Foam
Deep Dive



Presented by:

Just Wholesale®
BY SAILRITE





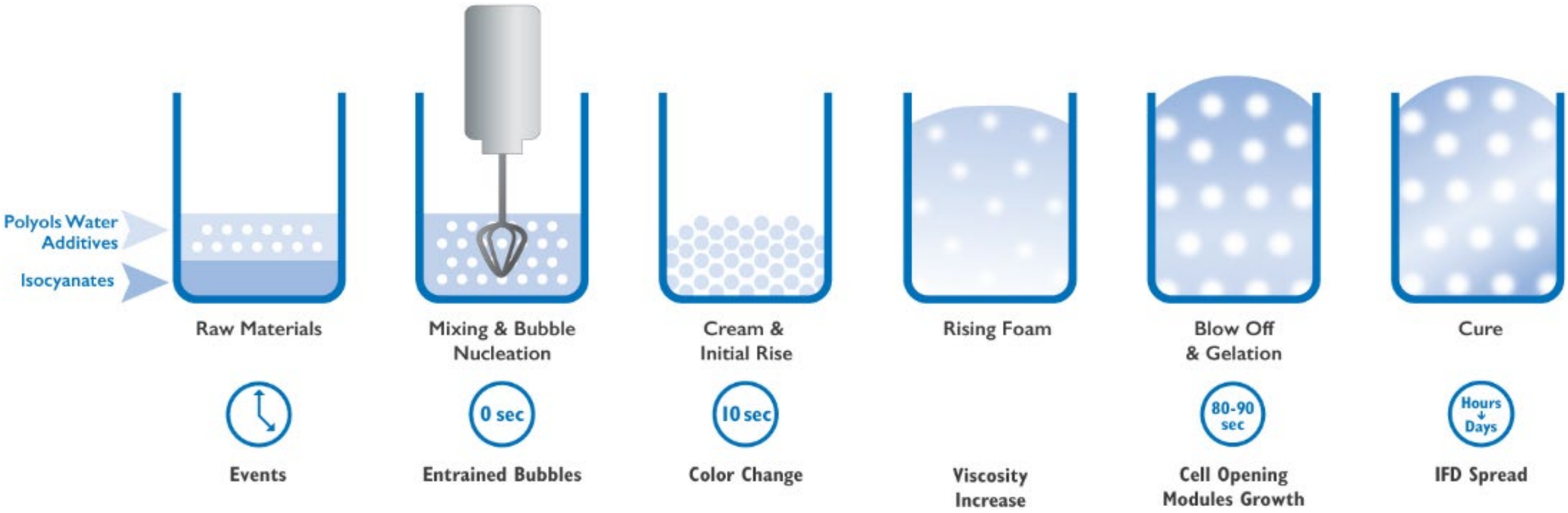


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The Anatomy of Foam

Goal: Demystify the product and establish the vocabulary.

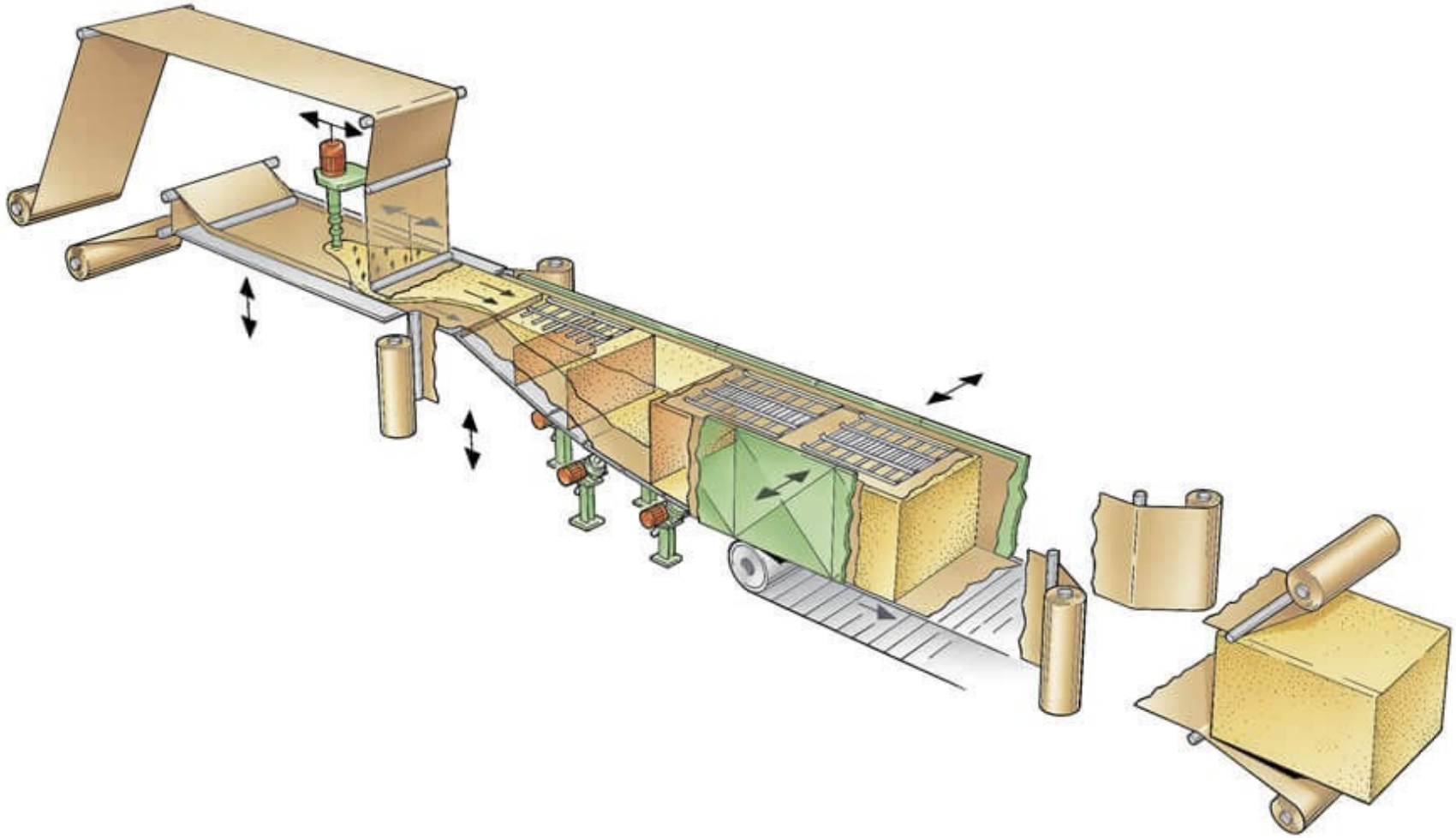
What is **Upholstery Foam?**



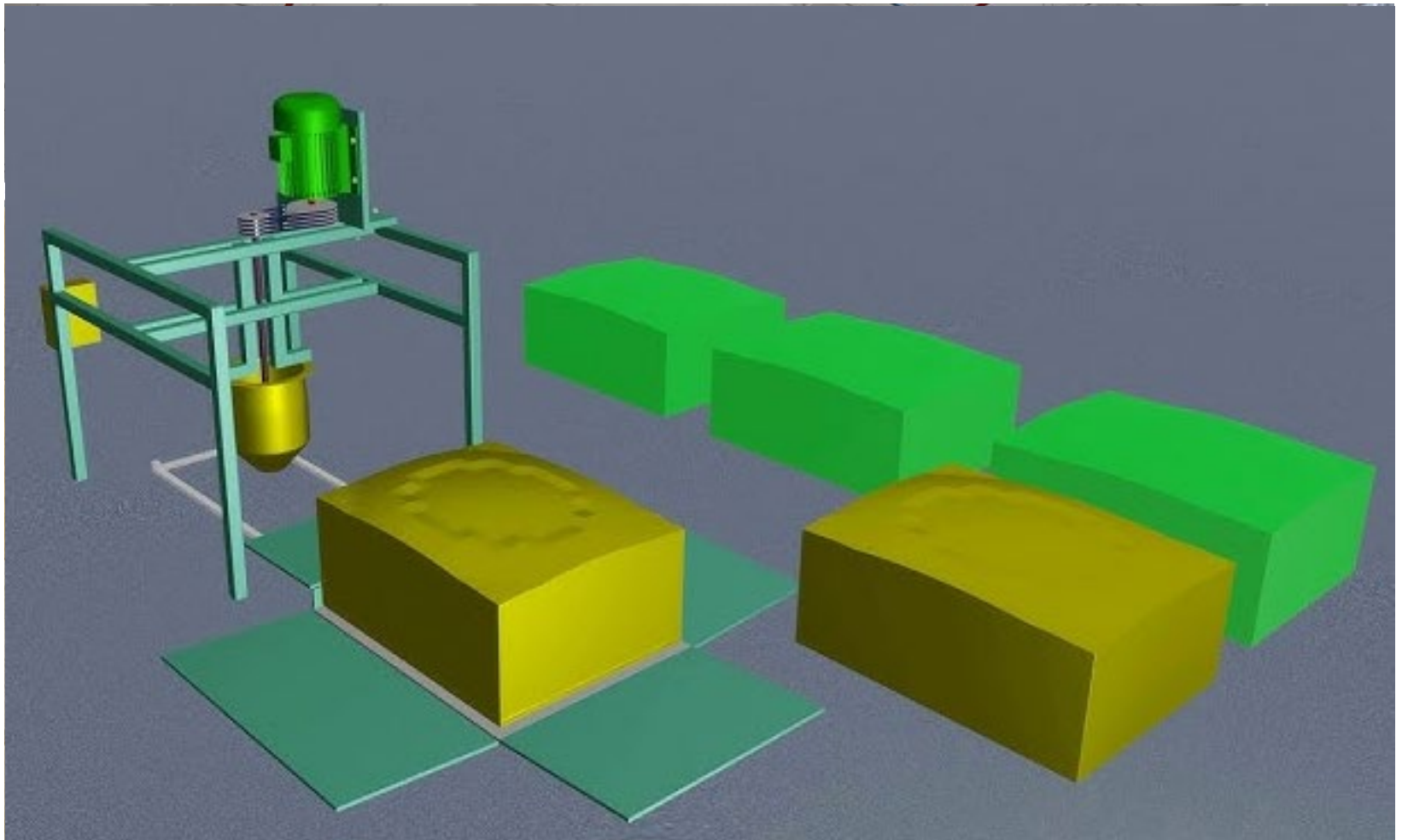
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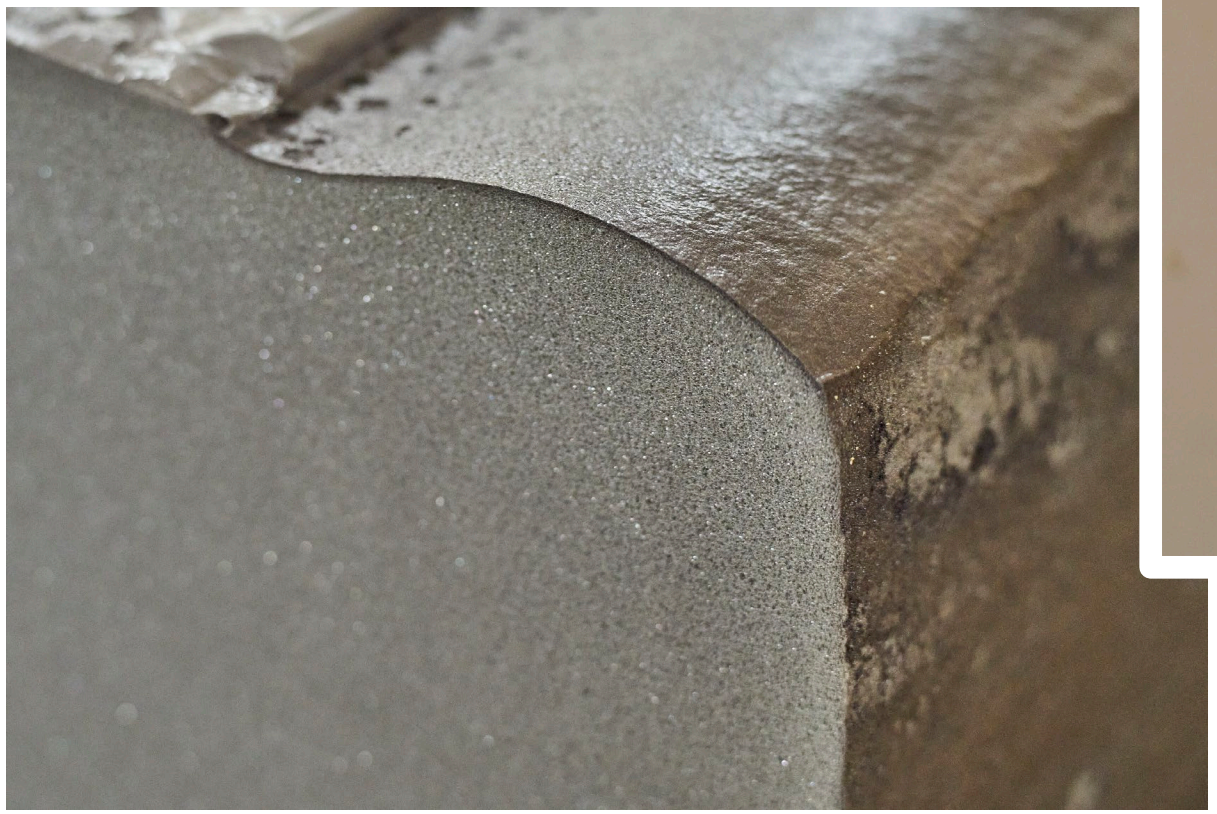
Manufacturing Methods – **Slabstock**



Manufacturing Methods – **Molded**



From Bun to Sheet: **Processing the Foam**





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From Bun to Sheet: **Processing the Foam**









The Metrics of **Quality**

Goal: How to read a spec sheet.

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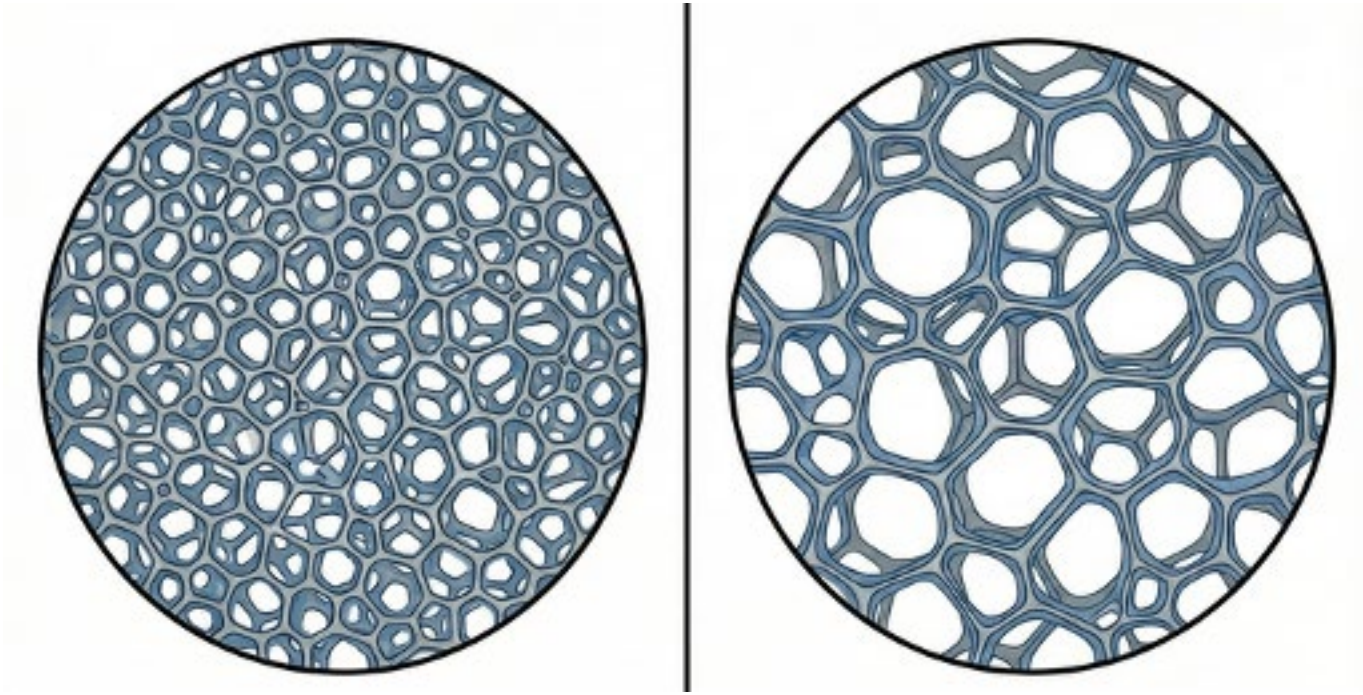
Density

Definition:
Mass per unit volume.

- Density (lbs/ft³) = Weight/Volume

The Golden Rule

- Density = Durability, not firmness



High-Density Foam
(Cellular Level)

Medium-Density Foam
(Cellular Level)

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Density (example)

Density (lbs/ft³) = Weight/Volume



3” x 26” x 48”
4 pounds

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{cubic feet = cubic inches ÷ 1,728}

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***Density = 1.84* lbs/ft³**

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IFD/ILD

Definition: The force (pounds) required to compress the foam by 25% of its thickness.

- This is the "Feel" (Soft, Medium, Firm).



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Bottoming Out

Why it occurs:

1. Using low IFD in thin cushion

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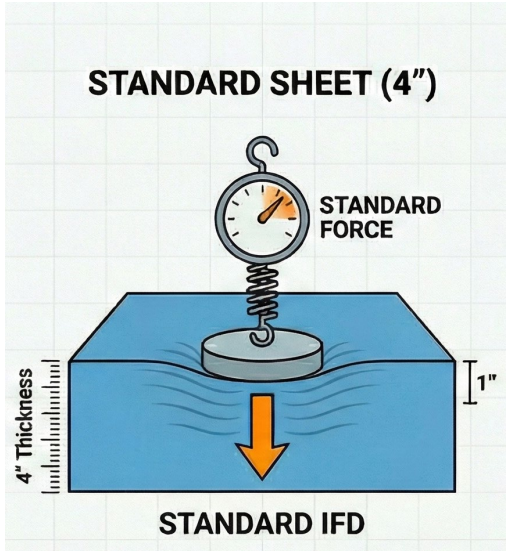




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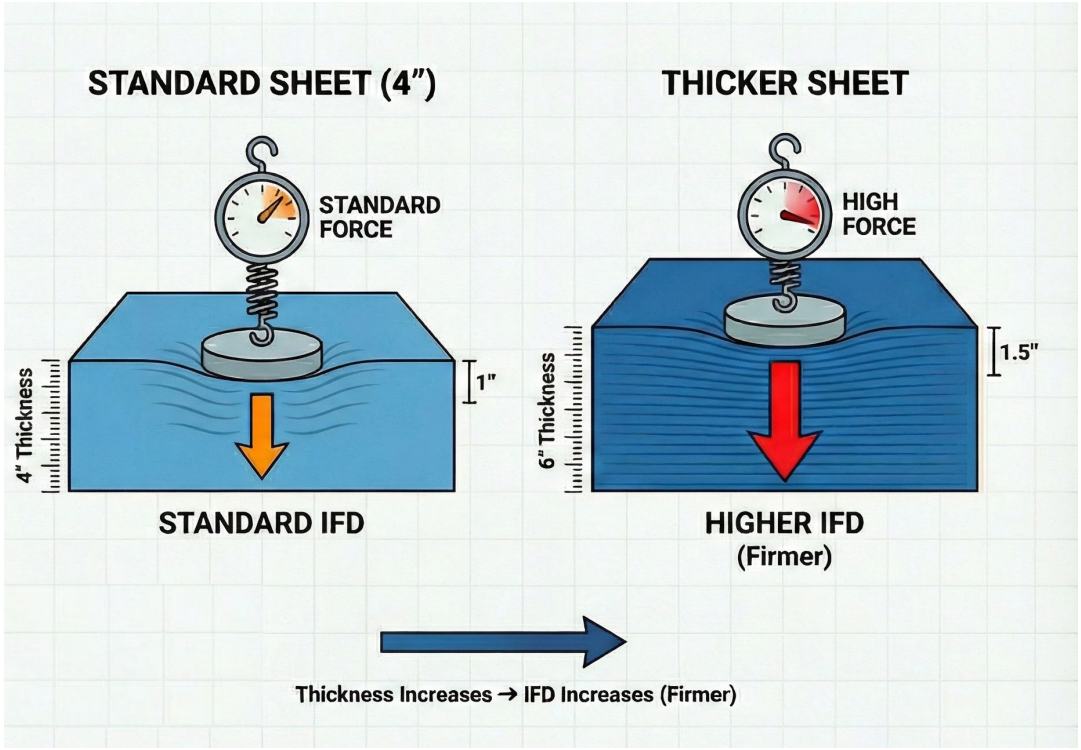




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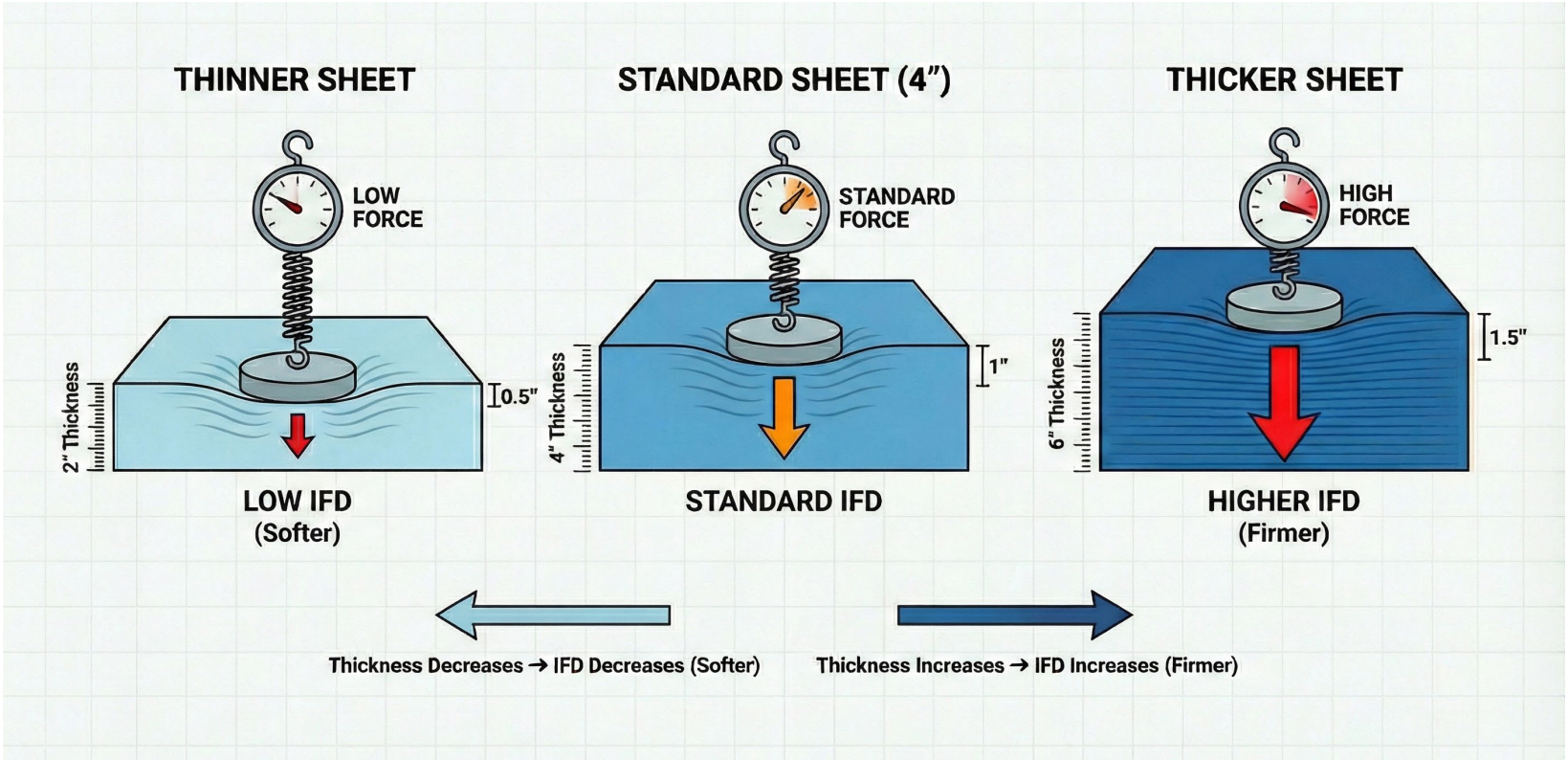




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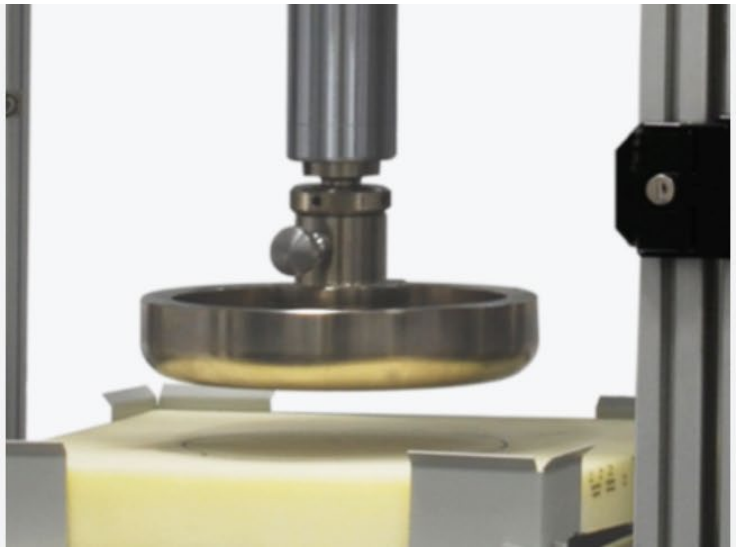


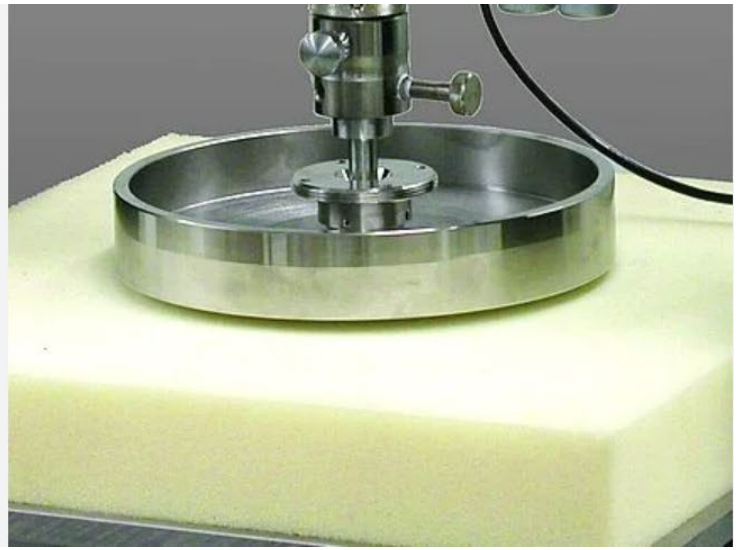
Bottoming Out

Why it occurs:

2. Low density that fatigues quickly







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Bottoming Out

Why it occurs:

2. Low density that fatigues quickly **or foam is old**

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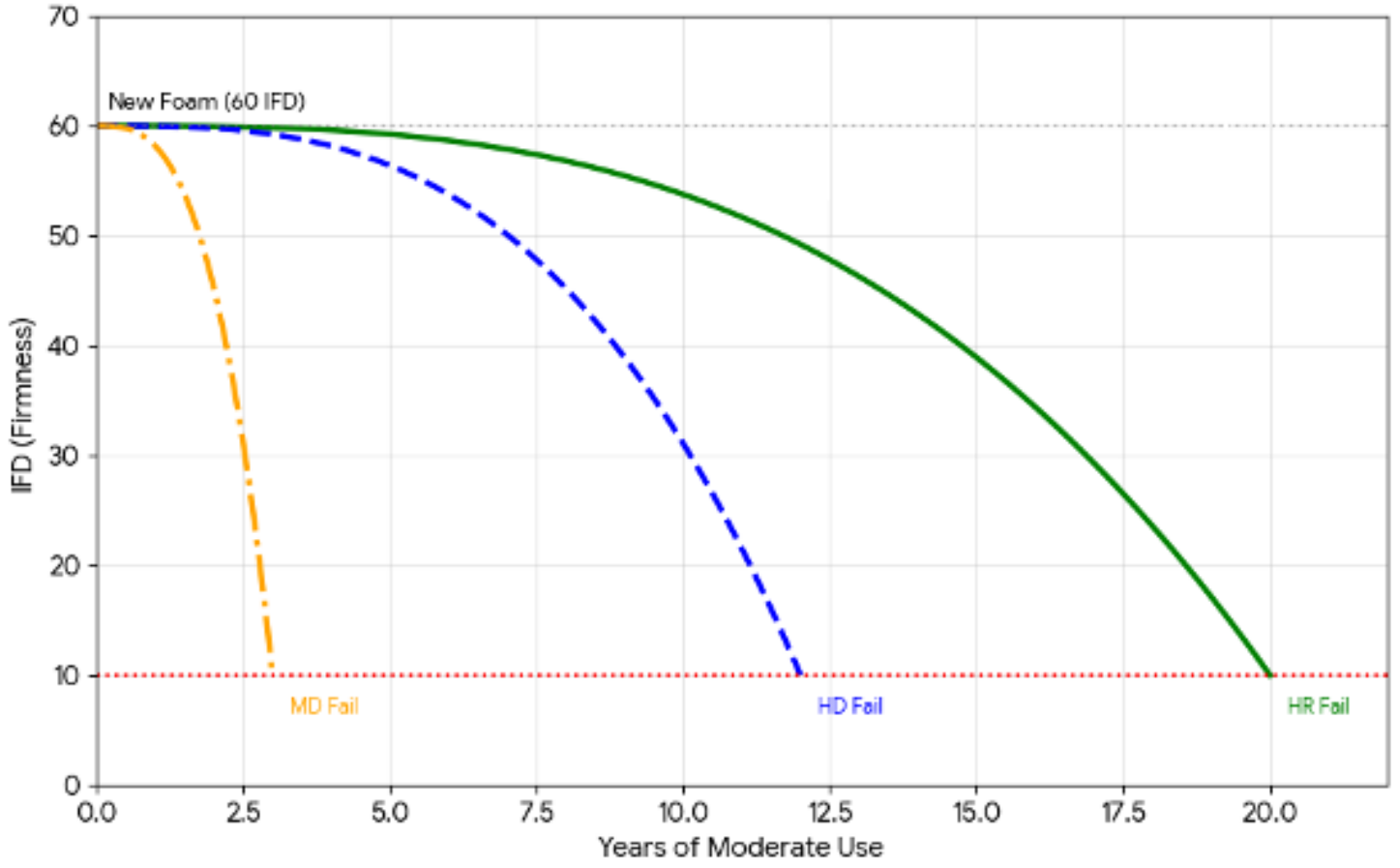




Bottoming Out

Why it occurs:

2. Low density that fatigues quickly **or foam is old**



High Resilience Foam
(Life ~20 Years)

High Density Foam
(Life ~12 Years)

Medium Density Foam
(Life ~3 Years)

Bottom Out/
Replacement Needed
(< 10 IFD)

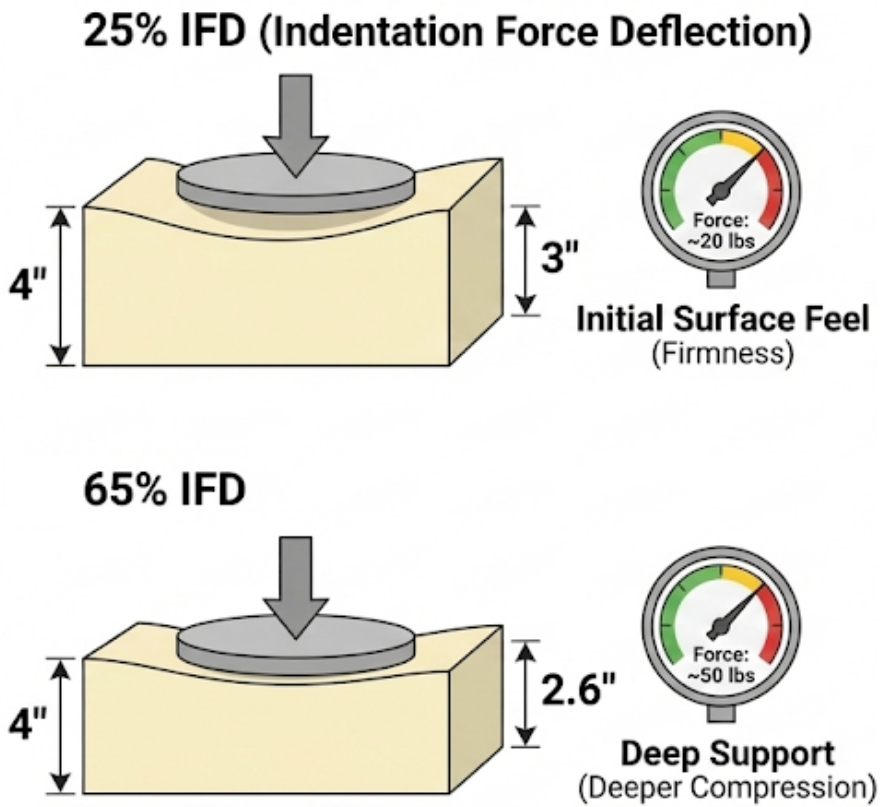
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The "Support Factor" – **Resilience**



$$\text{Support Factor} = \frac{65\%\ \text{IFD}}{25\%\ \text{IFD}}$$

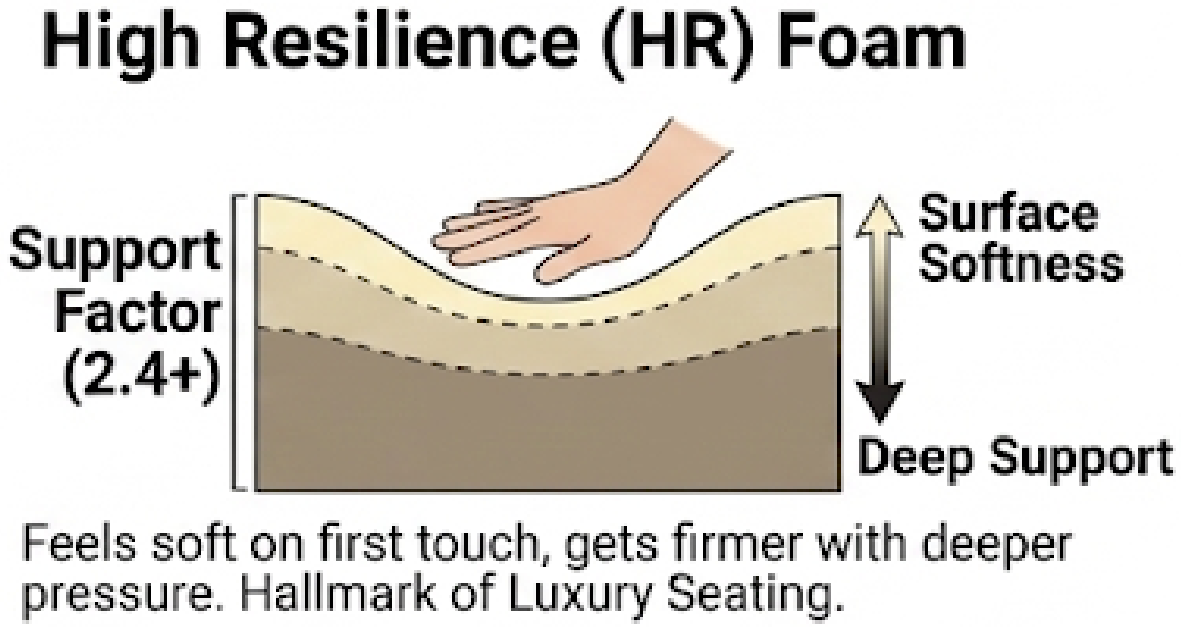
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The "Support Factor" – **Resilience**



Feels soft on first touch, gets firmer with deeper pressure. Hallmark of Luxury Seating.

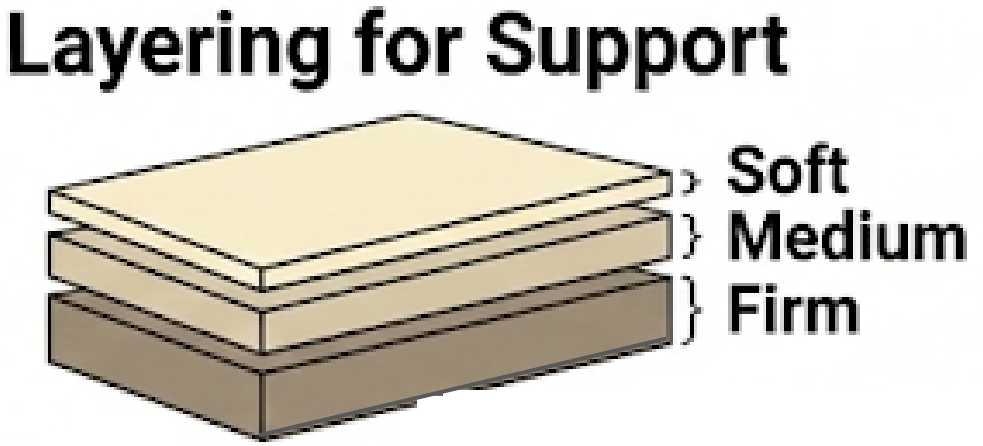
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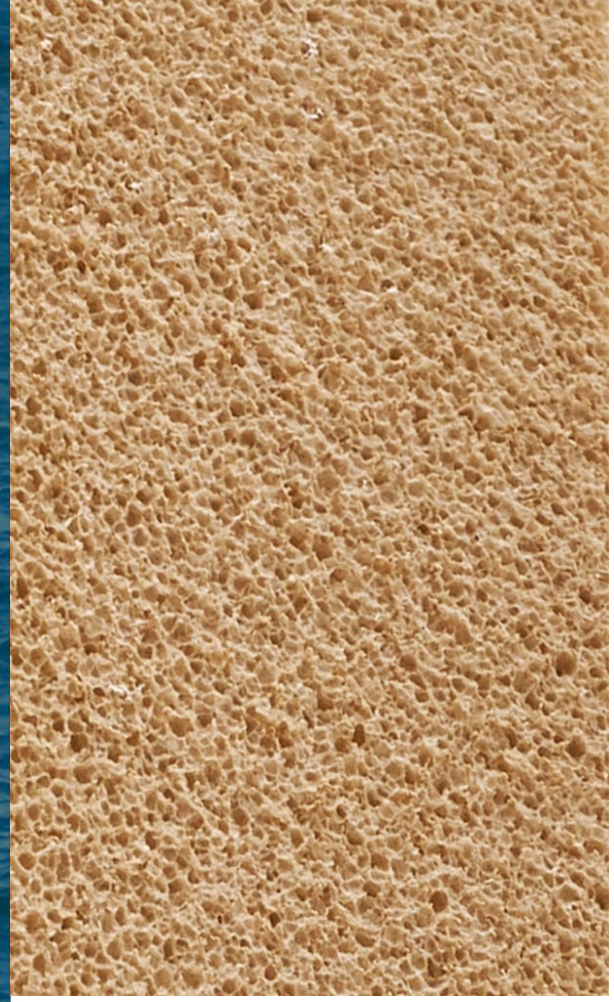
The "Support Factor" – **Resilience**



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Marine Foam
Types

Goal: Help to choose the right foam for the job.



Flotation





Flotation

High Resilience







Flotation

High Resilience

Antimicrobial



Flotation



High Resilience



Antimicrobial



Dry Fast

Fabrication & **Application**

Goal: Practical tips you can use in the shop.







Sizing and Patterning Rules – **Box Cushion**

Extra Firm IFD

- Top/Bottom plates add ¼” to seam allowance
- Boxing height add ¾” to seam allowance

Soft-Firm IFD

- Top/Bottom plates match foam
- Boxing height add ½” to seam allowance

Using Batting

- Half of combined thickness







Steaming Foam – **Principles**

Glass Transition Temperature – point at which a material goes from ”glassy” to ”rubbery”







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Steaming Foam – **Principles**

Gas Law - volume and pressure of a gas change with temperature







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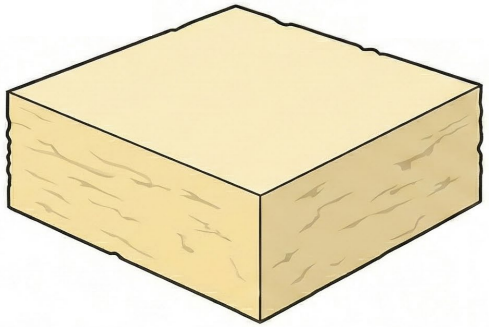






Steaming Foam – **Bring it Together**

Before Steaming (Stiff, Compressed)



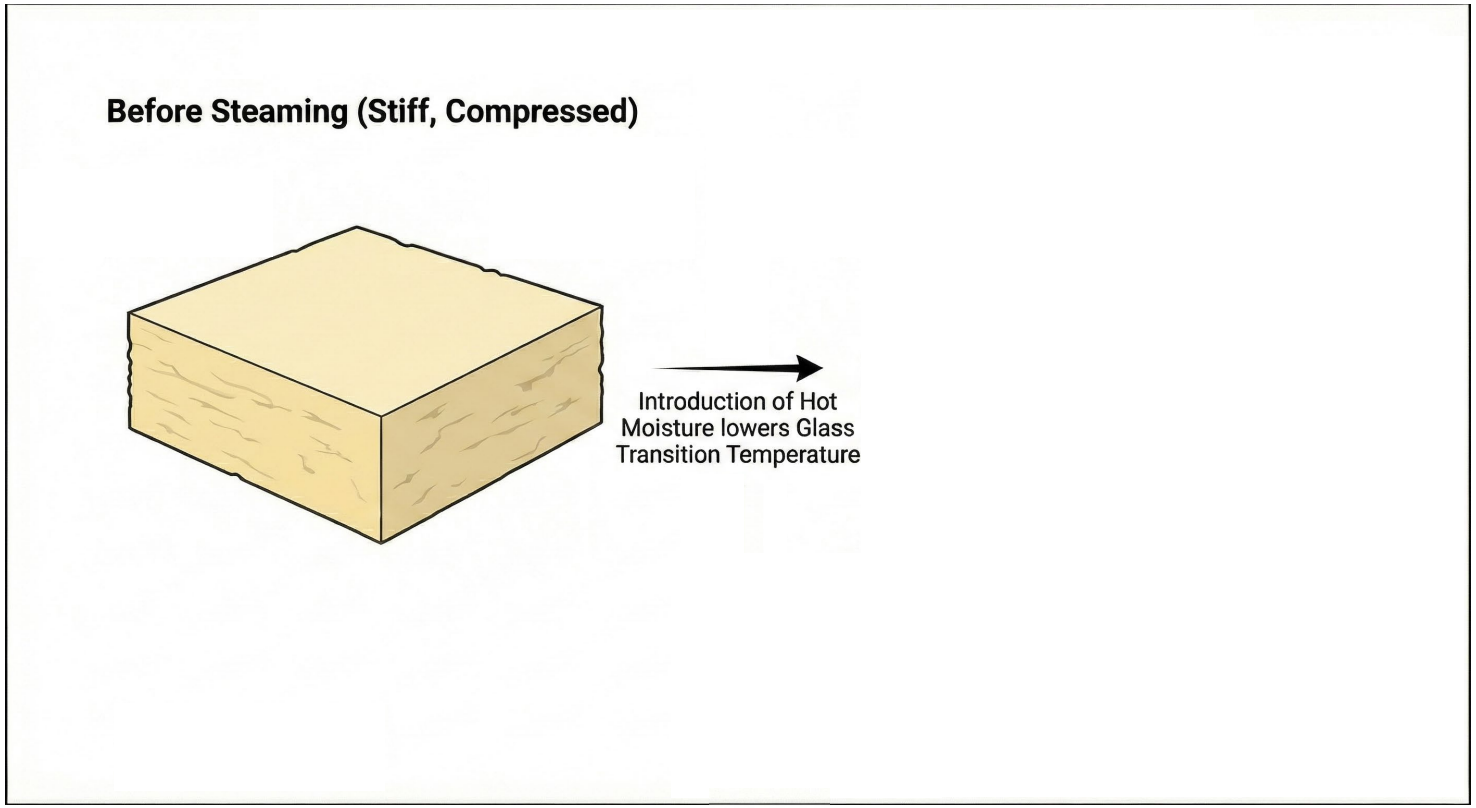






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Steaming Foam – **Bring it Together**

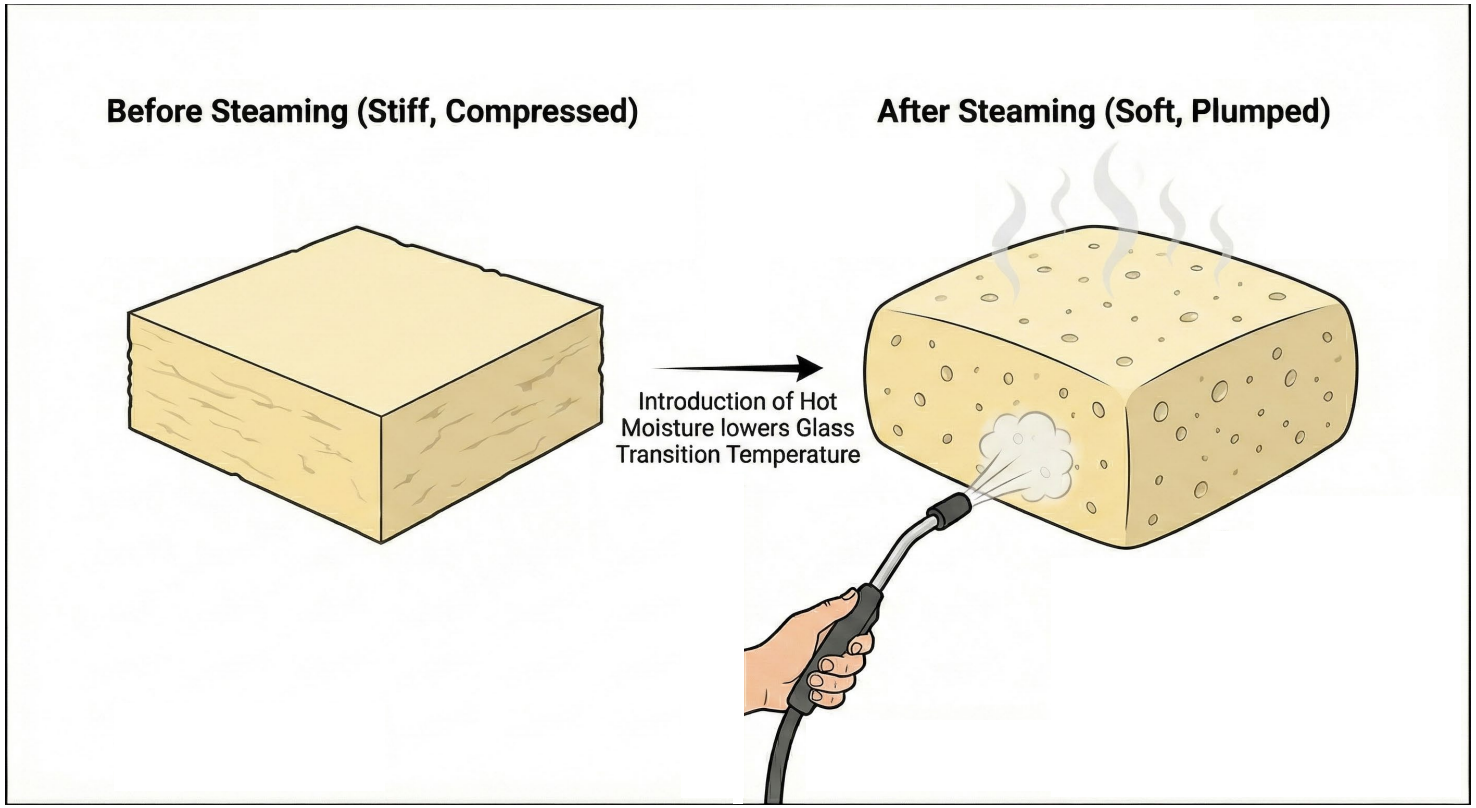








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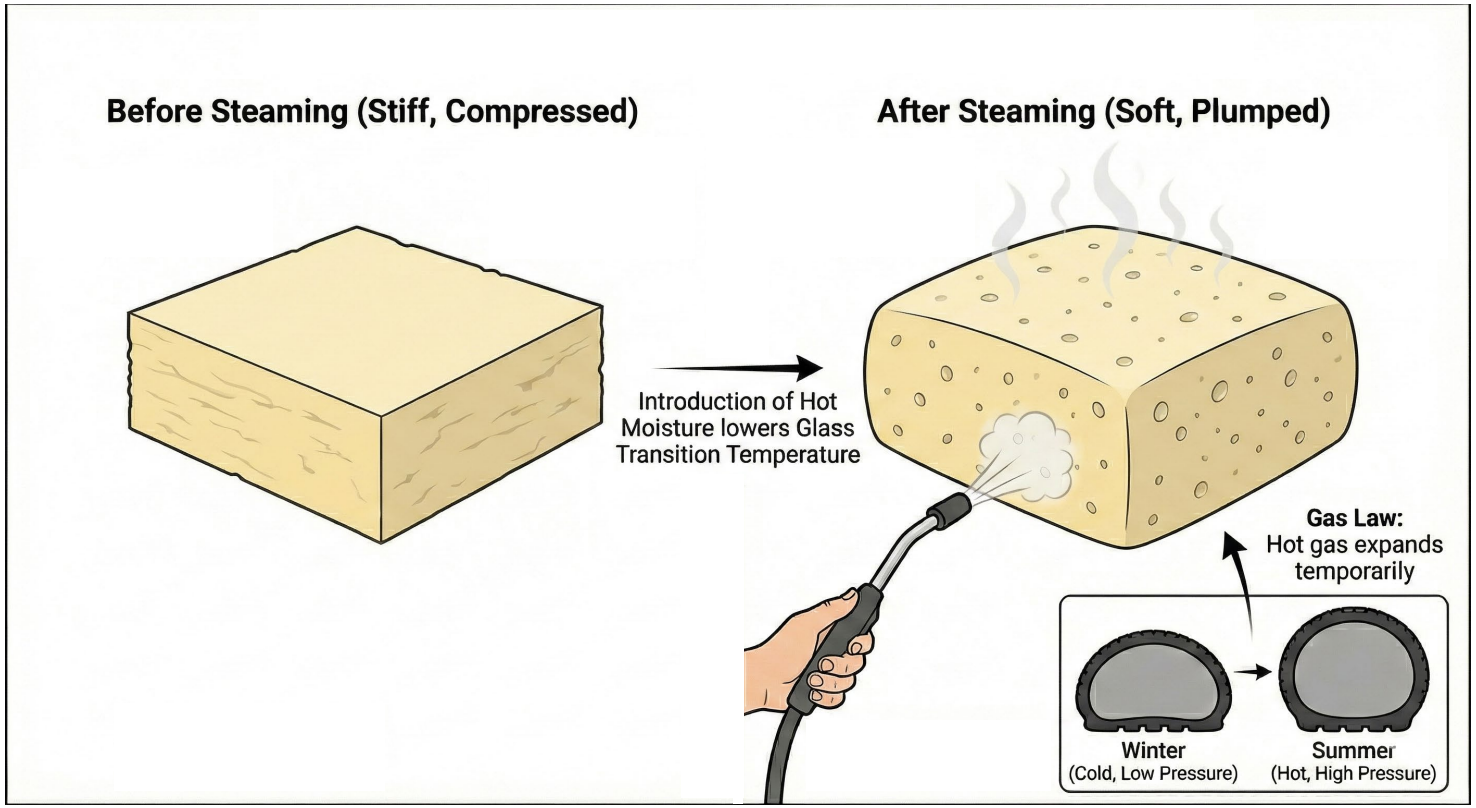








Steaming Foam – **Bring it Together**

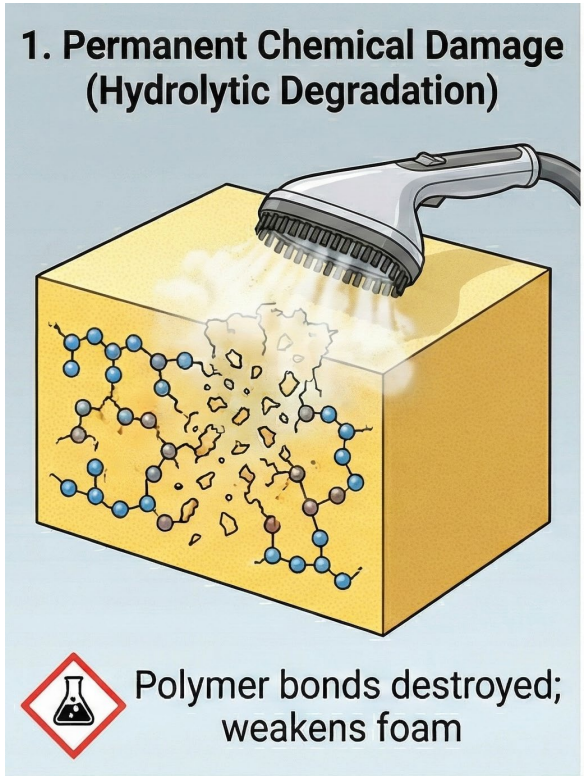








Steaming Foam – **Risks**

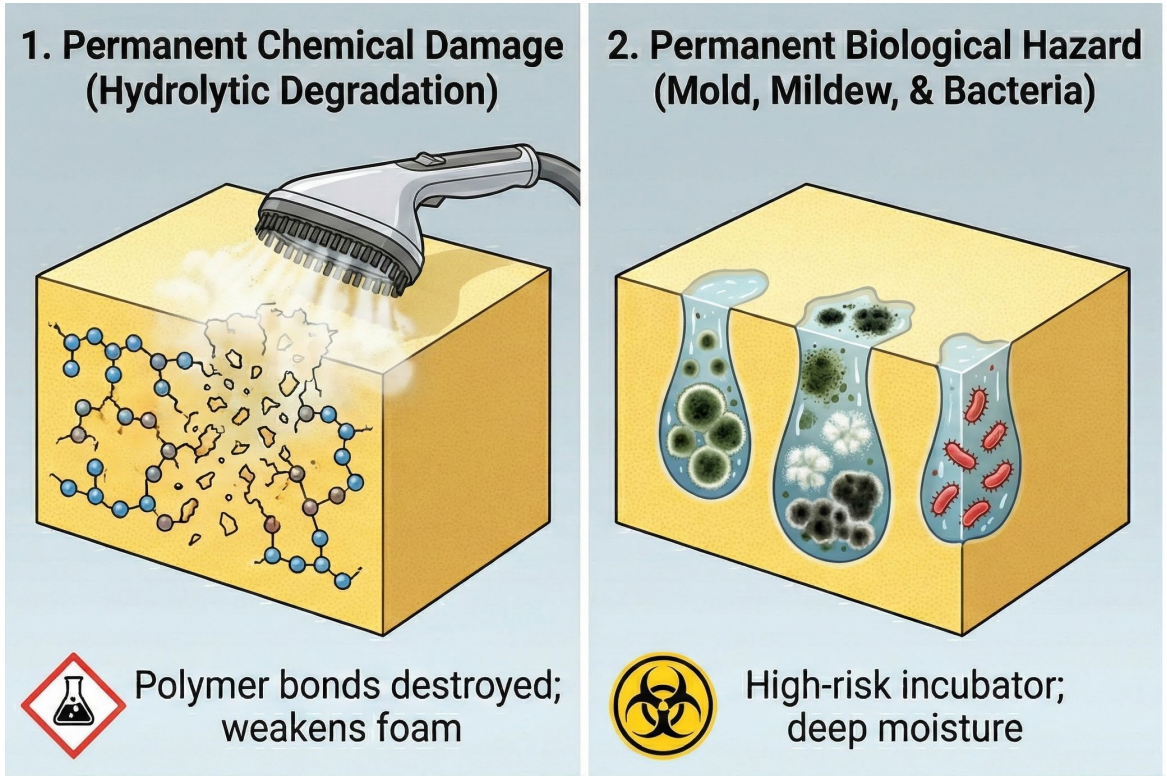








Steaming Foam – **Risks**



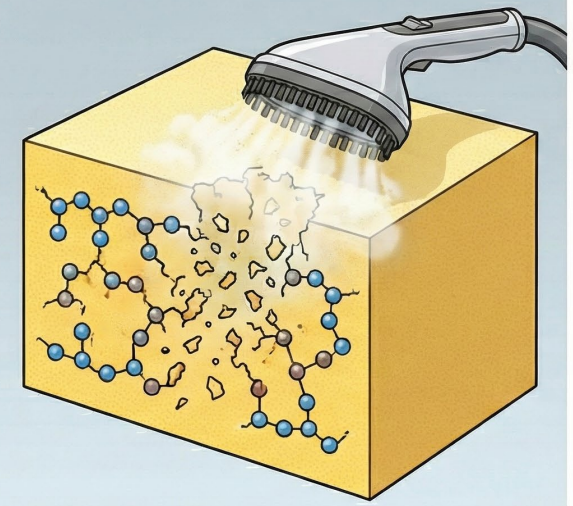






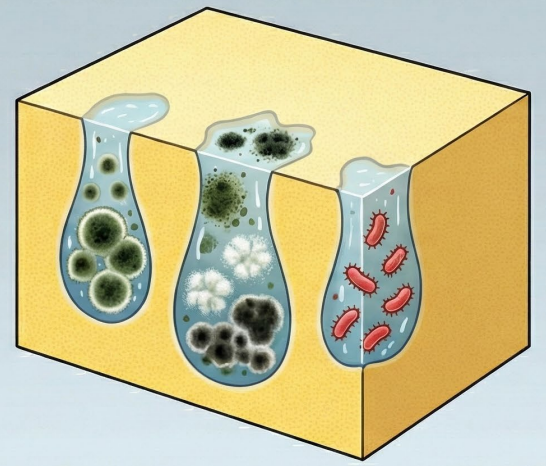
Steaming Foam – **Risks**

1. Permanent Chemical Damage (Hydrolytic Degradation)



Polymer bonds destroyed; weakens foam

2. Permanent Biological Hazard (Mold, Mildew, & Bacteria)



High-risk incubator; deep moisture

3. Collateral Damage (Adhesive Failure)



Adhesive fails due to heat & moisture







Questions?

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