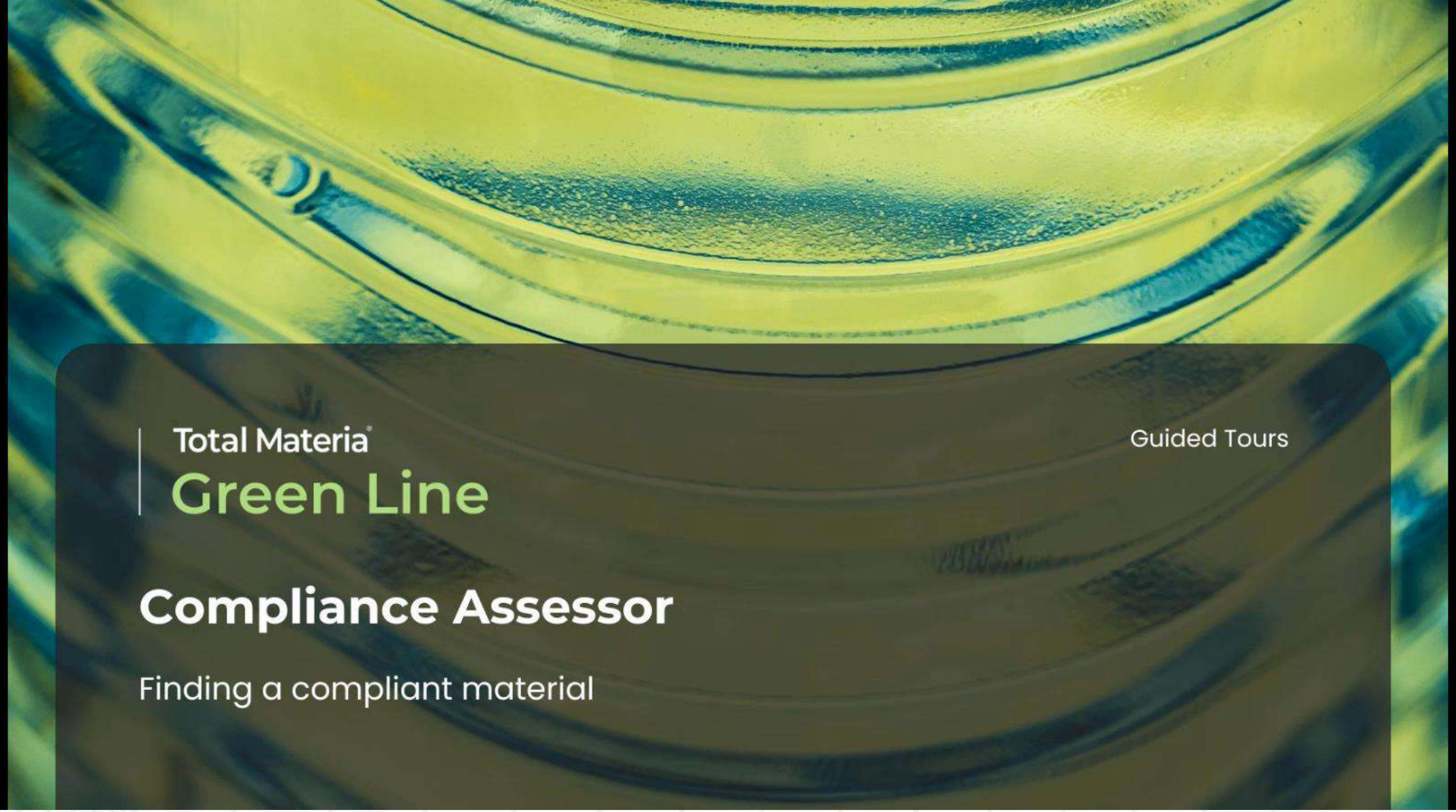
MITSUBISHI CHEMICAL GROUP

Poly-ether-ether-ketone

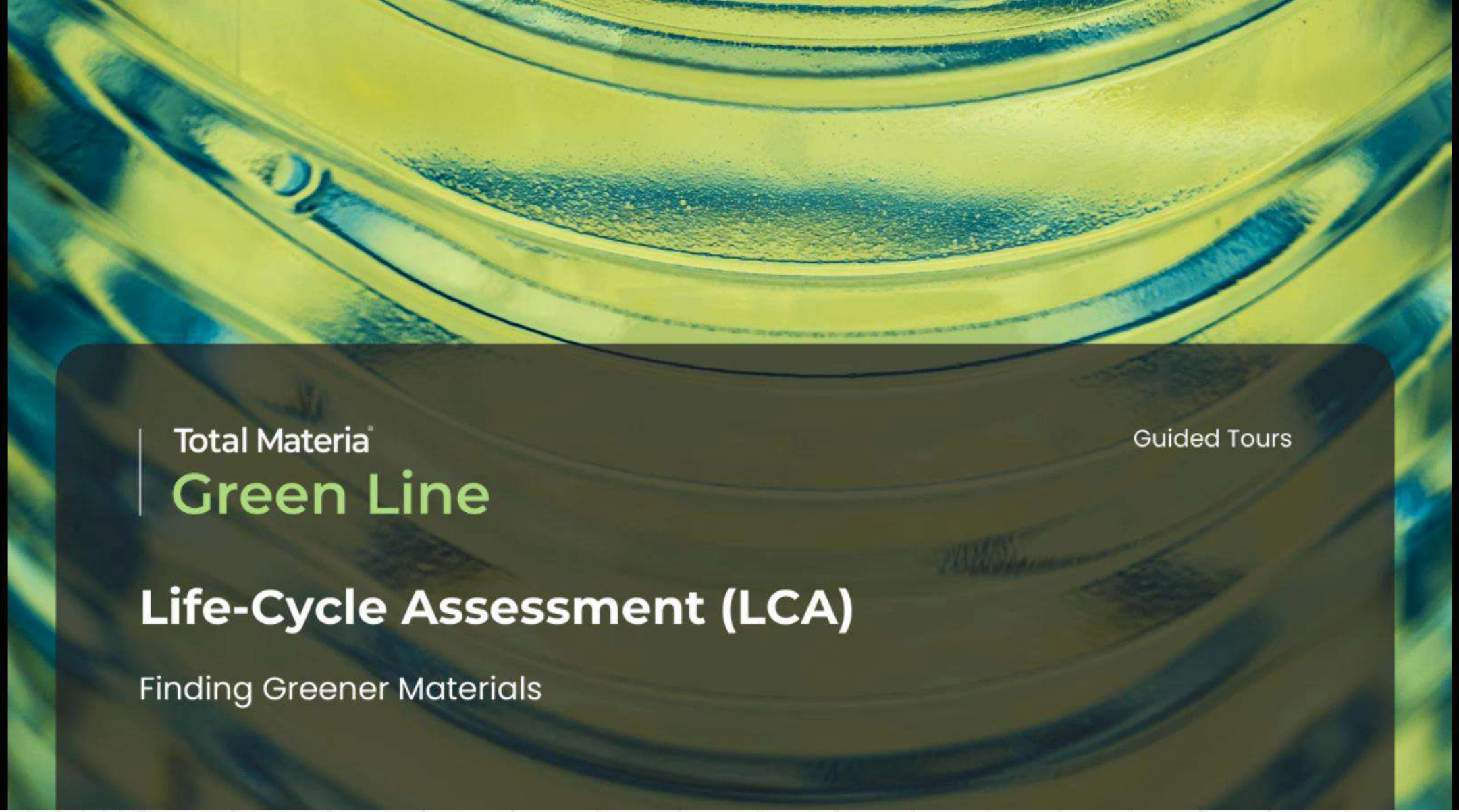
Ketron® 1000 Polyetheretherketone PEEK is an unfilled, general purpose grade that offers the highest elongation and toughness of all materials in the PEEK family. Ideal for instrument and seal components, where ductility and inertness are critical. Ketron® 1000 PEEK shapes are known for their ability to fit within a variety of applications and industries.

	ISO*			ASTM*		
	Test methods	Units	Indicative values	Test methods	Units	Indicative values
Melting temperature (DSC, 10°C (50°F) / min)	ISO 11357-1/-3	°C	340	ASTM D3418	°F	644
Glass transition temperature (DMA- Tan δ) (2)		°C			°F	
Thermal conductivity at 23°C (73°F)		W/(K.m)	0.25			1.75
Coefficient of linear thermal expansion (-40 to 150 °C) (-40 to 300°F)				ASTM E-831 (TMA)		26


Total Materia
Green Line
Guided Tours
Carbon Footprint
Calculating the Carbon Footprint of Your Material


Total Materia
Green Line
Guided Tours
Compliance Assessor
Finding a compliant material


Total Materia
Green Line
Guided Tours
Bill of Materials (BOM)
Quickly find non-compliant materials


Total Materia
Green Line
Guided Tours
Life-Cycle Assessment (LCA)
Finding Greener Materials


Total Materia® Horizon
Reference Material Information
Total Materia® Integrator
Enterprise Materials Management
Total Materia
Total Materia® Green Line
Compliance & Sustainability Calculations
Total Materia® Predictor
Predicting Properties with ML

Next Steps

Let's understand your specific requirements and challenges

Explore our solution(s) in greater detail

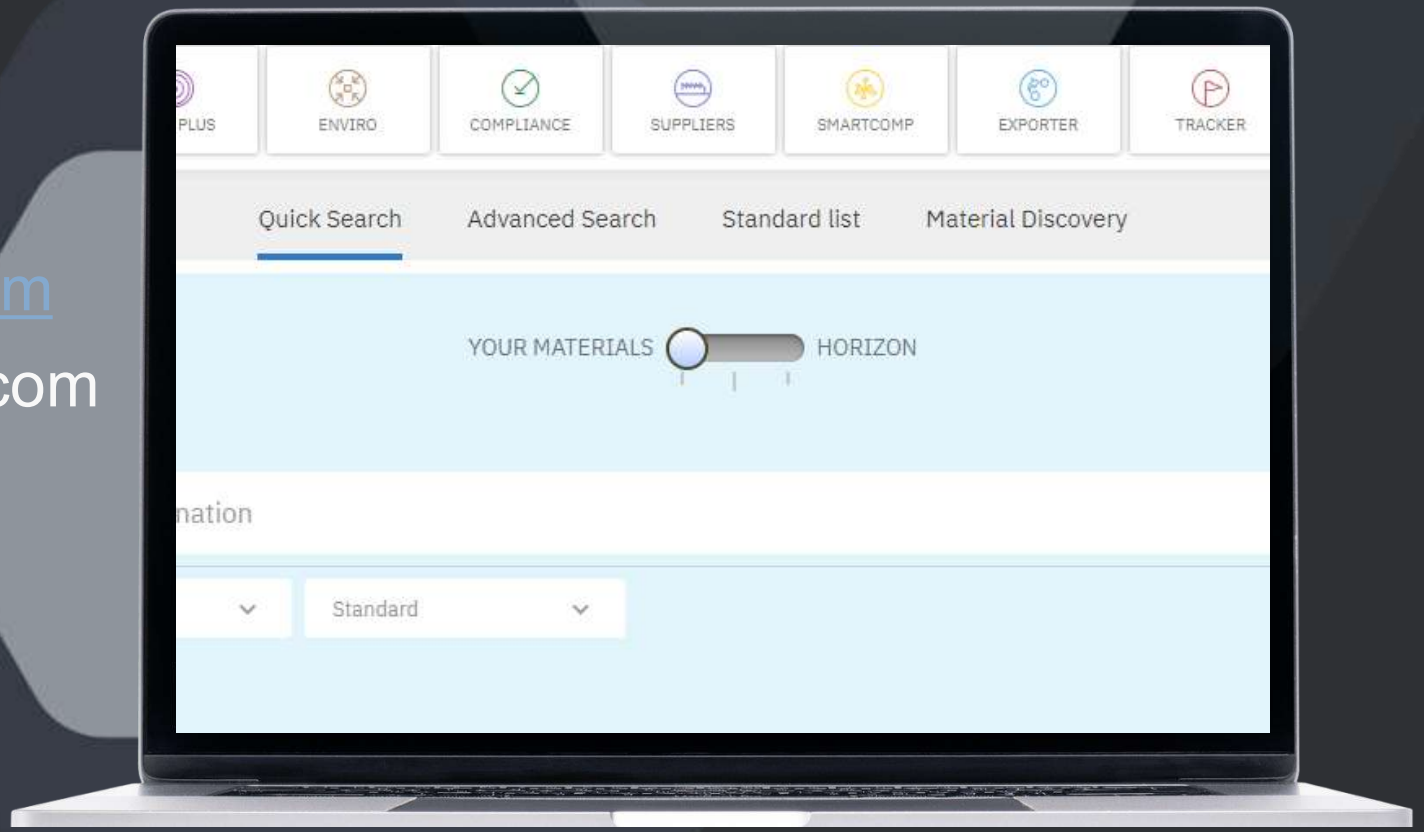
Understand value via testing in a real-world scenario

Analyze the results and ensure the solution(s) meet your objectives

Roll-out and onboarding for your organization

Contact Us to Book a Demo

Hakan Çiftçi - Merve Geçimli
Mobile: 0536 776 87 10
Email: hakan.ciftci@hedefarge.com
merve.candir@hedefarge.com



Total Materia®

Departments and People We Help

Supply Chain
Finding material suppliers

Materials Engineer
Subject Expert

CAE Simulation Specialist
Material property simulators

Purchasing
Interpret requests from engineering

Compliance & Sustainability
Monitor legislation, validate compliance, and find greener alternatives

Sales & Applications Engineer
Bridge between customers and engineering teams, assuring customers of capability

Quality
Quality assurance and control

CAD/Manufacturing
Validate product & process capability

Color Palette

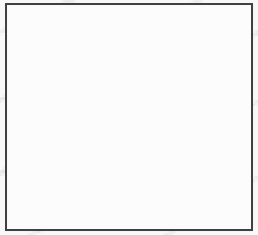
Total Materia

TM Blue
On logo

R 33
G 73
B 191
HEX #6298E0

TM Charcoal
On logo

R 46
G 48
B 52
HEX #2E3034



TM White
On logo

R 252
G 252
B 252
#FCFCFC

R: 55 G: 63 B: 78 HEX #373F4E	R: 98 G: 152 B: 224 HEX #6298E0
R: 67 G: 80 B: 100 HEX #435065	R: 92 G: 127 B: 173 HEX #5C7FAD
R: 171 G: 189 B: 214 HEX #ABBDD6	R: 127 G: 154 B: 181 HEX #7F9AB5

Font and Colors of Text:

All Headings – Verdana
All Text - Arial

Color:
- Black HEX #363838
- White HEX #F8F8F8

R: 54 G: 56 B: 56 HEX #363838	R: 54 G: 56 B: 56 HEX #E8E8E8	R: 248 G: 248 B: 248 HEX #F8F8F8

Solution Colors and Logos - Horizon

Product Icon

Main Horizon Blue

R: 68
G: 84
B: 188

HEX #4454ED

Supporting Horizon Blues

R: 87
G: 103
B: 246

HEX #5767F6

R: 158
G: 165
B: 253

HEX #9EA5FD

R: 27
G: 41
B: 173

HEX #1B29AD

Product Logos

On Light Backgrounds

Total Materia®
Horizon

On Dark Backgrounds

Total Materia®
Horizon

Total Materia®
Horizon

Solution Colors and Logos - Integrator

Product Icon

Main Integrator Red

R: 237
G: 68
B: 94

HEX #ED445E

Supporting Integrator Reds

R: 221
G: 87
B: 113

HEX #F65771

R: 252
G: 184
B: 194

HEX #FCB8C2

R: 177
G: 0
B: 48

HEX #B10030

Product Logos

On Light Backgrounds

Total Materia®
Integrator

On Dark Backgrounds

Total Materia®
Integrator

Total Materia®
Integrator

Solution Colors and Logos - Predictor

Product Icon

Main Predictor Purple

R: 151
G: 114
B: 222

HEX #9772DE

Supporting Predictor Purples

R: 170
G: 133
B: 239

HEX #AA85EF

R: 208
G: 183
B: 255

HEX #D0B7FF

R: 112
G: 13
B: 185

HEX #700DB9

Product Logos

On Light Backgrounds

Total Materia®
Predictor

On Dark Backgrounds

Total Materia®
Predictor

Total Materia®
Predictor

Solution Colors and Logos – Green Line

Product Icon

Main Green Line Green

R: 160
G: 213
B: 114

HEX #A0D572

Supporting Green Line Greens

R: 179
G: 232
B: 133

HEX #B3E885

R: 206
G: 240
B: 177

HEX #CEF0B1

R: 65
G: 132
B: 6

HEX #418406

Product Logos

On Light Backgrounds

Total Materia®
Green Line

On Dark Backgrounds

Total Materia®
Green Line

Total Materia®
Green Line

Icons for use