https://www.youtube.com/watch?v=pbz3NGbwyuc

Nya metoden är att i Slow Cookern använda nedan uppdaterade recept på nya (men från fabrik inoljade) kedjor:

-Paraffin

-Cooking Oil Solidifier (som samlar upp oljan från kedjan), https://www.drakfrukt.se/produkt/solidify-n-toss-japansk-cooking-oil-solidifier-forstelna-matlagningsoljan-3-pack/

- Pulver för antifriktion (Grafit, Tungsten eller molydenum disulfide powder)

Here's a step-by-step guide to creating your own **DIY wax-based chain lubricant** optimized for bicycle chains. This method is based on using readily available ingredients and mimics commercial products like Squirt or other wax-based lubes.

Creating a **fluid wax-based chain lubricant** that can be applied from a drip bottle requires a formulation that remains liquid at room temperature but still leaves a protective wax layer after the carrier (usually water or alcohol) evaporates. Here's how to achieve it:

Ingredients

1. **Wax Base**:
    - **Paraffin Wax** or **Microcrystalline Wax** (50–70% of the total solid wax content). Microcrystalline wax is softer and improves adhesion and flexibility.
    - Optional: Add a small amount of **Lanolin** (5–10%) to keep the wax coating slightly pliable.
2. **Solvent/Carrier**:
    - **Water** (for an emulsion-based lube, eco-friendly option).
    - **Isopropyl Alcohol (99%)** (for a solvent-based lube, faster drying). Alcohol also improves fluidity for drip application.
3. **Emulsifier (for water-based lube)**:
    - **Polysorbate 80** or **Lecithin** (1–2% of the total mixture to stabilize the emulsion).
4. **Additives (Optional)**:
    - **PTFE Powder** (e.g., Teflon) to improve slipperiness and reduce friction.

- **Graphite Powder or Molybdenum Disulfide** (for performance under extreme conditions).

Formulation Options

Option 1: Water-Based Drip Wax Lube

1. **Ingredients (Ratios)**:
    - 100g Paraffin Wax (or 70g Paraffin + 30g Microcrystalline Wax).
    - 200ml Distilled Water.
    - 2ml Polysorbate 80 or a few drops of liquid Castile soap.
    - Optional: 5g Lanolin + 1–2g PTFE Powder.
2. **Steps**:

1. Melt the wax in a double boiler.
2. Heat the water slightly (to avoid solidifying the wax when mixed).
3. Add the emulsifier to the water and stir well.
4. Slowly pour the melted wax into the water while stirring continuously to create a stable emulsion.
5. Let the mixture cool slightly and transfer it to a drip bottle.
6. Shake well before each use.

Option 2: Alcohol-Based Drip Wax Lube

1. **Ingredients (Ratios)**:
    - 100g Paraffin Wax (or 70g Paraffin + 30g Microcrystalline Wax).
    - 250ml Isopropyl Alcohol (99%).
    - Optional: 5g Lanolin + 1–2g PTFE Powder.
2. **Steps**:

1. Melt the wax in a double boiler.
2. Let the wax cool slightly, then slowly add the isopropyl alcohol while stirring. (Do this away from open flames.)
3. Stir until the mixture is fully blended and fluid.
4. Transfer to a drip bottle while warm.
5. Shake well before each use.

Tips for Application

1. **Clean the Chain:** Ensure the chain is degreased and free of old lubricant for optimal adhesion.
2. **Apply Generously:** Drip the lube directly onto each link, ensuring good coverage of rollers and pins.
3. **Drying Time:** Let the lube dry completely before riding. Alcohol-based lubes dry faster than water-based ones.
4. **Shake Before Use:** Always shake the bottle to re-disperse the wax particles before application.

Choosing Between Water- and Alcohol-Based

- **Water-Based:** Eco-friendly, but takes longer to dry.
- **Alcohol-Based:** Quicker drying, ideal for immediate use but less environmentally friendly.

Ingredients

1. **Paraffin Wax (or Microcrystalline Wax):**
    - Provides the core lubricating layer.
    - Paraffin wax is harder and less tacky, while microcrystalline wax adds flexibility and adhesion.
    - Easily sourced from hardware stores, candle-making suppliers, or online.
2. **Water:**
    - Acts as a carrier for the wax particles, ensuring easy application.
3. **Emulsifier (e.g., liquid dish soap or a cosmetic-grade emulsifier):**
    - Keeps the wax suspended in water and prevents separation.
4. **Additives (Optional):**
    - **PTFE (Teflon) Powder:** Reduces friction further (available from industrial suppliers or some bicycle shops).
    - **Lanolin:** Adds some stickiness and corrosion resistance.
    - **Isopropyl Alcohol (99%):** Aids in drying the lubricant on application.
5. **Heat Source:**

- Double boiler or a heat-safe container for melting wax safely.

Equipment

- Double boiler or heat-safe container for melting wax.
- Blender or hand whisk for creating the emulsion.
- Storage bottle (e.g., a squeeze bottle for easy application).

Procedure

Step 1: Melt the Wax

- In a double boiler, melt **100g of paraffin wax** on low heat. Do not overheat, as wax is flammable.
- If using microcrystalline wax, combine it with paraffin in a 70:30 ratio (paraffin to microcrystalline) for optimal properties.

Step 2: Create the Emulsion

- Once the wax is fully melted, slowly add **200–300ml of warm water** (not boiling). Stir continuously as you pour to prevent clumping.
- Add a few drops of an **emulsifier** (start with 2–3ml of dish soap). This helps the wax mix with the water.

Step 3: Add Optional Additives

- If using, stir in:
    - **PTFE Powder:** 1–2 teaspoons.
    - **Lanolin:** 5–10g for improved adhesion.
    - **Isopropyl Alcohol:** 20–50ml to aid drying after application.

Step 4: Blend the Mixture

- Use a blender or a whisk to create a fine emulsion. This ensures the wax particles are uniformly distributed in the water.

Step 5: Cool and Store

- Pour the mixture into your storage bottle while still warm but not too hot. Let it cool to room temperature.

Application

1. Shake the bottle thoroughly before each use to remix the emulsion.
2. Apply generously to a clean, dry chain.

3. Allow the water to evaporate completely before riding (usually a few hours or overnight). The wax will leave a dry, protective film on the chain.

Tips for Success

- **Consistency Testing:** If the mixture is too thick or thin, adjust the water-to-wax ratio.
- **Cleaning Before Application:** For the best performance, ensure the chain is free of old oil or grease before applying the wax lube.
- **Reapplication:** Reapply every 100–200km or after a wet ride.

This DIY recipe can be customized further based on your needs (e.g., adding rust inhibitors for wet climates). Let me know if you'd like detailed advice on ingredient sourcing or adjustments! 🚲✨

Here's the updated list of emulsifiers suitable for your DIY wax-based chain lubricant, focusing on **environmentally friendly options** that minimize ecological impact:

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1. Lecithin

- **Type:** Natural emulsifier derived from soy or eggs.
- **Environmental Impact:** Biodegradable and non-toxic.
- **Where to get it:** Health food stores, baking suppliers, or online.

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2. Polysorbate 80

- **Type:** Synthetic but considered low-toxicity and environmentally benign.
- **Environmental Impact:** Biodegradable and widely used in food and cosmetics.
- **Where to get it:** Online retailers, soap-making, or cosmetic supply stores.

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3. Beeswax (combined with Borax)

- **Type:** Natural emulsifier system.
- **Environmental Impact:** Beeswax is biodegradable and Borax, while natural, should be used sparingly due to potential ecological effects in high concentrations.
- **Where to get it:** Hardware stores, beekeeping suppliers, or candle-making suppliers.

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4. Liquid Soap (Castile Soap or Similar)

- **Type:** Natural emulsifier.

- **Environmental Impact:** Biodegradable and eco-friendly, especially when sourced from vegetable oils.
- **Where to get it:** Health food stores or online retailers.

Removed Emulsifiers

- **Sodium Lauryl Sulfate (SLS):** While biodegradable, SLS can be harmful to aquatic life in high concentrations and is best avoided in DIY projects for outdoor use.
- **Alcohol Ethoxylates:** These are synthetic and may have negative environmental impacts depending on the specific formulation and degradation pathway.
- **Mono- and Diglycerides:** Some sources may involve unsustainable palm oil production, which can negatively impact ecosystems.

Final Recommendations

For an **eco-conscious chain lube**, lecithin, liquid Castile soap, or a beeswax-Borax mix are the best options. These ingredients provide effective emulsification while aligning with environmental sustainability.

The emulsifiers listed (lecithin, polysorbate 80, beeswax with Borax, and Castile soap) will not **directly prevent the mixture from becoming hard** once the water evaporates. However, they can influence the consistency of the final product by keeping the wax dispersed during application. Here's a breakdown:

How Emulsifiers Work in Wax Emulsions

- Emulsifiers ensure that wax particles remain evenly distributed in the water-based mixture.
- During application, the water evaporates, leaving behind the wax. The wax will naturally form a solid layer, as it is designed to provide lubrication or sealing properties.

Preventing Hardness in the Final Layer

To keep the wax from forming a brittle or overly hard layer on the chain, you can:

1. **Add a Softening Agent:**
    - **Lanolin:** Adds flexibility and reduces the brittleness of the wax. Use around 5–10% by weight.
    - **Microcrystalline Wax:** A softer wax than paraffin that provides better adhesion and elasticity. Blend it with paraffin wax in a 70:30 ratio (paraffin to microcrystalline).

2. **Fine-Tune the Emulsion:**
    - Proper emulsifiers like **lecithin** or **polysorbate 80** ensure the wax is finely dispersed, which helps it coat the chain more evenly and prevents clumping that could lead to uneven or hard layers.
3. **Control Wax Content:**
    - Reducing the wax concentration in the mixture results in a thinner, less rigid final coating.
4. **Incorporate Additives:**
    - Add **PTFE (Teflon) powder** or similar dry lubricants to enhance slipperiness and modify the texture of the wax layer.

Conclusion

While emulsifiers keep the wax in suspension during application, the final hardness is determined by the type of wax, the additives, and the formulation. For a more flexible and chain-friendly coating:

- Use softer waxes (microcrystalline or a paraffin blend).
- Incorporate additives like lanolin for flexibility.
- Adjust wax concentration to avoid thick, brittle coatings.

Would you like guidance on adjusting ratios for these components?

What is Lecithin? (Svenska: Lecitin)

Lecithin is a **natural emulsifier** that comes from animal or plant sources, most commonly **soybeans** or **sunflower seeds**. It is a mixture of phospholipids, particularly **phosphatidylcholine**, which helps bind water and oil-based ingredients together. In your DIY wax lubricant, lecithin helps **stabilize the emulsion**, allowing the wax and water to mix effectively, preventing them from separating.

Lecithin is commonly used in food products (like chocolate or margarine), cosmetics, and pharmaceuticals. It's a **biodegradable** and **non-toxic** ingredient, making it an excellent choice for an eco-friendly DIY chain lubricant.

Types of Lecithin

1. **Soy Lecithin**: The most common form, extracted from soybeans.
2. **Sunflower Lecithin**: A non-GMO alternative, popular for those avoiding soy-based products.
3. **Egg Lecithin**: Derived from egg yolks, often used in cooking and baking but less common in chain lube recipes.

Where to Obtain Lecithin in Sweden

In Sweden, you can find lecithin at several types of stores, both physical and online. Here are some options:

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1. Health Food Stores (Hälsokostbutiker)

- **Hälsokraft** (various locations)
- **Life** (several branches across Sweden)
- **Astrid och Aporna** (online store)

These stores often carry **soy lecithin** or **sunflower lecithin** in powdered or liquid form.

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2. Online Retailers

- **Adlibris**: A large Swedish online retailer that stocks lecithin from various brands, both in liquid and powder form.
- **Bodystore**: Another health-focused Swedish retailer that stocks lecithin, with a focus on natural and plant-based ingredients.
- **Swanson**: An international retailer with a presence in Sweden, offering various forms of lecithin, including sunflower lecithin.

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3. Specialty Shops (Baking or Soap-Making)

Some baking or soap-making suppliers carry lecithin, particularly for use as an emulsifier in food products or cosmetic formulations. In these types of stores, you can sometimes find lecithin in larger quantities.

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4. Large Supermarkets

- Some large Swedish supermarkets (like **ICA**, **Coop**, or **Willys**) may carry **soy lecithin** in their health food or baking sections, but availability can vary by store and region.

If you're looking for lecithin specifically for your DIY chain lube, I recommend starting with **health food stores** or **online retailers** that specialize in eco-friendly and natural ingredients.

powdered sunflower lecithin will be **perfectly applicable** for your DIY wax-based chain lubricant. It works the same way as other lecithin types and will help you create a stable emulsion between the wax and the water (or alcohol) in your lubricant. Here's how sunflower lecithin will perform in the formula:

Benefits of Powdered Sunflower Lecithin for Chain Lube:

1. **Effective Emulsification**: Sunflower lecithin will allow the wax and water (or alcohol) to blend together, preventing them from separating. This ensures that the lubricant remains evenly distributed on the chain.
2. **Eco-Friendly**: Unlike soy lecithin, sunflower lecithin is **non-GMO** and a great option if you're looking for a more natural, plant-based emulsifier.
3. **Easy to Handle**: Powdered lecithin is easy to mix and measure in your formulation, and it will dissolve well in warm water or alcohol.

How Much Sunflower Lecithin to Use

For a fluid wax-based lubricant, use about **1–2% of the total weight** of your mixture in powdered sunflower lecithin. For example:

- If you're making 300ml of lubricant (approx. 300g, depending on the water or alcohol used), you'd need about **3–6g of powdered sunflower lecithin**.

How to Use it in Your Formula

1. **Melt the Wax**: Melt your paraffin or microcrystalline wax (around 70-80% of your total formula).
2. **Prepare the Water or Alcohol**: Warm your water or alcohol slightly (not too hot) to help dissolve the lecithin.
3. **Mix Lecithin with Water/Alcohol**: In a separate container, dissolve the powdered sunflower lecithin in the warm liquid. Stir well to ensure it is fully dissolved and not clumpy.
4. **Combine**: Slowly add the melted wax into the lecithin-water mixture while stirring continuously to create an emulsion.
5. **Shake Well**: Once the mixture is cool enough, transfer it to your drip bottle and shake well before use.

Storage Tips

- Keep the mixture in an airtight container.
- If using water-based formulations, the product will need to be **shaken before each use** to keep the emulsion stable.

Powdered sunflower lecithin is a great choice, so go ahead and use it with confidence in your DIY chain lube! Let me know if you need further guidance or help with any steps!

Adding **Isopropyl Alcohol (IPA)** to your **water-based lubricant** will have several effects on the final mixture. IPA is a **volatile solvent**, which means it evaporates quickly and can alter the consistency and drying time of your chain lubricant. Here's what happens when you add IPA to the water-based mixture:

Effects of Adding IPA Alcohol to a Water-Based Chain Lubricant:

1. Faster Drying Time

- **Quicker Evaporation**: IPA evaporates faster than water, so adding it will **speed up** the drying process once the lubricant is applied to the chain. This is particularly useful if you want a lubricant that dries quickly to avoid attracting dirt and grime.

2. Improved Penetration

- **Better Flow**: IPA helps thin out the mixture, making it **more fluid** and easier to apply with a drip bottle. It will assist in ensuring that the lubricant penetrates deeper into the chain rollers and links.

3. Potential Changes in Emulsion Stability

- **Disruption of Emulsion**: IPA is a solvent and can potentially **break down the emulsion** between the wax and water, especially if added in large amounts. To prevent this, keep the IPA content low—around **5–10% of the total volume**—to avoid destabilizing the mixture.
- **Maintain Mixing**: You may need to **stir or shake** the lubricant more frequently to keep the wax, water, and alcohol properly emulsified, especially if the IPA content is high.

4. Slightly Thinner Consistency

- **Reduced Viscosity**: IPA will reduce the overall **viscosity** of the mixture, making it **thinner**. This helps with application, especially when using a drip bottle. However, if too much IPA is added, the lubricant might become too runny, and it may not provide the desired thickness once dried.

5. Improved Lubricity

- **Slicker Coating**: IPA can assist in **enhancing the slickness** of the final lubricant, leading to reduced friction between the chain and other moving parts. However, this effect will depend on the wax-to-IPA ratio, so keep it balanced.

6. Reduced Residue and Dirt Attraction

- **Less Residue**: Because IPA dries faster than water, the resulting wax coating will be less **sticky** and may attract **less dirt** over time compared to a purely water-based formula.

How to Add IPA to Your Water-Based Chain Lube:

1. **Start Small**: Begin with **a small amount** of IPA (5-10% of the total volume) to test how it affects the formula.

2. **Mix Gradually**: Add IPA **after emulsifying** the water and lecithin mixture but before adding the melted wax. This will help integrate it smoothly into the blend without disrupting the emulsion.
3. **Adjust Consistency**: If the mixture becomes too thin, you can compensate by **slightly increasing the wax content** or using a small amount of **beeswax** to increase the thickness.

Recommended IPA Content:

- **Low IPA Content (5-10%)**: To maintain stability, prevent breaking the emulsion, and avoid overly thinning the mixture.
- **Higher IPA Content (10-15%)**: For very fast drying and improved penetration, but be careful not to destabilize the emulsion.

Conclusion:

Adding IPA alcohol to a **water-based chain lubricant** can be beneficial for faster drying, better penetration, and improved lubrication properties. Just be mindful of the quantity you use to maintain the emulsion and ensure the final consistency is suitable for drip application.

Additives:

be cautious about the environmental impact of **PTFE (Teflon)**. While it is commonly used for its **excellent lubrication properties**, it is not the most eco-friendly option, as it can persist in the environment for a very long time and can be harmful to wildlife if not disposed of properly. Fortunately, there are several **eco-friendly alternatives** that can provide similar **low-friction** and **long-lasting lubricating** effects in your chain wax. Here are five alternatives to PTFE that are more environmentally friendly:

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1. Graphite Powder

- **Properties**: Graphite is a **natural mineral** that has been used for centuries for lubrication. It is **biodegradable** and has excellent lubricating properties, reducing friction on the chain.
- **How it works**: Graphite creates a **dry lubricating layer** on the chain, which helps reduce wear and friction without attracting dirt or grime.
- **Use**: You can add **1-5%** of graphite powder to your chain lube formula, depending on how slippery you want the final mixture.

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2. Molybdenum Disulfide (MoS_2)

- **Properties**: Like graphite, molybdenum disulfide is a **natural lubricant** with great **anti-wear properties** and can withstand **high-pressure** environments. It is often used in industrial applications and is **environmentally safer** than PTFE.
- **How it works**: MoS_2 forms a **lubricating film** that reduces friction, provides smooth movement, and extends the life of your chain.
- **Use**: MoS_2 can be added in small amounts, about **1-2%** by weight in your lubricant mix.

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3. Castor Oil (Hydrogenated)

- **Properties**: Hydrogenated castor oil is a **biodegradable** and **sustainable** option with natural lubricating properties. It is commonly used in greases and lubricants for its **viscosity** and ability to stay in place.
- **How it works**: Castor oil creates a **thick, tacky layer** that stays on the chain for a longer time, offering good protection against wear.
- **Use**: Typically used at about **5-10%** of the total formulation, depending on how thick or tacky you want the lube to be.

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4. Coconut Oil (Fractionated)

- **Properties**: Fractionated coconut oil is a **light, biodegradable oil** that is derived from coconut oil. It has a **lower viscosity** than other oils, which makes it suitable for light chain lubes.
- **How it works**: It helps reduce friction by providing a **slippery surface** on the chain, but it doesn't leave as heavy a residue as other oils or waxes.
- **Use**: You can use **5-10%** of fractionated coconut oil in your mixture to give it a smooth finish without it being overly greasy.

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5. Beeswax

- **Properties**: **Beeswax** is a natural, **biodegradable** wax that provides a **slick coating**. While it may not have the same low-friction properties as PTFE, it works well when combined with other lubricating agents and is eco-friendly.
- **How it works**: Beeswax offers **long-lasting lubrication** and a protective barrier against dirt and water, making it a great choice for outdoor conditions.
- **Use**: Beeswax can be used in combination with other natural oils or waxes. Typically, you would use **5-10%** in your formulation depending on the desired consistency.

Summary of Eco-Friendly Alternatives to PTFE:

1. **Graphite Powder**: Natural, dry lubricant for reduced friction.

2. **Molybdenum Disulfide**: High-pressure resistance, excellent lubrication.
3. **Hydrogenated Castor Oil**: Biodegradable, thick, tacky lubricant.
4. **Fractionated Coconut Oil**: Light, biodegradable, smooth finish.
5. **Beeswax**: Natural, creates a slick coating and water barrier.

How to Use These Alternatives:

You can experiment with any of these alternatives by adding **1-5%** of your chosen ingredient to your chain wax mixture. Start with small amounts and adjust based on your desired lubrication effect.

By using these **eco-friendly alternatives**, you can achieve a similar level of performance as PTFE while reducing the environmental impact of your homemade chain lubricant.

Where to buy:
You can buy both graphite powder and molybdenum disulfide locally in Sweden. For graphite powder, you can find it at places like Clas Ohlson or Bauhaus (sökterm: "**grafitpulver för smörjning")**, which offer products for DIY projects and industrial use. Graphite powder is often used for lubrication, and it can be found in various online stores as well.

Molybdenum disulfide (MoS_2) is also available from specialized suppliers such as Sigma-Aldrich or at some local scientific supply companies. This material is commonly used as a dry lubricant and is known for its low friction and durability. It is available in powdered form and can be purchased through online stores like Labas and Sigma-Aldrich in Sweden