



TROUBLESHOOTING GUIDE

Sigma Agriculture

Abstract

This guide was created by our Sigma Agricultural Team to help evaluate certain situations that may occur. In some cases, further investigation of an issue will be needed.

If further assessment/evaluation is needed, please be sure to send a detailed email describing your issue. Sigma will get back to you within 5 business days with Technical Support. In your detailed email, please be sure to include your contact information, and photos you may have, the core number and roll number, and any additional notes.

Table of Contents

Abstract	1
Film Storage	3
Film Storage Recommendations	3
Reading Sigma's Core Label - Example Label	4
Equipment Tension	5
To measure tension, please use the following steps:.....	5
To Measure tension, follow this equation to convert film stretch to a percentage:.....	5
Example:.....	5
Unwind Test	5
Measure unwind force before loading onto equipment.	5
Overstretching	6
Loose Film	7
Is there any dirt or build up on the track of the pre-stretch unit?.....	7
Are the springs in the pre-stretch unit weak?.....	7
Film Tearing During Wrapping	7
Is the edge damaged?.....	7
Film Tearing During Wrapping	8
Is the edge damaged?.....	8
Are the rollers on the pre-stretch unit damaged?.....	8
Is the film catching any part of the wrapper prior to bale?.....	8
Spiral Tearing of Film	9
Does the edge of the roll have any damage?.....	9
Spiral Tearing of Film	9
Does the edge of the roll have any damage?.....	9
Is the film wound in a manner that makes it unusable?.....	9
Is the film showing signs of telescoping?.....	9

Table of Contents Continued

Core Misalignment	10
<i>Is the film unusable due to a flushed core?</i>	10
Film Splitting or Holes on Bale	10
<i>Is there enough film being applied to ensure total coverage with at least 6 layers of film?</i>	10
<i>Is the film showing signs of degradation from UV rays?</i>	10
<i>Do your rollers have nicks or cuts on them, such as aluminum chips?</i>	11
<i>Were bales wrapped with Sisal Baler Twine?</i>	11
<i>Were Chemical Fertilizers sprayed near the storage site of the bales?</i>	11
<i>Is the film showing any signs of livestock entry or has it been stored near detrimental outdoor environmental factors, including branches or blowing snow?</i>	11
<i>Is the film experiencing a great deal of neck-down?</i>	12
<i>Is the roll of film very easy to stretch in comparison to other rolls?</i>	12
Spoilage of Baled Material	12
<i>Were the bales wrapped with a minimum of 6 layers of coverage, with no holes present?</i>	12
<i>Were the bales exposed to fertilizers, pesticides, treated twines and materials, manure, rain or other harmful elements?</i>	12
Next Steps	13
<i>*Make sure to keep the core for the roll in question so our Quality Control Team can verify any potential issues with the film.</i>	13
Over Stretching of Film	13
<i>Check gears on your pre-stretch unit. Are they worn or binding in any way?</i>	13
<i>Any build up on the pre-stretch unit rollers?</i>	13
<i>Is the roll of film very easy to stretch in comparison to others?</i>	13
<i>Is the film catching any part of the wrapper prior to bale?</i>	14
<i>Are the holes on the bale in a straight line or randomly spread?</i>	14
Poor Film Adhesion	14
<i>Have rolls been stored in cold temperatures?</i>	14
<i>Film Storage Information</i>	14
<i>Are the rollers on the pre-stretch unit damaged?</i>	15
<i>Were the bales wrapped in the rain or on a windy, dusty day?</i>	15



Film Storage

1. Film should not be stored in direct sunlight.
2. Ideal storage temperatures are between 15° (approximately 60°F) & 20° Celsius (approximately 70°F).
3. All rolls must be handled carefully to ensure the edges are not damaged.
4. Rolls should be kept in box until moment of use.
5. Consider keeping rolls in a tractor or compartment prior to their use.

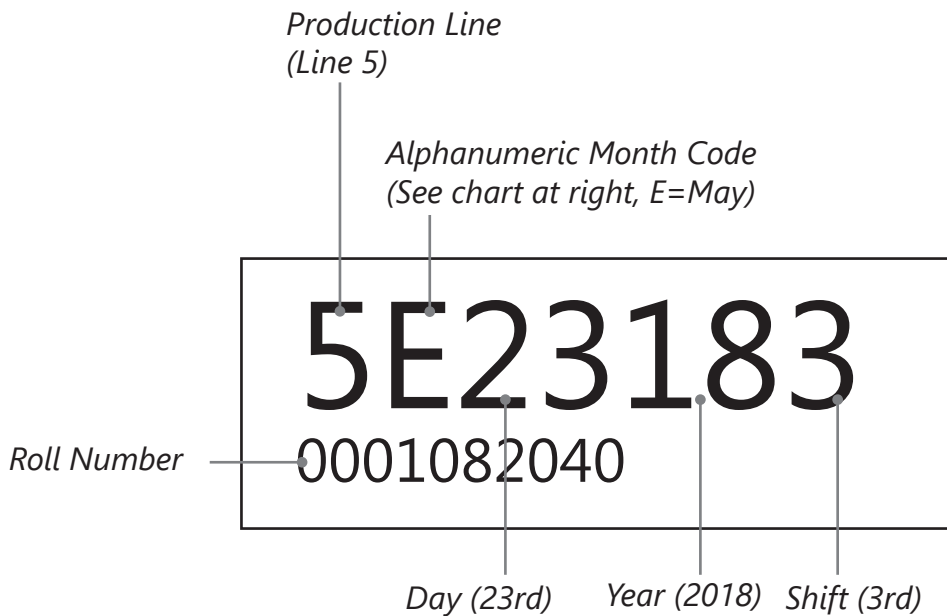
Core Misalignment can be generated by issues with machinery and (or) by external factors (i.e. weather, temperature, etc.) including higher temperatures, which create PIB migration.

Film tearing while wrapping can be generated by issues with external factors (i.e. weather, temperature, etc.) and machinery. If unable to identify issues, please see the section regarding "Next Steps" on page 16 for additional trouble shooting steps and contact information.

Film Storage Recommendations

- Film **should not** be stored in direct sunlight.
- Ideal storage temperatures are between 15° & 20° Celsius.
- All rolls must be handled carefully to ensure that edges are not damaged.
- Rolls should be kept in box until moment of use.
- Consider keeping rolls in a tractor or compartment prior to their use.

Reading Sigma's Core Label - Example Label



A roll with this label was produced May 23, 2018 on 3rd shift with a roll number of 000108204

JANUARY	A
FEBRUARY	B
MARCH	C
APRIL	D
MAY	E
JUNE	F
JULY	G
AUGUST	H
SEPTEMBER	I
OCTOBER	J
NOVEMBER	K
DECEMBER	L

Equipment Tension

To measure tension, please use the following steps:

1. Mark the roll prior to wrapping with 2 lines 10 inches apart.
2. After one revolution stop the wrap cycle.
3. Find the marks now that the film has been applied (i.e. stretched) and measure the distance between them.
4. This number should coincide with your machines pre-stretch gearing (usually 55%) +/- 10%:
 - a. If the tension is too high, extra resistance may be occurring.
 - b. If the tension is too low, film may be slipping through the carriage.

To Measure tension, follow this equation to convert film stretch to a percentage:

$$\text{Stretch percentage} = \frac{(\text{Final Measurement}-\text{Initial})}{(\text{Initial Measurement})} \times 100\%$$

Example:

$$\text{Stretch Percentage} = \frac{16 \text{ inches} - 10 \text{ inches}}{(10 \text{ inches})} \times 100\%$$

$$\text{Stretch Percentage} = 60\%$$

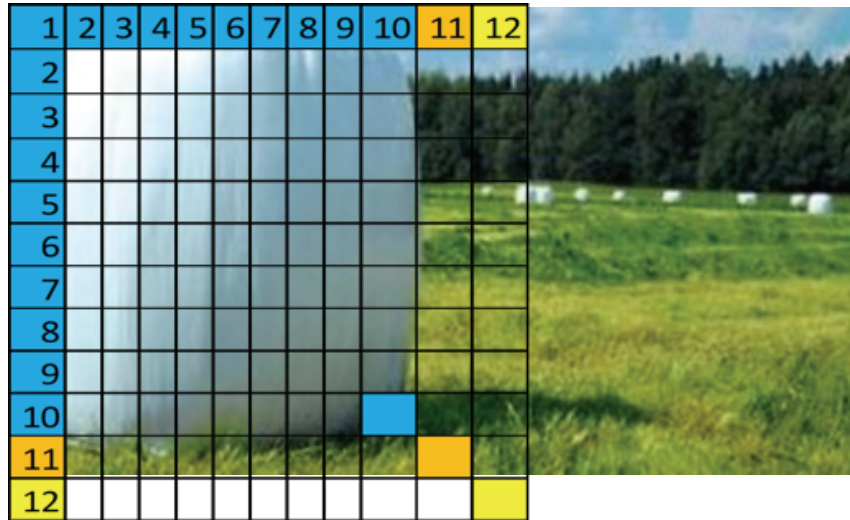
Unwind Test

Measure unwind force before loading onto equipment.

(Using a pull scale) Create an attachment point by forming a loop. Attach to pull scale. Load roll onto equipment and attach using the same looping method as in the previous step to measure the unwind force.

Overstretching

- If the material is overstretch by ONLY 10%, material surface increases by 21%.
- This would reduce tack level by 21%.
- If the material is overstretch by 20% (12x12= 144) tack level would decrease by 44%.
 - This would give you the impression that the material has no tack while wrapping.



10 x 10 = 100	Excellent Coverage and Tack Levels
11 x 11 = 121	Increase Surface Coverage and Decrease Tack Levels by 21%
12 x 12 = 144	Increase Surface Coverage and Decrease Tack Levels by 44%

Loose Film

Is there any dirt or build up on the track of the pre-stretch unit?

Roller Build Up

Issue: Over time, the tackifier used in silage film will rub on to the rollers of the machine causing the rollers to be covered in a sticky, black residue.

Solution: Clean rollers with white mineral spirit or automotive brake cleaner. Make sure that all build up has been removed from the rollers and retest.



Are the springs in the pre-stretch unit weak?

Issue: The springs inside the pre-stretch unit will weaken or break over time. This can cause lack of tension on film during application.

Solution: Replace the weak springs in the pre-stretched unit to remove slack in the system.

Loose Film Application can be generated by several outdoor ailments or issues with machinery; we were unable to pinpoint your problem.



Film Tearing During Wrapping

Is the edge damaged?

Issue: The roll was mishandled and has damaged. When rolls are dropped or damaged on the edge, the chance of film breaks increases dramatically.

Solution: Either pull the damaged film off the roll until undamaged film is exposed or replace the roll.

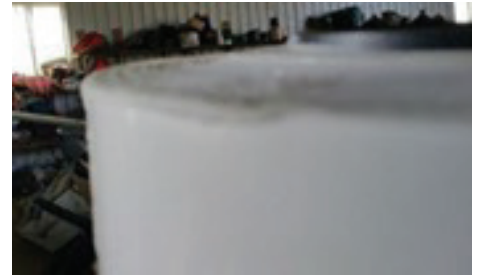


Film Tearing During Wrapping

Is the edge damaged?

Issue: The roll was mishandled and has damaged. When rolls are dropped or damaged on the edge, the chance of film breaks increases dramatically.

Solution: Either pull the damaged film off the roll until undamaged film is exposed or replace the roll.



Are the rollers on the pre-stretch unit damaged?

Issue: When the rollers on the pre-stretch units are damaged (with nicks or cut for example), this can lead to tearing of the film during wrapping.

Solution: Replace the rollers or attempt to fix the damage and try again. Additionally, clear the rollers of any debris.



Is the film catching any part of the wrapper prior to bale?

Issue: The film is catching on the wrapper before getting to the bale.

Solution: Ensure the film is threaded through the pre-stretch unit correctly and there is nothing obstructing the path of the film before trying again.

Film tearing while wrapping can be generated by issues with the machinery. If you are unable to pinpoint your issue, please see "Next Steps" on page 16 for additional steps and contact information.

Spiral Tearing of Film

Does the edge of the roll have any damage?

Film Damage

Issue: The roll was mishandled and has damage. When rolls are dropped or damaged on the edge, the chance of film breaks increases dramatically.

Solution: Either pull the damaged film off the roll until undamaged film is being used or replace roll.

Is there any build up on the pre-stretch unit rollers?

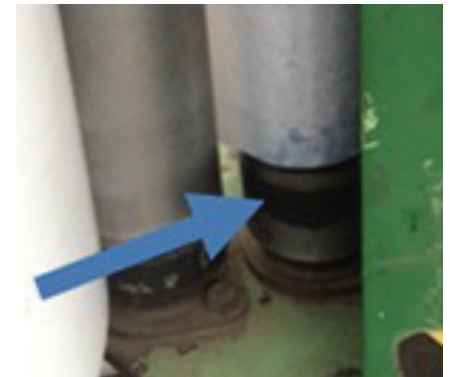


Spiral Tearing of Film

Does the edge of the roll have any damage?

Issue: Over time the tackifier used in silage film will rub on to the rollers of the machine causing the rollers to be covered in a sticky, black residue.

Solution: Clean rollers with white mineral spirit or automotive brake cleaner. Make sure that all build up has been removed from the rollers and retest.



Is the film wound in a manner that makes it unusable?

Winding Fault

Issue: Some of the ingredients used in the film can cause layers to slide between each other.

Solution: Unwind the film until any flaws have been removed. Try the roll again after unwinding. If the film is still unusable, please email us for technical assistance.



Is the film showing signs of telescoping?

Spiral Tearing due to Core Misalignment: Improper Storage Conditions

Issue: Sigma Silage Film should ideally be stored between 15°C (approximately 60°F) & 20°C (approximately 70°F).

Core Misalignment

Is the film unusable due to a flushed core?

Issue: One side of the roll is flush with the core, making it impossible for film to properly cycle through the wrapper.

Solution: If the rolls in this condition, and was stored properly, please send us a detailed email (with supporting pictures) describing your issue. Sigma will get back to you within 5 business days with the Technical Support. In you detailed email, be sure to include your contact information, any photos you may have, the core number, and the roll number of the film, as well as any additional notes or comments.



Film Splitting or Holes on Bale

Is there enough film being applied to ensure total coverage with at least 6 layers of film?

Insufficient Coverage

Issue: All Bales must be covered with at least 6 layers of film at all points. Fewer layers make the bale subject to spoilage, therefore more wraps is always recommended.

Solution: Apply enough film so that all areas of bale have at least 6 layers of film.



Is the film showing signs of degradation from UV rays?

UV Degradation

Issue: Ultraviolet light, oxygen, and heat all will degrade polyolefins and cause brittleness, color change, and product failure. However, there are additives called Ultraviolet Inhibitors that trap the free radicals which form during the photo-oxidation process, retarding the breakdown of the film. However, over time, the sun degrades the UV Inhibitors in the plastic.

Solution: The plastic is guaranteed for a period of 12 month from the date of proper application and use. If the film is showing signs of degradation within this warranty period, please contact technical support. Please be sure to include a detailed description of your issue, your contact information any photos you have, the core number and roll number of the film.



Do your rollers have nicks or cuts on them, such as aluminum chips?

Roller Damage

Issue: When the rollers on the pre-stretch units are damaged, with nicks or cuts for example, this can lead to tearing of the film during wrapping.

Solution: Replace the rollers or attempt to fix the damage and try again. Additionally, clear the rollers of all other debris.



Were bales wrapped with Sisal Baler Twine?

Issue: Sisal twine is treated with oil-based pesticides that interact with important ingredients in Stretch Film that ensure its strength.



Were Chemical Fertilizers sprayed near the storage site of the bales?

Chemical Fertilizers

Issue: Chemical Fertilizers interact with important ingredients in stretch Film that ensure its strength.

Solution: Consider storing your bales in a new location to prevent this issue.

Is the film showing any signs of livestock entry or has it been stored near detrimental outdoor environmental factors, including branches or blowing snow?

Animal Entry or Outdoor Ailments

Issue: Film splitting is usually caused by animal entry, blowing snow, uneven bales and other outdoor factors causing tearing of the film. It may be necessary to use a higher grade of film if these are common or to cover with silage sheeting – provided by Sigma AG. Holes through all layers of film are usually caused by extreme scenarios i.e. dry material, large stems, rocks etc. It may be necessary to use a higher grade of film if these are common issues.

Splits and holes must be covered with repair tape as well

Solution: The film has most likely been compromised by either an animal or livestock. Use tape to seal holes and check back for further issues.

Is the film experiencing a great deal of neck-down?

Splitting of Film can be generated by issues with machinery or various outdoor environmental factors.



Is the roll of film very easy to stretch in comparison to other rolls?

Overstretching of Film can be generated by issues with machinery. If you were unable to pinpoint your issue (but there could be an issue with your film based on its ability to stretch easier than most) please see "Next Steps" on page 13 for additional steps and contact information.

Spoilage of Baled Material

Were the bales wrapped with a minimum of 6 layers of coverage, with no holes present?

Issue: When oxygen has made its way into the bale after it has been wrapped, aerobic fermentation takes place. This is dangerous to use as feed for livestock.

Solution: Ensure all areas of the bale have at least 6 layers of coverage; however we recommend increasing the number of layers in some cases (e.g. large square bales, in extreme condition or when the dry matter exceeds 50% etc.) as these extra layers will provide a better seal and prevent oxygen from entering and help increase yield.

DO NOT FEED SPOILED SILAGE TO LIVESTOCK!

Were the bales exposed to fertilizers, pesticides, treated twines and materials, manure, rain or other harmful elements?

Issue: The bales were exposed to contaminants or rain that spoiled the material. These contaminants interact with the plastics used in agricultural products and can allow oxygen to enter.

Solution: Consider storing your bales in a new location to prevent loss. Spoilage can be generated by issues with machinery or various outdoor environmental factors. If you were unable to pinpoint your issue, please see "Next Steps" on page 13 for additional steps and contact information.



Next Steps

***Make sure to keep the core for the roll in question so our Quality Control Team can verify any potential issues with the film.**

Please send a detailed email describing your issue. Sigma will get back to you within 5 business days with Technical Support. Be sure to include your contact information, any photos, the core number, and the roll number of the film, as well as any additional notes or comments.

Over Stretching of Film

Check gears on your pre-stretch unit. Are they worn or binding in any way?

Worn Gears

Issue: Gears that have worn or been damaged can cause rollers to bind, which creates additional tension.

Solution: If the pre-stretch unit gears are worn or binding, they must be replaced. This ensures the film stretches properly without excessive resistance.



Any build up on the pre-stretch unit rollers?

Build up on pre-stretch unit

Issue: Over time, the tackifier used in silage film will rub on to the rollers causing them to be covered in a sticky residue.

Solution: Clean rollers with white mineral spirit or automotive brake cleaner. Make sure all build up has been removed from the rollers and retest.



Is the roll of film very easy to stretch in comparison to others?

Overstretching of film can be generated by issues with machinery; we were unable to pinpoint your issue, but there could be a issue with your film based on its ability to stretch easier than most. Please see Next Steps on page 16 for next steps and contact information.

Is the film catching any part of the wrapper prior to bale?

Issue: The film is catching on the wrapper before getting to the bale causing a hole to form when the film is pulled.

Are the holes on the bale in a straight line or randomly spread?

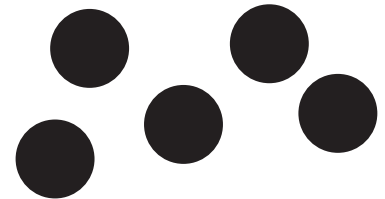
Straight Line

Holes in the film created while wrapping can be generated by issues with machinery. If the holes are mostly in a straight line, the issue is likely being created by the wrapper.



Randomly Spread

Holes in the film created while wrapping can be generated by issues with machinery. If you were unable to pinpoint your issue, please see "Next Steps" on page 16 for additional steps and contact information.



Poor Film Adhesion

Have rolls been stored in cold temperatures?

Issue: Sigma Silage Film should ideally be stored between 15°C- 20°C before use. Lower temperature may cause PIB migration where the adhesion ingredient migrates away from a portion of the film and/or pools in an area of film.

Film Storage Information

- Film should not be stored in direct sunlight.
- Ideal storage temperatures are between 15° & 20° Celsius.
- All rolls must be handled carefully to ensure that edges are not damaged.
- Rolls should be kept in box until moment of use.
- Consider keeping rolls in a tractor or compartment prior to their use.

Are the rollers on the pre-stretch unit damaged?

Issue: When the rollers on the pre-stretch units are damaged, with nicks or cuts for example, this can lead to tearing of the film during wrapping.

Solution: Replace the rollers or attempt to fix the damage and try again. Additionally, clear the rollers of any debris.

Were the bales wrapped in the rain or on a windy, dusty day?

Poor Wrapping Conditions

Issue: The film's adhesion efficiency is reduced when it comes into contact with rain, dust, dirt, or debris.

Solution: Remove any dirt from the film where possible and let dry as needed. Remember to wrap bales in optimal weather conditions.

