

Testing Paper Products in a Production Environment

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OUTLINE

- *The Resolute Trial Culture*
- *How to Avoid Surprises*
 - *Variable paper grade characteristics*
 - *Printing Process Pinch Points*
 - *Problems when changing paper Grade*

Resolute runs about 300 paper Trials at a broad range of printers annually

Highly developed Trial system

- Everyone on the same page
- Improved success rate
- Eliminates recreating the wheel
- Ability to better help with customer needs & manage expectation
- Track costs and opportunities
- Capture learnings
 - Better understand our wins and translate them to other wins
 - Better understand our losses and the Gaps and create action plans to resolve issues

Resolute Forest Products Trial Culture

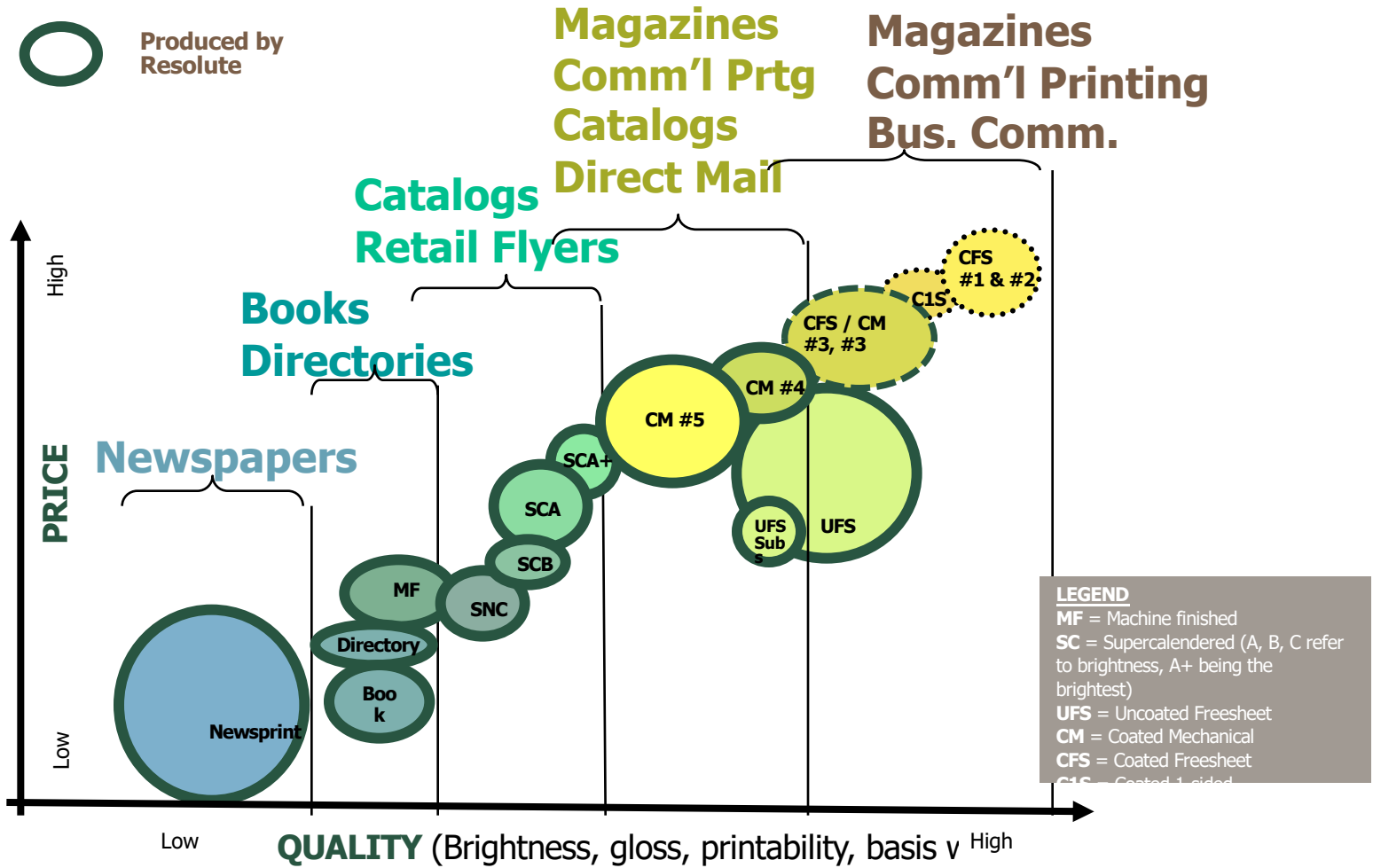
- System designed to be Inclusive
- Defined SOP
 - Defined Trial objective and Criteria for success
- Defined communications
- Defined Responsibilities
- Defined reporting system and follow up

What it takes:

- Everyone working in the same way
 - Senior Management on down
- Organization and Planning
- Communication, Feedback and Tracking
- Reporting

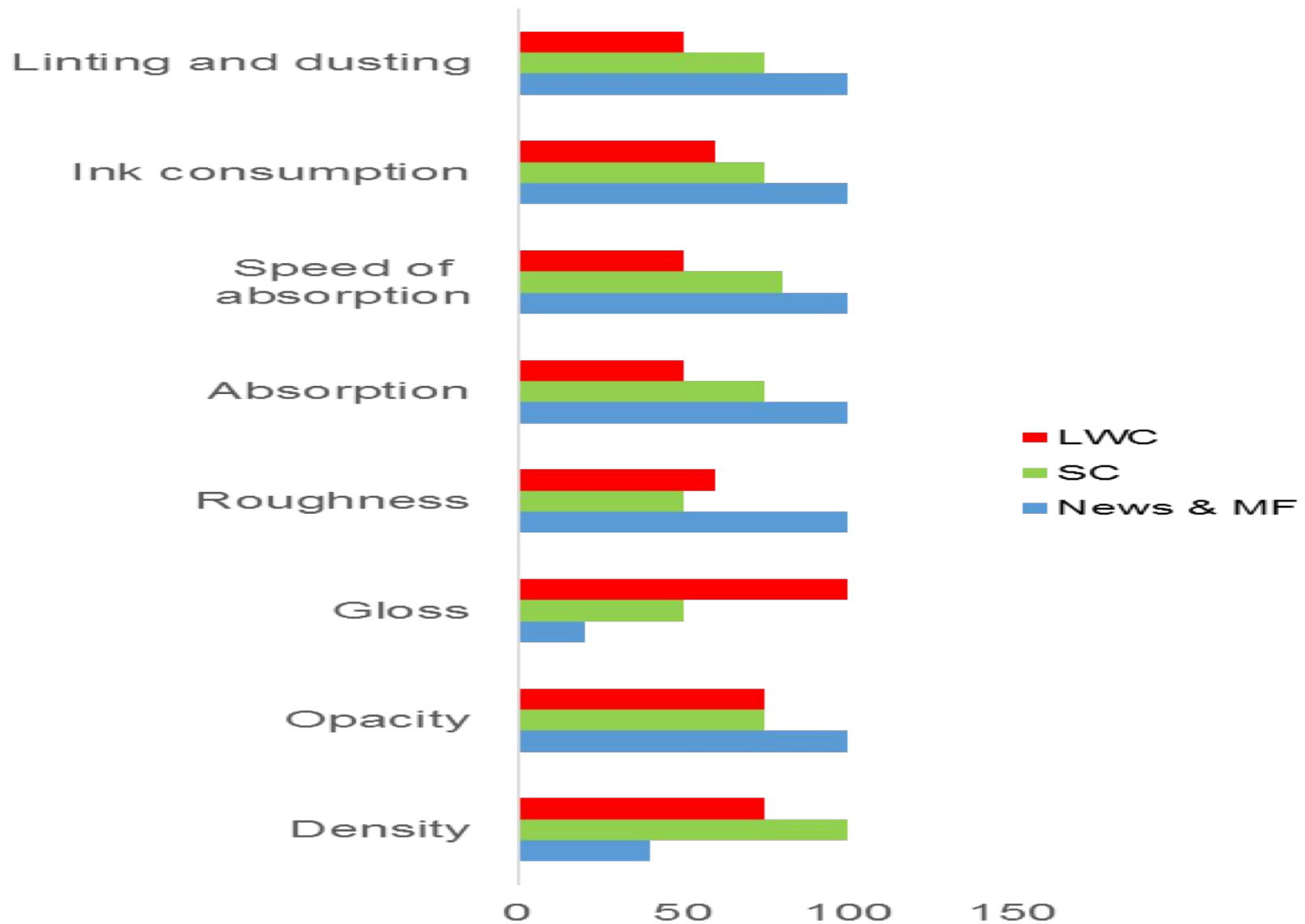
- **NO SHORT CUTS**

RFP: Broadest NA Paper Producer



Uncoated --> Supercalendered --> Coated

Comparative paper Characteristics



Different papers have variable process requirements

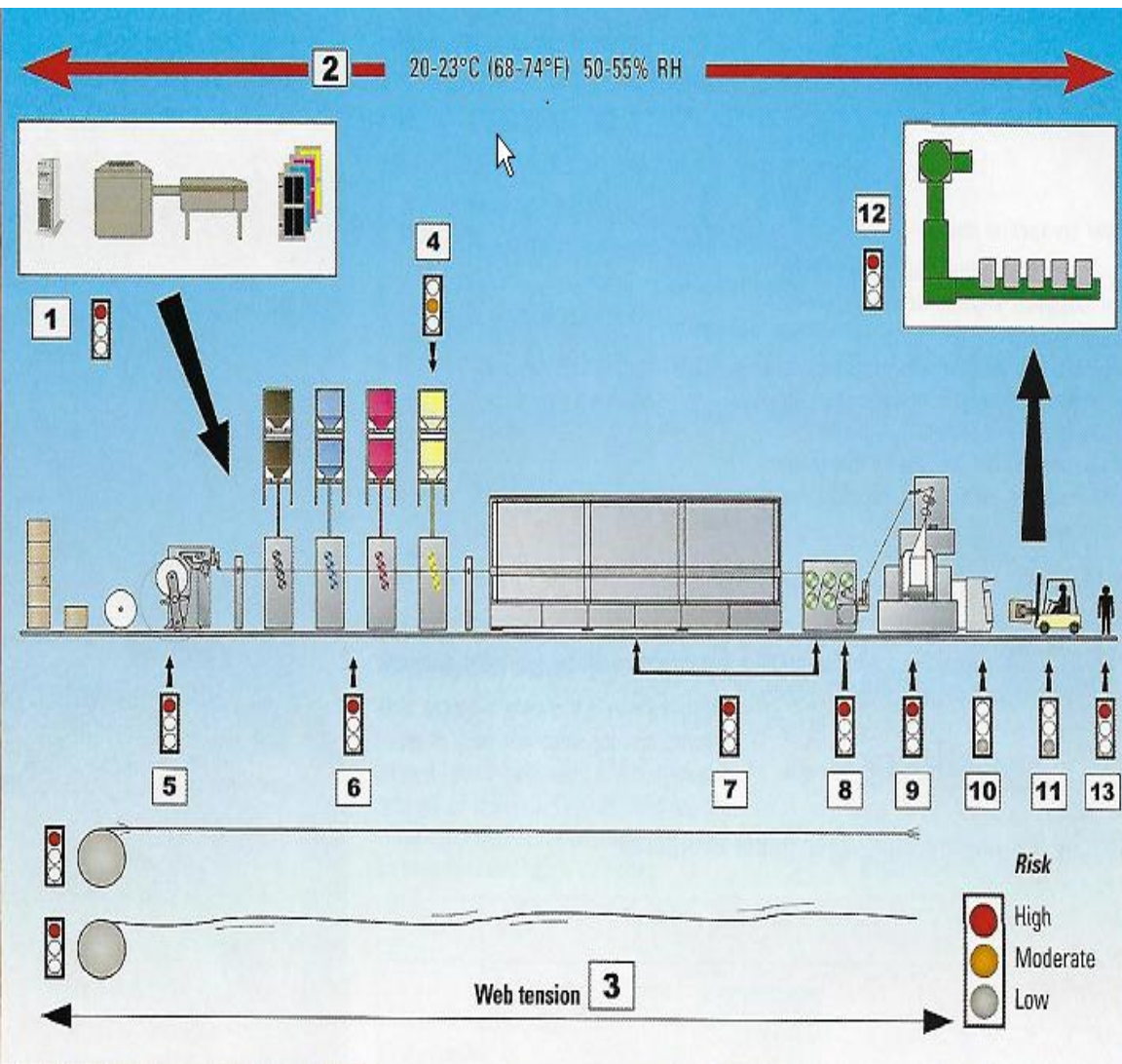
These impact:

- Pre - press
 - One of the most important factors affecting total cost and quality ..
Matching pre press profiles to the paper grade and press
- Printing
- Finishing
- Total cost

To avoid surprises: **Best Practice**

Discuss the physical characteristics of a new grade with the supplier, include if needed the Ink supplier and Fountain Solution supplier

When changing Grades the Best Practice is to optimize the entire Process System:



Key System Elements	Paper Grade Variable
1 Pre-press profile	HIGH
2 Temperature and Humidity	HIGH
3 Web Tension	HIGH
4 Ink Type / Tack	HIGH
5 Paper roll conditioning and splice	Low
6 Printing units	Low
7 Heatset system Profile setting	High
8 Remoisturizing / silicone	High
9 Folder	Low - Moderate
10 Stacking system	Moderate
11 Transport	Moderate
12 Bindery line	Moderate
13 Competencies, Communication and Training	High

20-23°C (68-74°F) 50-55% RH

1. Pre-Press Profile

High Priority

Profiles for Dot gain need to be set per grade
Different ranges due to different paper absorption qualities
In general higher dot gain lower quality
Take type of Screening into account

To Print a Dot of	A dot value of:		
	UFS	Alternative Offset	Ecopaque
Pulp	Chemical Free Sheet	(TMP) Mechanically refine	Mechanically refined with a light surface treatment
25%	19	8	20
50%	36	20	38
75%	62	44	62

2

20-23°C (68-74°F) 50-55% RH

2. Temperature and Humidity

High Priority

Controlling the Ambient Environment
Managing a stable Temp. and Humidity results in less outside stresses that could cause wrinkles or registration issues



Web tension

3

Risk

- High
- Moderate
- Low

2

20-23°C (68-74°F) 50-55% RH

3. Web Tension

High Priority

Different paper grades have variable tension profiles. Incorrect Tension settings result in erratic ribbon control, web breaks and possible registration issues.

The lighter the paper the lower the Tension requirements

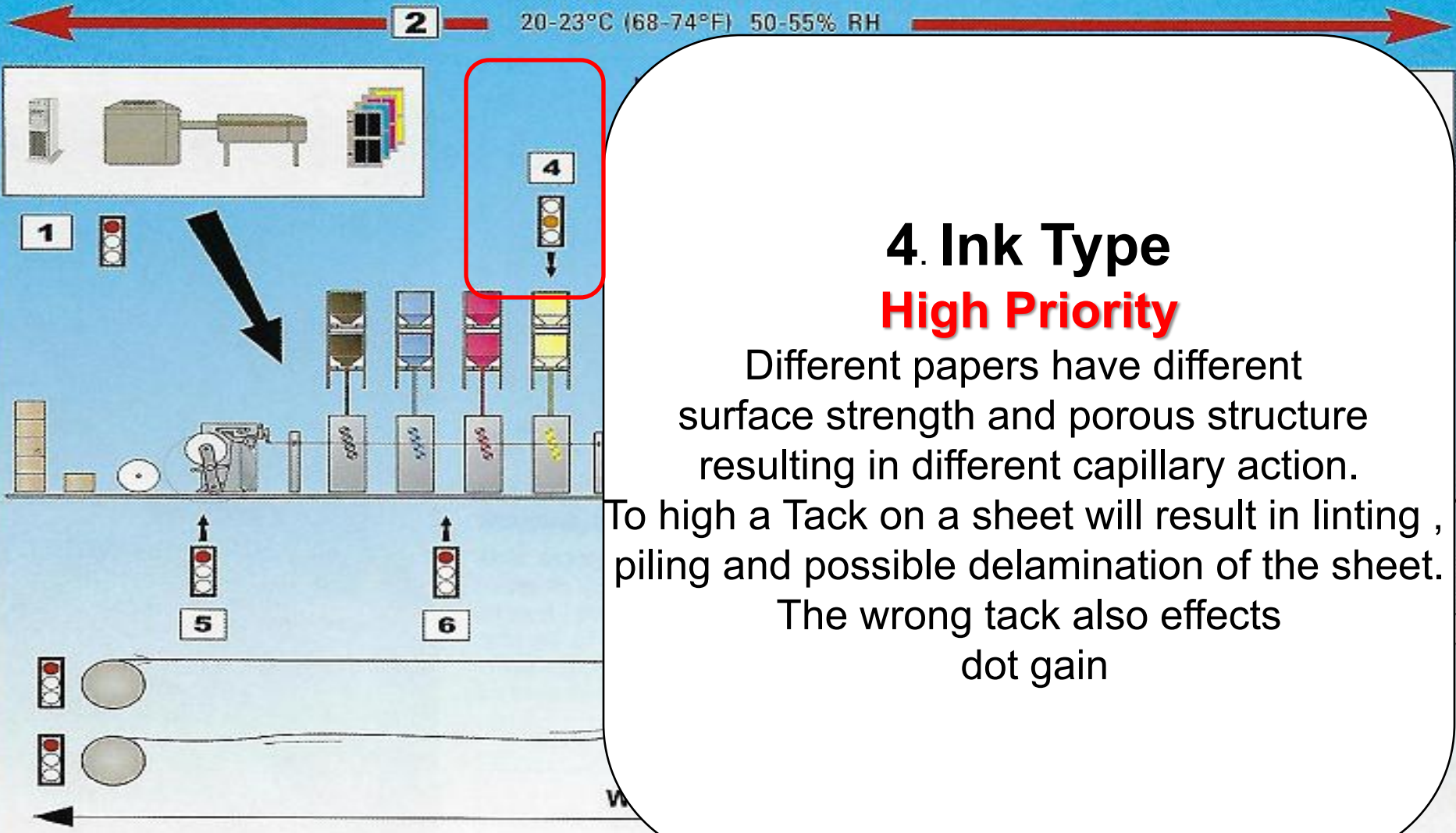
Old tape should always be cleaned up
ESPECIALLY if Basis weight reduces !

1

13

Web tension 3

High
Moderate
Low

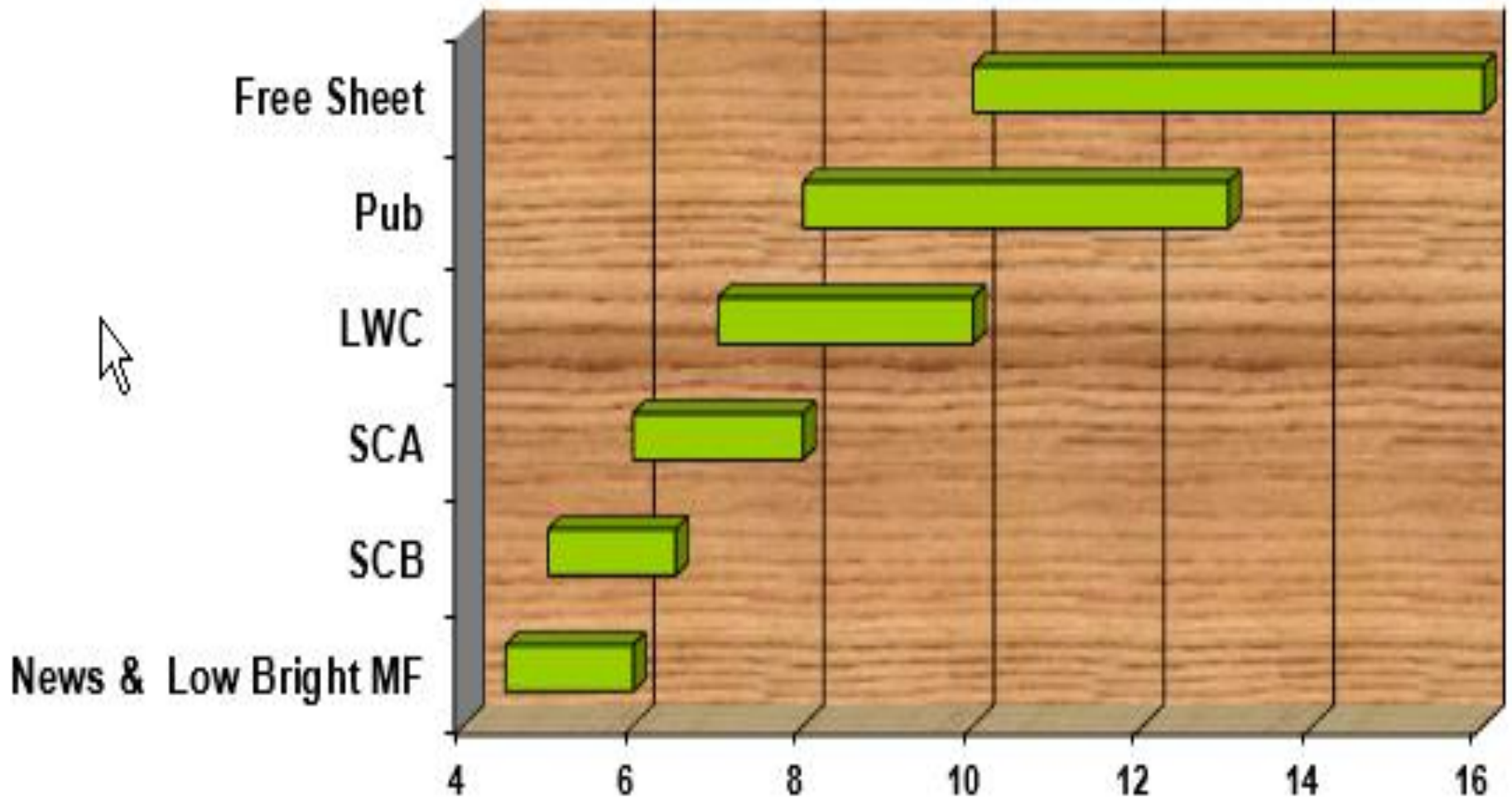


4. Ink Type

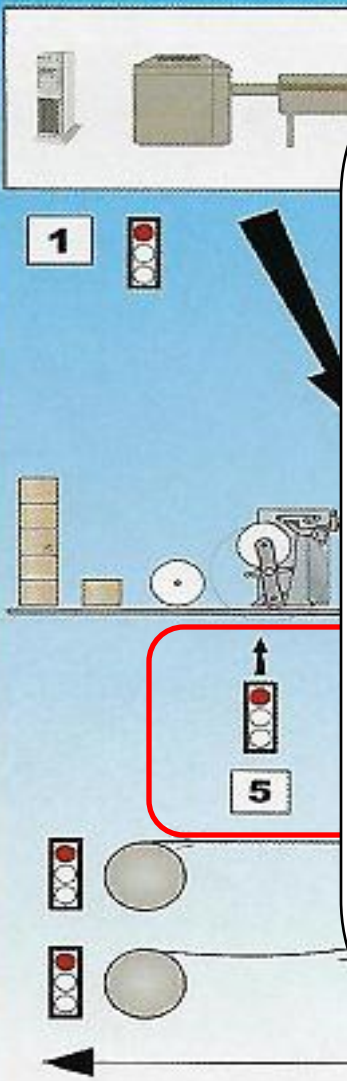
High Priority

Different papers have different surface strength and porous structure resulting in different capillary action. Too high a Tack on a sheet will result in linting, piling and possible delamination of the sheet. The wrong tack also effects dot gain

Typical Tack Ranges by Paper



← 2 20-23°C (68-74°F) 50-55% RH →



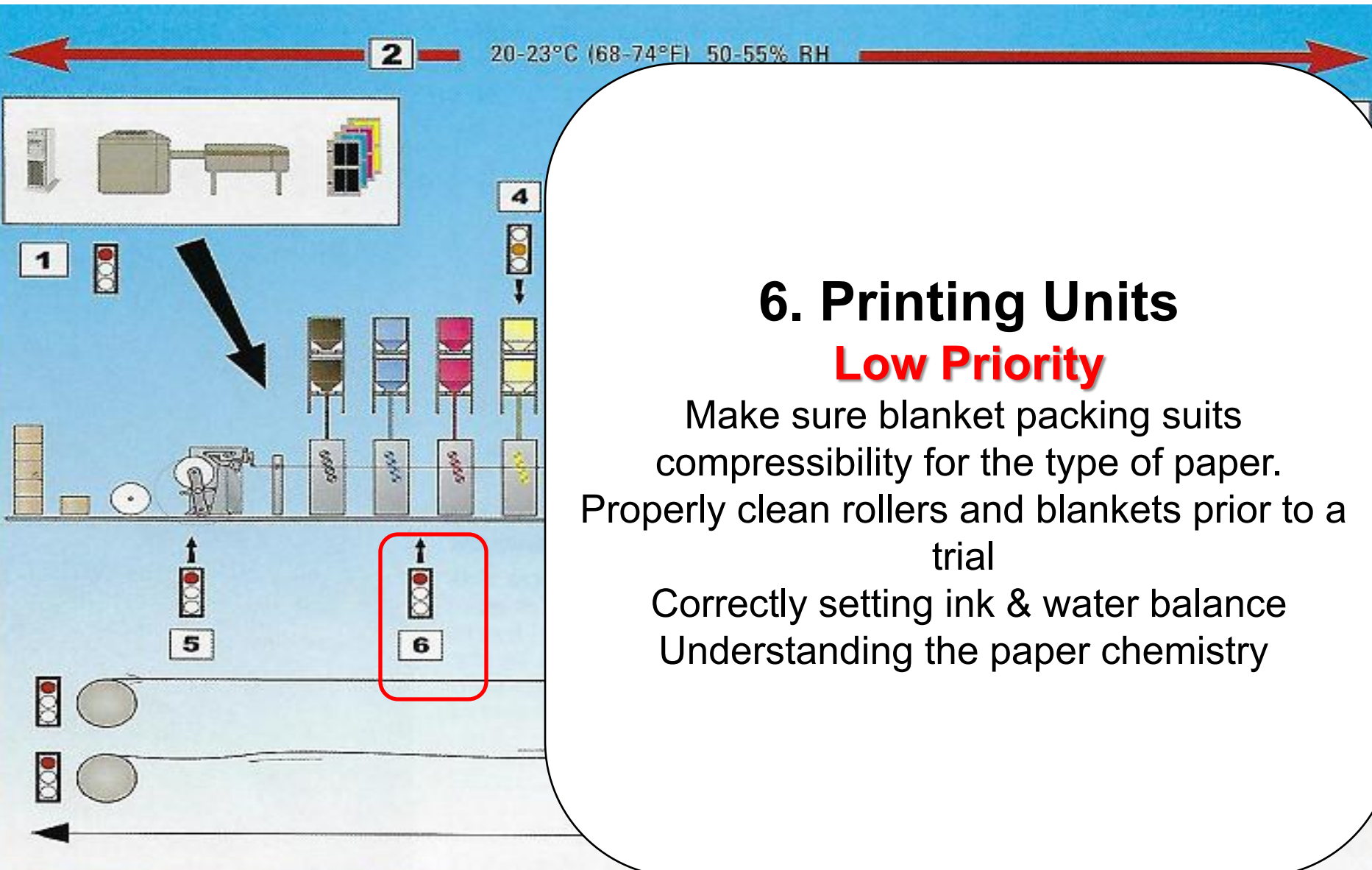
5. Paper Roll Conditioning & Splice preparation

Low Priority

Best practice: rolls should be unwrapped just prior to paster loading, Belly wrapper removed as late as possible This minimizes problems of moisture wrinkles caused due to ambient air conditions.

In Winter do not use rolls if they are extremely cold to the touch

At manufactured paper Moisture varies by grade from: as low as 4.5 (some UFS) to 9.0+% for Newsprint



6. Printing Units

Low Priority

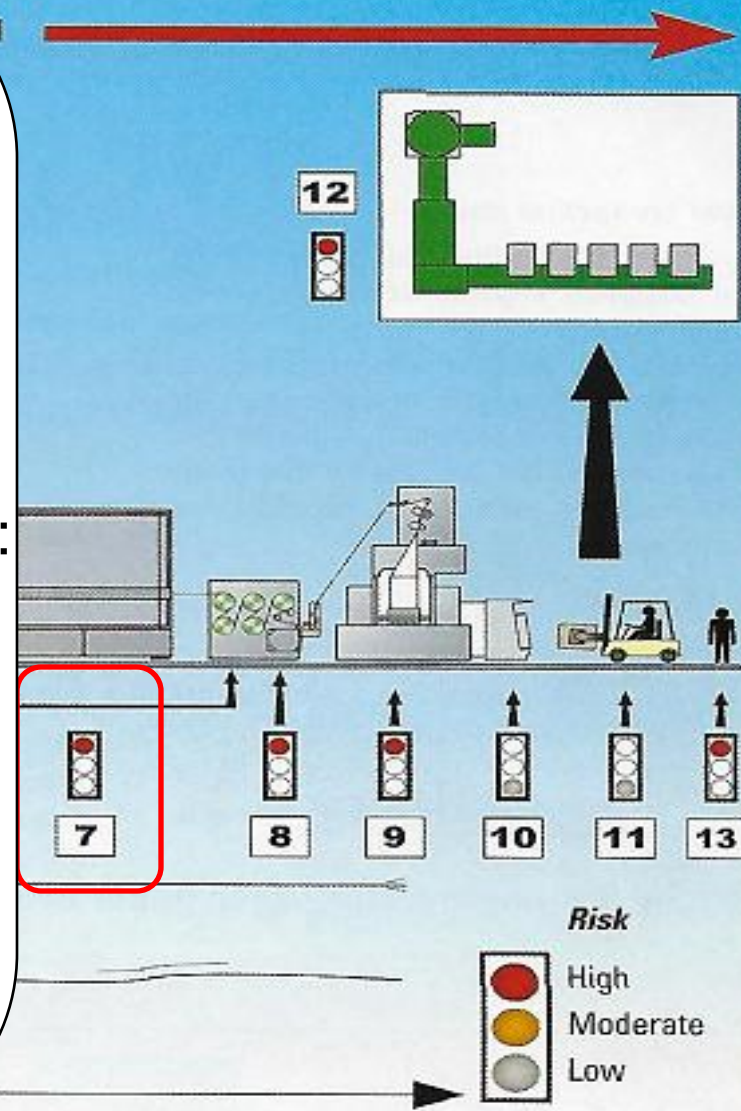
Make sure blanket packing suits compressibility for the type of paper. Properly clean rollers and blankets prior to a trial

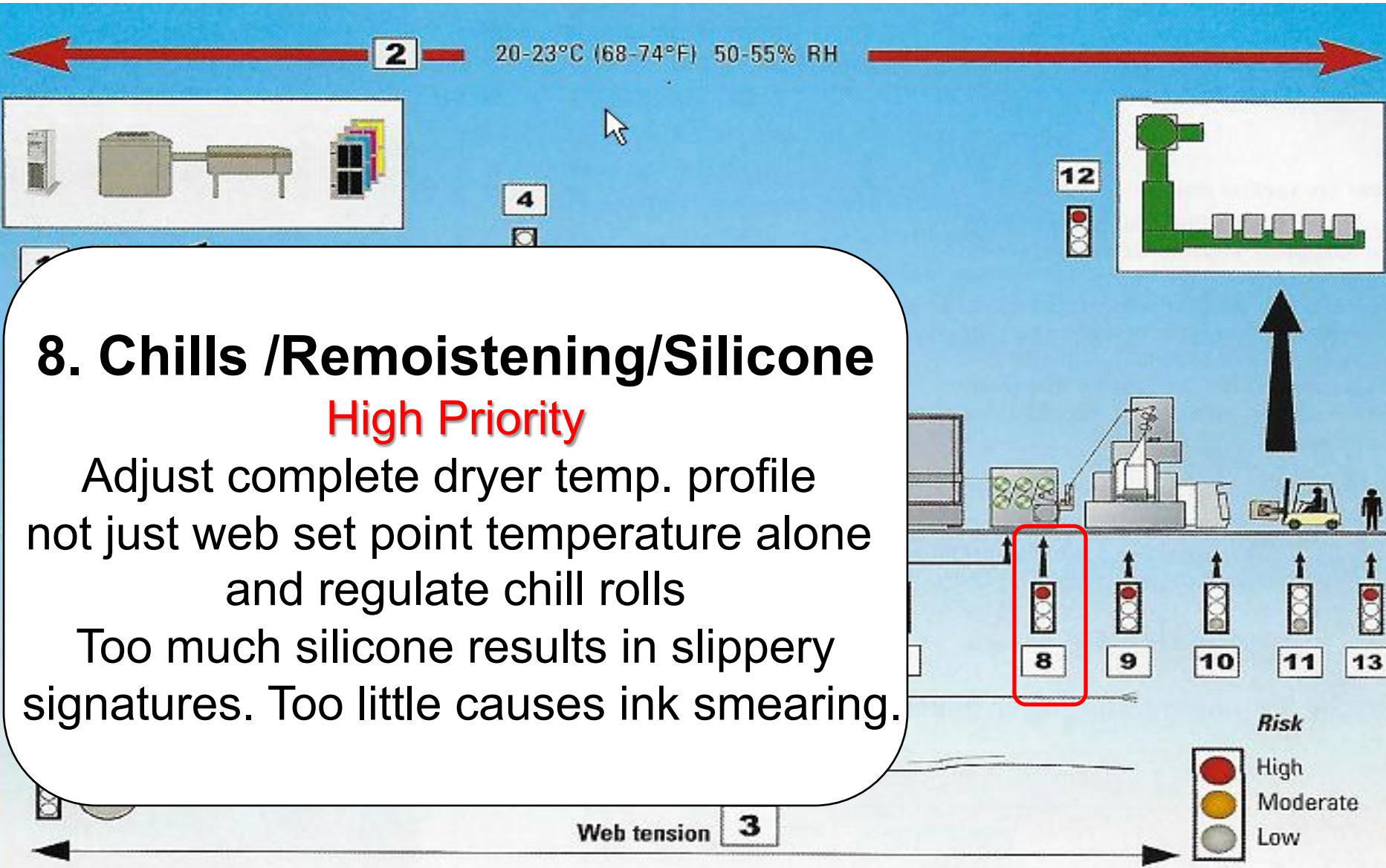
Correctly setting ink & water balance
Understanding the paper chemistry

7. Heatset System Dryer setting Profile

High Priority

Incorrect Dryer Temperatures can result in:
 sheet shrinkage
 Low print gloss
 Blisters on coated paper
 Web breaks





8. Chills /Remoistening/Silicone

High Priority

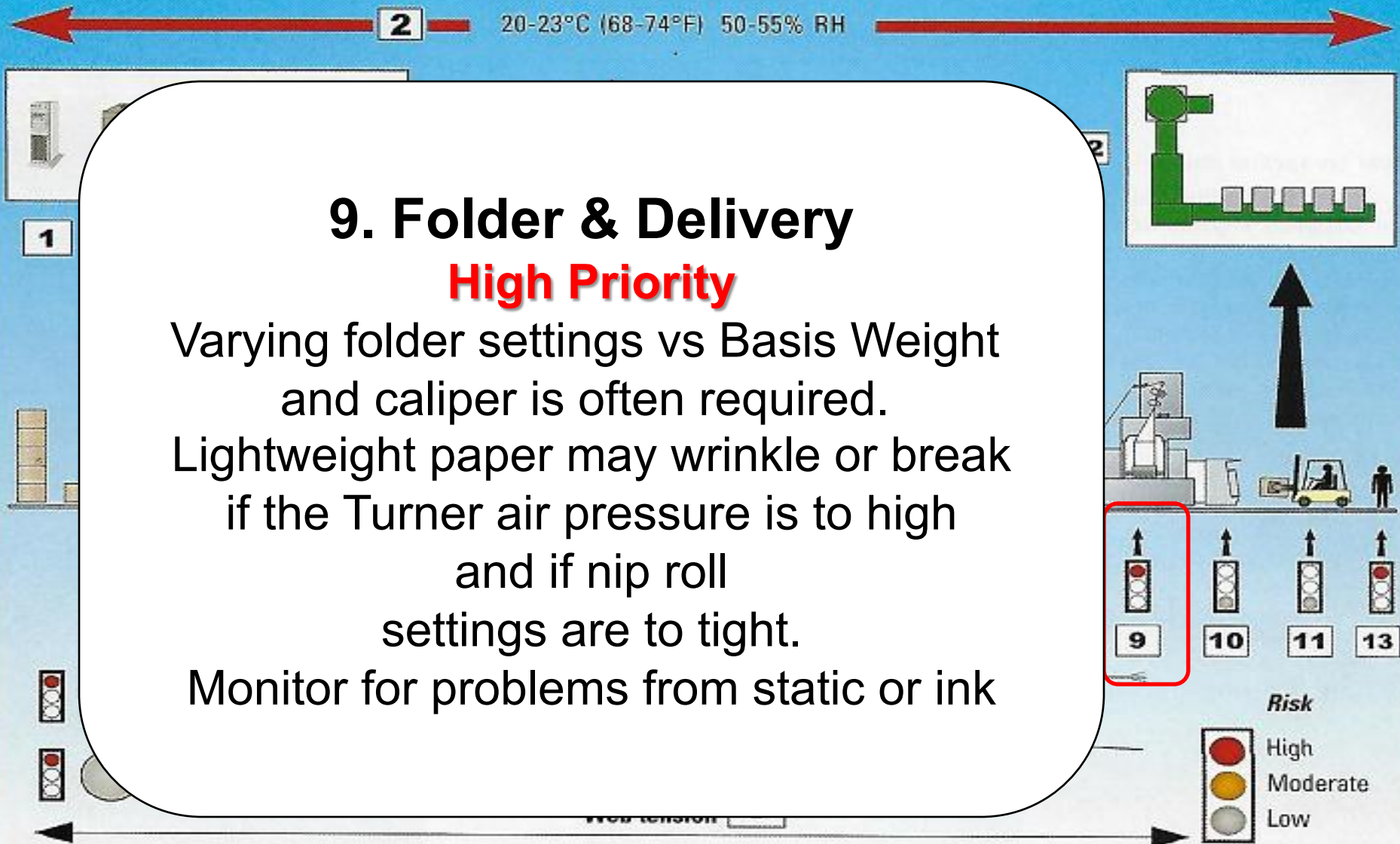
Adjust complete dryer temp. profile not just web set point temperature alone and regulate chill rolls

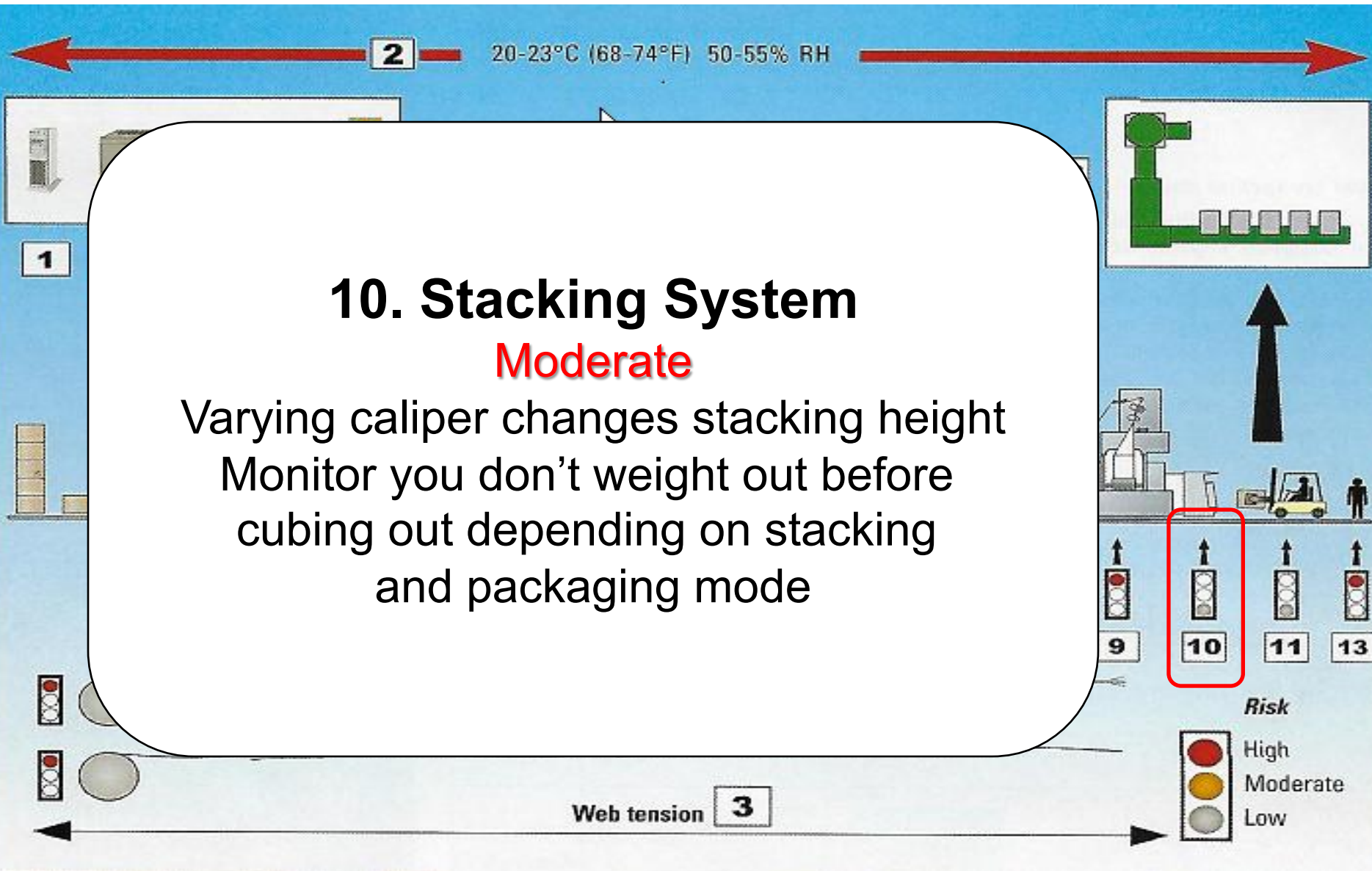
Too much silicone results in slippery signatures. Too little causes ink smearing.

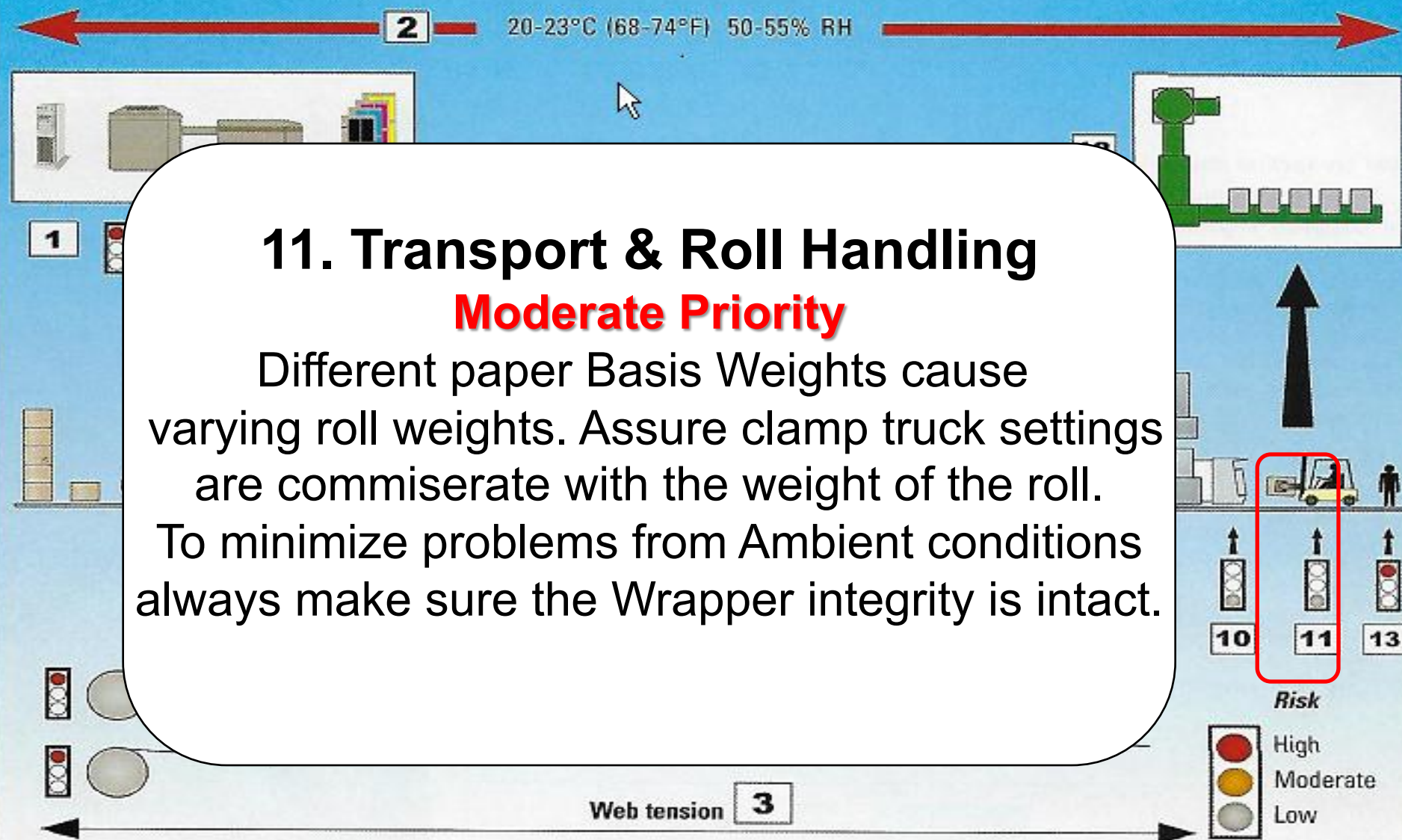
9. Folder & Delivery

High Priority

Varying folder settings vs Basis Weight and caliper is often required. Lightweight paper may wrinkle or break if the Turner air pressure is too high and if nip roll settings are too tight. Monitor for problems from static or ink





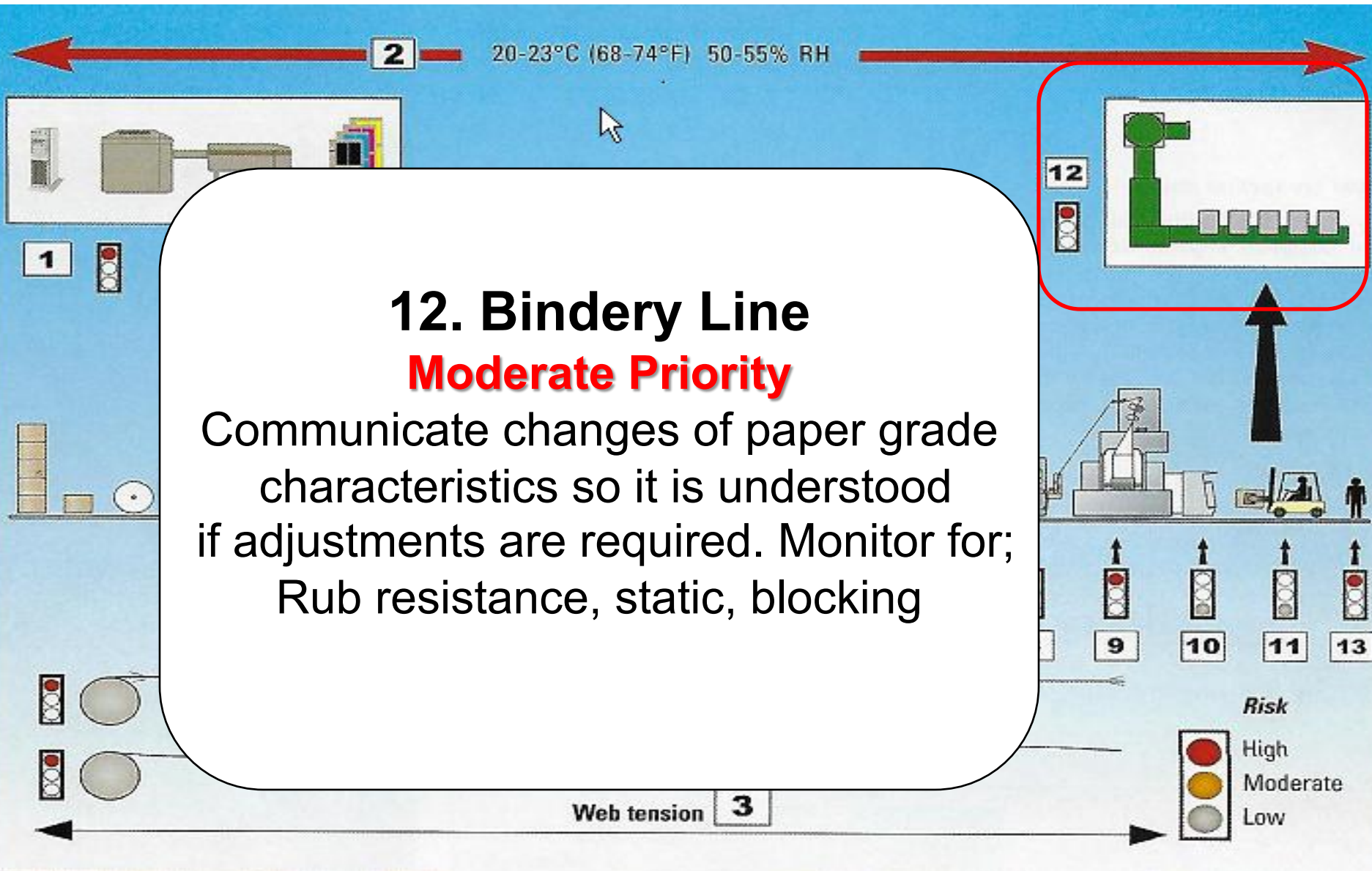


11. Transport & Roll Handling

Moderate Priority

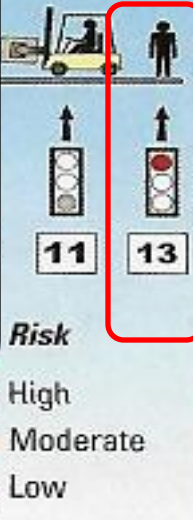
Different paper Basis Weights cause varying roll weights. Assure clamp truck settings are commiserate with the weight of the roll.

To minimize problems from Ambient conditions always make sure the Wrapper integrity is intact.



13. Culture, Communication, Competencies & Training

High Priority



Common problems when changing paper grades

Consequences: ☉ runnability ☹ *Printability* \$ *Economic*



Symptom	Consequence	Principal causes
Wrinkles on decreased Basis Weight	☉ ☹	Mechanical – issues masked at higher BW: Left over tape on rollers, out of Tram
Moisture wrinkles	☉ ☹ \$	Unwrapping roll to early/ poor ambient air conditions
Baggy web	☉ ☹ \$	Poor paper mill manufacturing
Paper ink absorption	☹	Variable with paper grade
Dot gain	☹	Variable with paper grade, pre press profile
Ink water balance	☉ ☹ \$	Variable with paper grade , pre press profile
Ink consumption	☉ ☹ \$	Variable with paper grade, pre press profile
Paper Gloss	☹	Variable with paper grade
Printed gloss	☉ ☹ \$	Variable with paper grade, excessive dampening / drying
Ink feedback	☹	Incompatible ink, dampening and temp. over inking, uncoated paper surface with loose fibers
Fiber feedback	☹	Uncoated paper surface loose fibers, incorrect ink tack
Drying difficulties	☉ ☹ \$	Variable with paper grades
Linting. Picking, piling	☉ ☹ \$	Uncoated paper surface loose fibers, incorrect ink tack or poor inking adjustment
Web tension: increased breaks	☉ ☹	Variable settings with paper grade and weight
Folder	☉	Variable settings with paper grade and weight
Signature delivery	☉ ☹ \$	Variable settings, problems from ink and static, not adjusting nip pressure for changing caliper
Sheet shrinkage/growth	☉ ☹ \$	Incorrect drying temp

TRIAL PITFALLS

Pressroom :

- Take no time to properly define and communicate the trial
No Plan
- Use rolls by error ... no segregation of incoming trial paper
 - are unaware of an upcoming trial – **No Communication**
 - use trial rolls without any notice to or follow up to the supplier
- toss a roll on at the end of “a run” without a procedure / plan, no data or sample collection and no feedback or limited feedback
- Do not fairly compare Apples to Apples when evaluating a trial
- Put off running the trial until it is no longer relevant
- Choose **not** to make changes to accommodate a changing substrate for it's new physical characteristics ie lower B.W.
- **Attitude**

Before you start running Trials.. Do you have a standard process ?

 *You want everyone rowing in the same direction !!!*

Develop a “Culture” for Trials

Develop a Consistent plan for Trials

Clearly define the process: Responsibilities,

Communications and requirements for each step and get alignment from Sales, Operations, and Management

There is no small trial

