4. Safety stock

What is Safety Stock ?

“A quantity of stock planned to be in inventory to protect against fluctuation in demand or supply”

The formula of Transformation Center is the following:

$$\text{Safety Stock}_{\text{past demand RLT}} = k * \sigma_{\text{past demand weekly}} * \sqrt{RLT}_{\text{weeks}}$$

Rate calculation (Step 1 and 2)

$$\text{Safety Stock}_M = \boxed{(SS_{\text{Past demand RLT}} / \text{Average Past Demand}_{\text{during RLT}})} \times \boxed{\text{Future demand during SHS RLT}}$$

(Step 3)

The Safety Stock is calculated following the 3 main steps below:

1. Calculate Safety Stock based on Demand Variability formula (k * WD * RLT)
2. Calculate proportion to past demand average during RLT => Safety Stock based on past/Average Past Demand during RLT
3. Apply proportion to the future demand average during RLT => For each month, calculate the future demand during RLT

Then the last result in step 3 is reworked with the Safety Stock matrix below, following the Variability and the Usage of the item.

Variability & Usage Effect

		<10/52 weeks		>35/52 weeks
	Variability/Usage	L	M	H
CoV<50%	X (Low)	SS/3	SS	SS
	Y (Med)	SS/2	SS/2	SS
CoV>100%	Z (High)	SS/3	SS/2	SS

REMARKS:

> To calculate the Demand Variability and the Average Past demand, we look at the actual demand (Internal + External) on the last 108 weeks based on the last requested GI date. Data come from the following BW Query:

BW_QRY_MVSDSO56_0002 / Historical Data - Sales & Purchase Orders

> Variability is calculated with the following formula:

Coefficient of Variation (COV) = (Demand Variability / Demand Average) * 100

Then the Variability is determined as:

- **Low (X)** if the CoV is below 50%
- **Medium (Y)** if the CoV is between 50% and 100%
- **High (Z)** if the CoV is above 100%

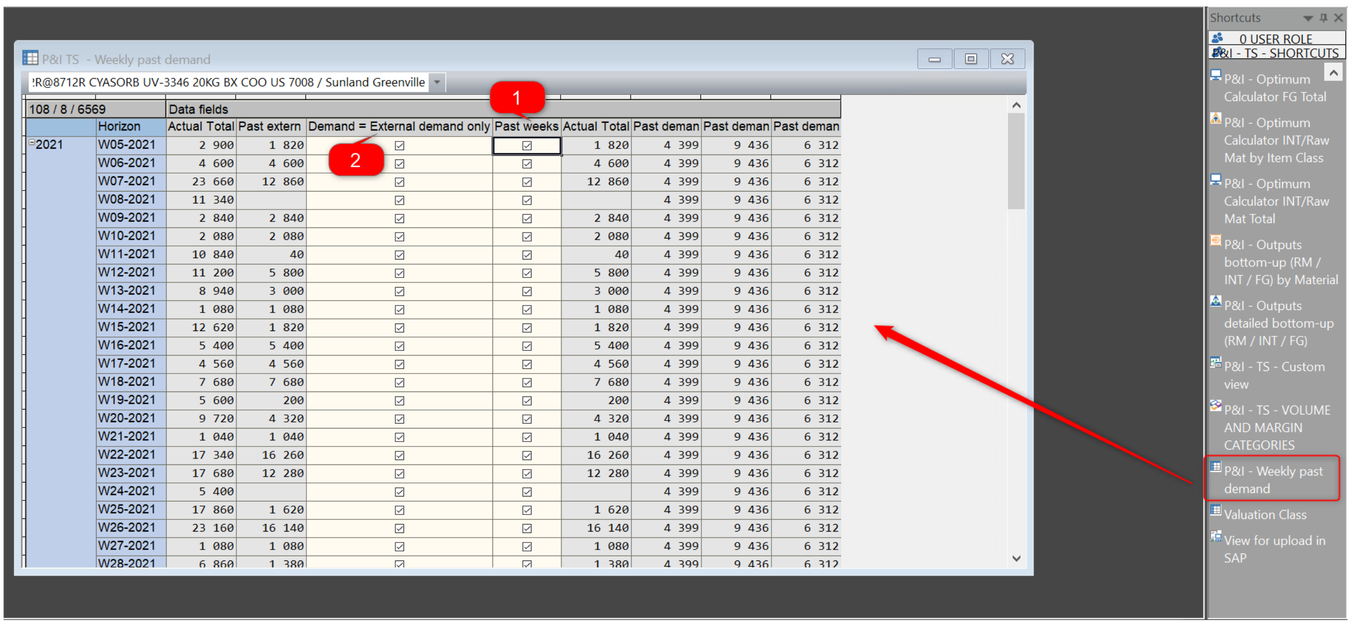
> Usage is determined following the number of weeks with demand, out of the last 108 weeks

Usage is:

- **Low (L)** if the number of weeks with demand is below 10
- **Medium (M)** if the number of weeks with demand is between 10 and 35
- **High (Z)** if the number of weeks with demand is above 35

Additional functionalities:

There is as specific view that used for 2 additional functionalities that will impact Safety stock.



108 / 8 / 6569		Data fields							
	Horizon	Actual Total	Past extern	Demand = External demand only	Past weeks	Actual Total	Past deman	Past deman	Past deman
2021	W05-2021	2 900	1 820	☑	☑	1 820	4 399	9 436	6 312
	W06-2021	4 600	4 600	☑	☑	4 600	4 399	9 436	6 312
	W07-2021	23 660	12 860	☑	☑	12 860	4 399	9 436	6 312
	W08-2021	11 340		☑	☑		4 399	9 436	6 312
	W09-2021	2 840	2 840	☑	☑	2 840	4 399	9 436	6 312
	W10-2021	2 080	2 080	☑	☑	2 080	4 399	9 436	6 312
	W11-2021	10 840	40	☑	☑	40	4 399	9 436	6 312
	W12-2021	11 200	5 800	☑	☑	5 800	4 399	9 436	6 312
	W13-2021	8 940	3 000	☑	☑	3 000	4 399	9 436	6 312
	W14-2021	1 080	1 080	☑	☑	1 080	4 399	9 436	6 312
	W15-2021	12 620	1 820	☑	☑	1 820	4 399	9 436	6 312
	W16-2021	5 400	5 400	☑	☑	5 400	4 399	9 436	6 312
	W17-2021	4 560	4 560	☑	☑	4 560	4 399	9 436	6 312
	W18-2021	7 680	7 680	☑	☑	7 680	4 399	9 436	6 312
	W19-2021	5 600	200	☑	☑	200	4 399	9 436	6 312
	W20-2021	9 720	4 320	☑	☑	4 320	4 399	9 436	6 312
	W21-2021	1 040	1 040	☑	☑	1 040	4 399	9 436	6 312
	W22-2021	17 340	16 260	☑	☑	16 260	4 399	9 436	6 312
	W23-2021	17 680	12 280	☑	☑	12 280	4 399	9 436	6 312
	W24-2021	5 400		☑	☑		4 399	9 436	6 312
	W25-2021	17 860	1 620	☑	☑	1 620	4 399	9 436	6 312
	W26-2021	23 160	16 140	☑	☑	16 140	4 399	9 436	6 312
	W27-2021	1 080	1 080	☑	☑	1 080	4 399	9 436	6 312
	W28-2021	6 860	1 380	☑	☑	1 380	4 399	9 436	6 312

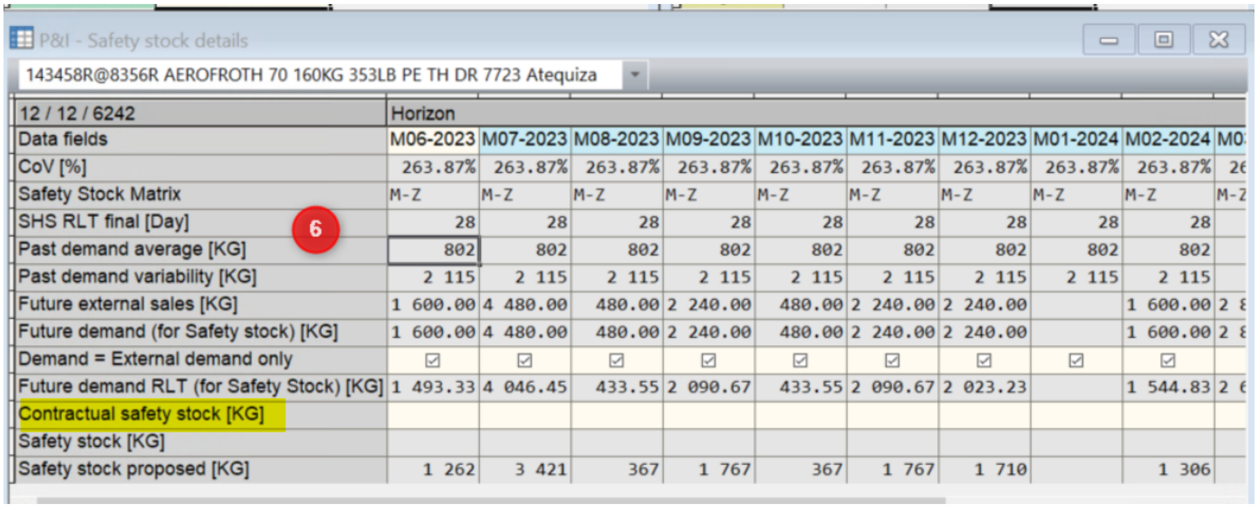
This view is accessible through the shortcut named "P&I - Weekly past demand"

> It is possible to unselect specific weeks from the calculation of these datafields but this action is not supported by TC as it should include all 108 weeks. You can do so by ticking / unticking the box called "Past weeks" in the view above.

> For TS exclusively: it is possible to only consider External demand for the calculation of Past demand average and Past demand variability. You can do so by ticking / unticking the box called "Demand = External demand only" in the view above.

Be careful, if you tick this box, it will be at SKU level and it will also impact other data such as Past demand average (none zero) & Future demand which are used in Safety Stock & Cycle Stock calculations.

The Contractual Safety Stock



P&I - Safety stock details

143458R@8356R AEROFROTH 70 160KG 353LB PE TH DR 7723 Atequiza

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12 / 12 / 6242	Horizon									
Data fields	M06-2023	M07-2023	M08-2023	M09-2023	M10-2023	M11-2023	M12-2023	M01-2024	M02-2024	M0
CoV [%]	263.87%	263.87%	263.87%	263.87%	263.87%	263.87%	263.87%	263.87%	263.87%	26
Safety Stock Matrix	M-Z	M-Z	M-Z	M-Z	M-Z	M-Z	M-Z	M-Z	M-Z	M-Z
SHS RLT final [Day]	28	28	28	28	28	28	28	28	28	
Past demand average [KG]	802	802	802	802	802	802	802	802	802	
Past demand variability [KG]	2 115	2 115	2 115	2 115	2 115	2 115	2 115	2 115	2 115	
Future external sales [KG]	1 600.00	4 480.00	480.00	2 240.00	480.00	2 240.00	2 240.00		1 600.00	2
Future demand (for Safety stock) [KG]	1 600.00	4 480.00	480.00	2 240.00	480.00	2 240.00	2 240.00		1 600.00	2
Demand = External demand only	☑	☑	☑	☑	☑	☑	☑	☑	☑	
Future demand RLT (for Safety Stock) [KG]	1 493.33	4 046.45	433.55	2 090.67	433.55	2 090.67	2 023.23		1 544.83	2
Contractual safety stock [KG]										
Safety stock [KG]										
Safety stock proposed [KG]	1 262	3 421	367	1 767	367	1 767	1 710		1 306	

The contractual safety stock is an additional field, taken into account in the Target stock calculation. It is a manual datafield that will allow the planner to adjust the safety stock, by adding or removing quantities, month by month and item by item.

This field is located in the 11. Safety stock tab in the Dynasys data review workspace.