

VIDEO TIMING GUIDE

Important Note

Since the *Indestructible Coating?!* video provides a comprehensive explanation, it is vital that clips are played in the correct order and timed precisely. If parts are shown out of order or mistimed, you risk giving away “spoilers” that will undermine students’ ability to construct their own understanding.

How to Use This Guide

Two sets of information are provided below. The first is the lesson sequence and corresponding 5E segment in which the clips should be played. The second is a brief summary of what occurs in each segment of the video from beginning to end.

Lesson Sequence

<i>Engage</i>	0:00–2:10
<i>Explore</i>	2:40–3:26
<i>Explain</i>	2:10–4:05 (<i>To skip the chemical reaction: 2:10–2:40 & 3:26–4:05</i>)
<i>Extend</i>	4:05–6:50

Annotated Video Timestamps

- 0:00–2:03 → Watermelon phenomenon demonstration, intro to Line-X® (polyurea) coating
- 2:03–2:10 → Line-X® (polyurea) is made of two substances
- 2:10–2:24 → Explanation for Component A (MDI), the black viscous liquid
 - 2:18 ▶ *Video-specific vocabulary (reactive)*
- 2:24–2:40 → Explanation for Component B, the colorless viscous liquid
- 2:40–3:09 → Mixing Components A & B and real-time chemical reaction
- 3:09–3:26 → Observations of the indicators a chemical reaction is occurring (e.g., gets hot)
- 3:26–4:05 → Detailed molecular explanation of the chemical reaction to form polyurea
- 4:06–4:35 → Explanation of how Line-X® (polyurea) is produced for use in the actual shop
- 4:35–5:06 → Demonstration of what happens when Line-X® (polyurea) is applied on something
- 5:07–5:40 → Description of how long the reaction takes and how long the heat output lasts
 - 5:20 ▶ *Video-specific vocabulary (cross-link)*
- 5:40–5:55 → Continuation of the demonstration of Line-X (polyurea) application from 4:35
- 5:55–6:24 → Details about how Line-X®’s (polyurea) properties are due to its molecular structure
 - 5:55 ▶ *Video-specific vocabulary (tensile strength)*
- 6:24–6:50 → Description of ways in which polyurea coatings other than Line-X® are used
- 6:50–7:08 → Video credits