



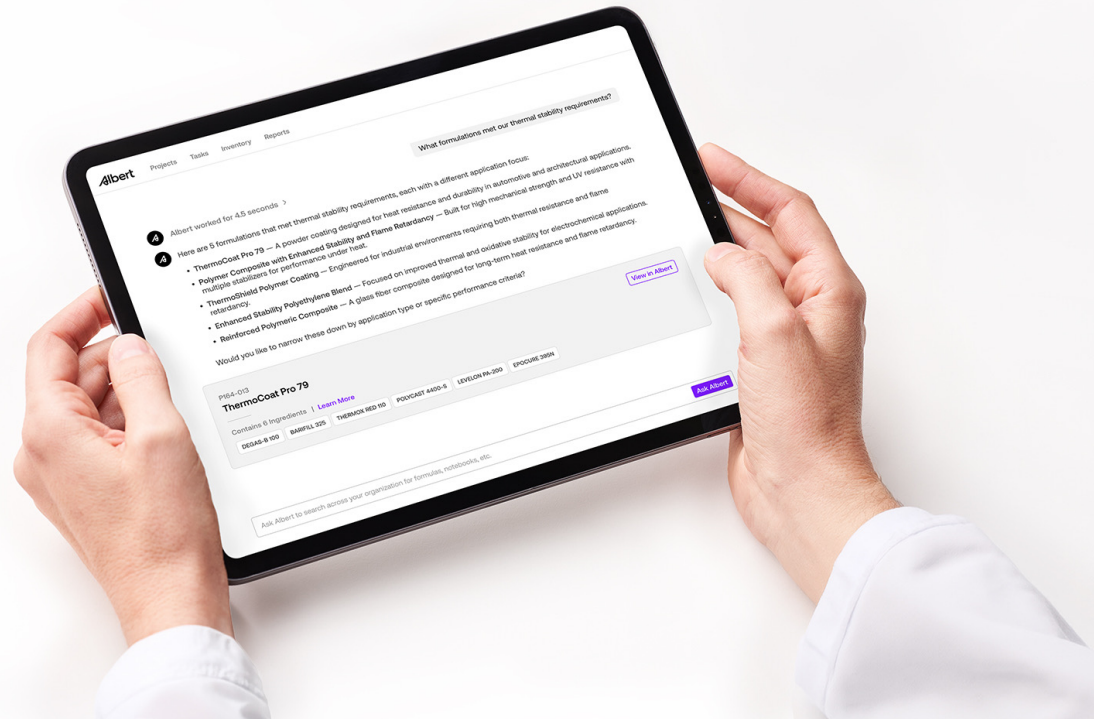
Accelerating time to value for AI in R&D



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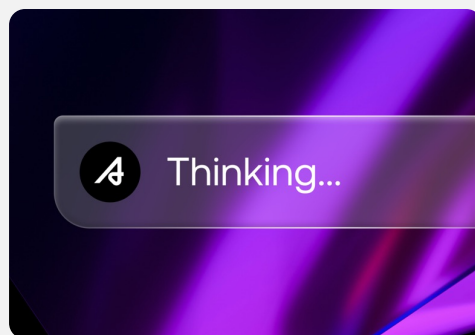


Meet Albert. The first AI-native operating system for materials science.

Built by chemists, for chemists. Forged in real labs by scientists with decades of bench experience at companies like Dow and Henkel.



Your science, your AI. Every experiment powers models specific to your chemistry, creating a system that learns as you discover.



Proven at enterprise scale. Thousands of scientists across hundreds of labs in the largest and most innovative organizations.



Trusted by over 400 organizations



Where we left off, and where we're going.



IRI 2025

Last year's workshop

The theme was urgency. Everyone agreed that digital transformations were necessary, but the path to start wasn't clear.



The future of R&D

What you'll walk away with

You'll leave with a clear picture of where you stand, how to harness AI at each stage, and a roadmap for what to do next.



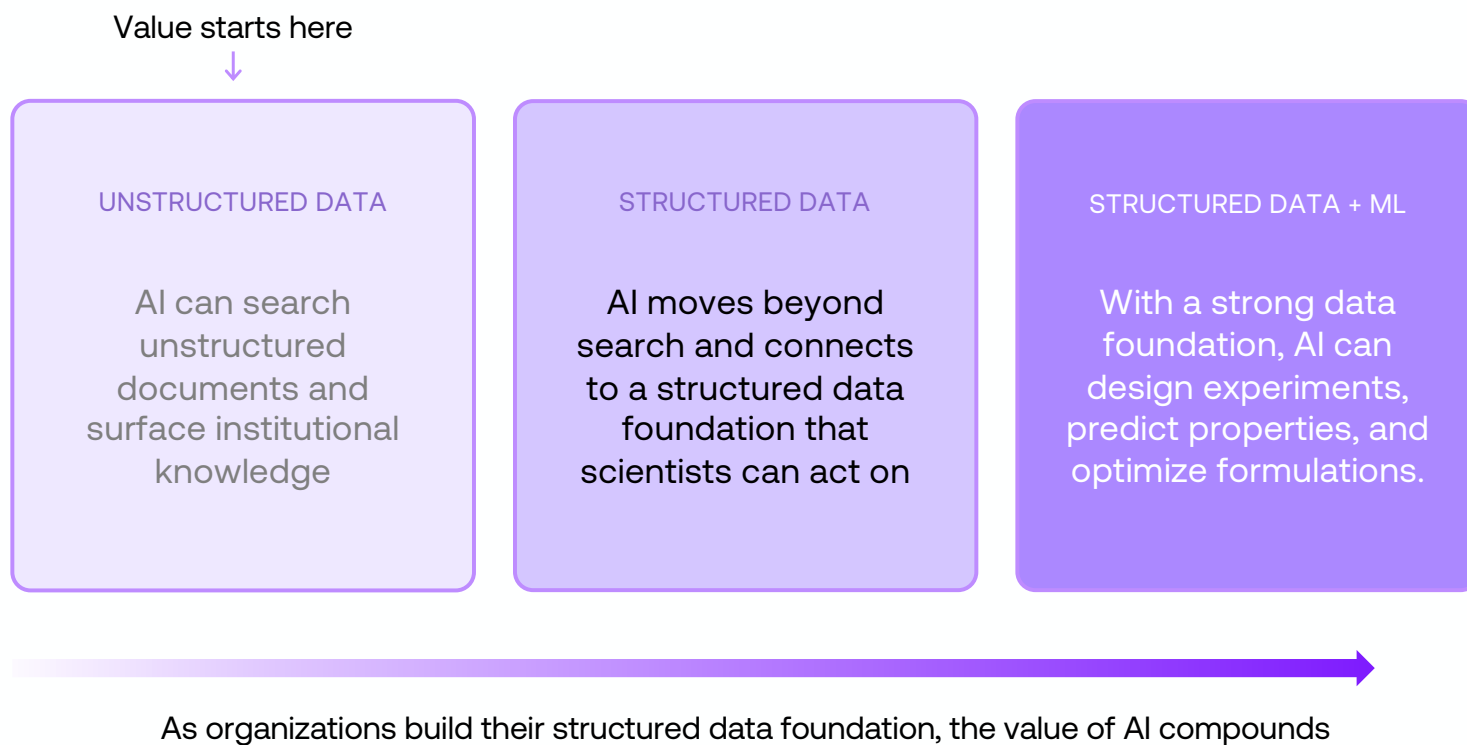
IRI 2026

Today's workshop

We'll talk about how to harness value from AI no matter where you are in your journey and discuss a framework for digital readiness.

AI delivers value at every stage of the journey

The more structured your data, the more AI can do – but every organization can start today



Start A New Chat

Can you estimate the Brookfield viscosity of a formulation containing 35% methacrylate, 35% acrylate, and 30% vinyl monomers with Irgacure 651 as the primary photoinitiator?

Albert is Thinking...

Intent: Find UV-curable formulation examples matching the methacrylate/acrylate/vinyl monomer blend and Irgacure 651 to estimate Brookfield viscosity.

35% methacrylate 35% acrylate 30% vinyl monomers Irgacure 651 Brookfield viscosity Irgacure 651 35% methacrylate 35% acrylate 30% vinyl monomers Irgacure 651 Brookfield viscosity

I'm searching for viscosity data and formulation details for a 35/35/30 methacrylate/acrylate/vinyl monomer mix with Irgacure 651 (Brookfield viscosity).

Reading through the top 28 notebook sections and 50 documents...

You're looking for an estimate of the Brookfield viscosity for a formulation with about 35% methacrylate, 35% acrylate, and 30% vinyl monomers, using a typical type I photoinitiator (like Irgacure 651). While I don't see a direct match for this exact formulation, there's a strong set of technical data in the document "技術報告書_JP2025-71214.docx" that discusses low-viscosity, high-reactivity energy-curable ink formulations with similar monomer blends and photoinitiator types. Let's walk through what's most relevant.

In the cited technical examples, inkjettable UV-curable formulations containing a blend of multifunctional acrylates (including methacrylate and acrylate types) and vinyl monomers, when optimized for low viscosity and high reactivity, achieve Brookfield viscosities in the range of 6-8 mPa-s at 25°C (see Section 9, "技術の考察"). These values are specifically for solvent-free, low-molecular weight monomer blends designed for inkjet and roll-to-roll applications—quite close to your targeted chemistry.

The report also points out that when only one type of monomer is used, viscosity tends to rise and application performance suffers, but with a balanced blend (like your 35/35/30 split), both low viscosity and good cured film properties are achieved. The data further show that keeping the total monomer content (excluding additives and photoinitiator) in the 90-100% range with similar ratios will generally keep the viscosity below 10 mPa-s at room temperature.

So, for your formulation, I'd estimate the Brookfield viscosity to be approximately 6-8 mPa-s at 25°C, assuming you are using low-molecular weight monomer grades and keeping additives to a minimum. If your acrylate and methacrylate monomers are somewhat higher in molecular weight, or you include significant additives (e.g., pigments, fillers), you could see viscosities rise toward 10-12 mPa-s, but still likely below 15 mPa-s in most cases.

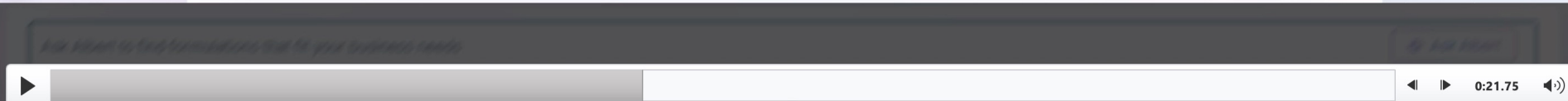
One practical note—the document strongly recommends a blend strategy (not just one monomer type) to keep both viscosity and cured film properties in the optimal range, which aligns well with your approach.

If you're targeting a specific inkjet or coating process, do you have a viscosity window you need to hit for your equipment? That could help narrow whether you want to tweak the monomer ratios or introduce a reactive diluent. Let me know if you want to see more about how different monomer types or photoinitiator levels affect viscosity in these systems.

Ask Albert to find formulations that fit your business needs

Ask Albert

AI can make mistakes. Always double-check responses.



AA001

Search in worksheet

\$32.681/ kg

Name	Inventory ID	Manufacturer	AA001-018 Ex 1	AA001-017 Ex 2	AA001-016 Ex 3	AA001-015 Ex 4	AA001-014 Ex 5	AA001-013 Ex 6	AA001-012 Ex 7	AA001-011 Ex 8	AA001-010 Ex 9	AA001-009 Ex 10	AA001-008 Ex 11	AA001-007 Ex 12	AA001-006 Ex 13	AA001-005 Ex 14
Benzophenone	A89189	Sigma-Aldrich						4.4								
4,4'-bis(diethylamino)benzophenone	A89190	Sigma-Aldrich					1	1.7								
Additives			-	-	-	-	-	-	-	-	10.9	-	-	-	-	-
Soisperse S24000 (dispersant)	A89196	Zeneca (Senekastock) / Lubrizo	0.2	0.2	0.4	0.2	0.4	0.4	0.2	0.4	0.4	0.2	0.2	0.2	0.2	0.2
Inventory Total			99.4	98	98.1	98.7	99.9	98	86.2	98.1	87.2	99.4	99.4	99.4	99.4	99.4
Process Design																
Adhesive UV Cure (1)			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Results																
Formula Properties (2 DTs)			1 Task	1 Task	1 Task	1 Task	1 Task	1 Task	1 Task	1 Task	1 Task	1 Task	1 Task	1 Task	1 Task	1 Task
Brookfield Viscosity																
Viscosity (centipoise)			9.7	8	8.3	8.5	8.7	8.3	14.2	8.9	9	9.5	10	11	10	
ASTM D3363 : Pencil Hardness																
Pencil Hardness			B (1)	HB (1)	HB (1)	HB (1)	HB (1)	HB (1)	HB (1)	HB (1)	HB (1)	HB (1)	HB (1)	HB (1)	HB (1)	HB (1)
Apps																
Pictogram	Germany															
Pricing	Average		\$32.681/ kg	\$32.257/ kg	\$31.649/ kg	\$32.22/ kg	\$33.085/ kg	\$30.537/ kg	\$34.544/ kg	\$34.205/ kg	\$33.73/ kg	\$38.096/ kg	\$32.747/ kg	\$32.657/ kg	\$32.609/ kg	\$32.481/ kg
Predecessor			AA001-001	AA001-001	AA001-001	AA001-001	AA001-001	AA001-001	AA001-001	AA001-001	AA001-001	AA001-001	AA001-001	AA001-001	AA001-001	AA001-001
Batches			No Tasks	No Tasks	No Tasks	No Tasks	No Tasks	No Tasks	No Tasks	No Tasks	No Tasks	No Tasks	No Tasks	No Tasks	No Tasks	No Tasks
Purpose																
Result																

Set Your Input Constraints

Define constraints to ensure we do not suggest candidate experiments that you know are not relevant or will not work.

Inventory	Parameter	Results	Tags	Pricing	Ratios
Name	Action	Min Value	Max Value	Min Count	Max Count
Acrylics & Acrylates	<input type="checkbox"/>	0.3	0.7		
Photoinitiator	<input type="checkbox"/>	0.00	0.08	2	3
Methacrylates	<input checked="" type="checkbox"/> Must Include <small>All of my candidates must contain this label.</small>		0.4		
Pigment	<input checked="" type="checkbox"/> Can Include <small>0.01 This label may be in some of my candidates, but not all of them.</small>		0.04	1	2
Vinyls, Vinylics & Vinyl Deri...	<input type="checkbox"/> Must Exclude <small>Do not recommend any formulations that use this label.</small>		0.4	1	2

Candidate Preview

Name	Ethoxylated pentaerythr...	C.I. Pigment Red 202	Ethylene glycol dimetha...
Candidate 1	27.852%	1.575%	0%
Candidate 2	0%	0%	24.418%
Candidate 3	0%	0%	0%
Candidate 4	27.897%	0%	28.176%
Candidate 5	0%	0%	0%
Candidate 6	0%	0%	27.855%
Candidate 7	25.665%	0%	0%
Candidate 8	0%	0%	28.09%
Candidate 9	11.612%	0%	0%

These sample candidates satisfy all of your constraints, and are representative of the candidate experiments Breakthrough is going to suggest. If anything doesn't look right, adjust your constraints and click **Refresh** to display an updated sample.

Refresh

Back

Generate Candidates

Henkel surfaces institutional knowledge with AI discovery engine

55%

of surfaced formulations came from projects the scientist wasn't part of

79%

of raw material suggestions were net-new to the receiving scientist

94%

of chemists plan to use Ask Albert on a regular basis

"One of the hardest problems in a large R&D organization is simply knowing what you already know. Ask Albert gave our scientists a way to find relevant work and raw materials they never would have discovered on their own."

Director Digital & Innovation Solutions

Henkel

Applied Molecules reduces development time with predictive AI

Dampening Materials

22 existing formulas referenced

30 AI-generated formulations
tested

3 iterations performed in Albert

3D Printing

60 existing formulas referenced

45 AI-generated formulations
tested

12 iterations performed in Albert

Development reduced from

3 months to 2 days



“If you gave me 5 years, I never would have tried this formula.
But it worked.”

Nicholas Gripp, Senior Scientist, Applied Molecules

The AI readiness curve

Where does your organization sit today?

Clean and structured data

Are data standardized with consistent formats, naming, and context? Can data be reliably reused across projects?

Data accessibility and integration

Can teams access data across ELN, LIMS, and modeling systems? Is there a connected data layer enabling cross-domain insights?

Digital workflow and experiment capture

Are experiments captured digitally and consistently? Can prior experiments and outcomes be easily searched and reused?

AI usage

Are there deployed AI use cases delivering near-term value today? Are AI efforts workflow-embedded or still pilot-stage?

People and change readiness

Are scientists open to changing how they work? Are incentives aligned to encourage adoption, not just traditional outputs?

Leadership commitment and investment

Is digital/AI a clearly stated R&D priority? Is funding sustained, or episodic? Are leaders actively engaged?

Digital capability and ecosystem

Do you have the right mix of internal talent? Can you move quickly from idea to execution, or are you resource-constrained?

Business impact and ROI

Are digital/AI initiatives tied to measurable outcomes? Is there a repeatable approach to tracking and scaling impact?

Discussion

Round 1: Where are you on the curve?

1 - Nascent

Fragmented, manual, inconsistent. Digital is minimal or ad hoc.

2 - Emerging

Isolated pilots and early tools. Limited integration or adoption.

3 - Established

Standardized and integrated. Measurable value in multiple areas.

4 - Leading

Fully embedded, scalable, AI-enabled, and continuously improving.

Using the provided worksheet, take a few minutes individually to score each dimension of your organization's AI readiness from 1-4, then discuss with your group.

Group discussions: Which dimension feels most urgent? If you could only fix one thing in the next 90 days, what would it be?

Report out: What was most similar across your organizations and where were the biggest differences?

20 min

breakout session

Discussion

Round 2: Where can you go and how can AI get you there?

What's one area where you could start today?

You don't need a perfect data foundation. What's an area where AI could start delivering value right now, no matter where your data lives?

What's your biggest barrier to getting there?

Is it data quality? Change management? Leadership buy-in? Understanding the barriers helps you build the right roadmap.



AI delivers value at every stage.

Now you have your starting
point and the framework for
what comes next.



Take the in-depth digital
readiness assessment

The background is a deep purple color with several large, overlapping, wavy, ribbon-like shapes that create a sense of depth and movement. The shapes are rendered with soft gradients and subtle shadows, giving them a three-dimensional appearance. The overall aesthetic is modern and abstract.

Albert