PET RECYCLING
CORPORATION OF CALIFORNIA

California PET Bale Composition Analysis: 2024 Update

OVERVIEW

The PET Recycling Corporation of California (PRCC) is a successful non-profit, producer responsibility organization committed to ensuring California's recycled PET bales meet or exceed statewide bale quality standards.

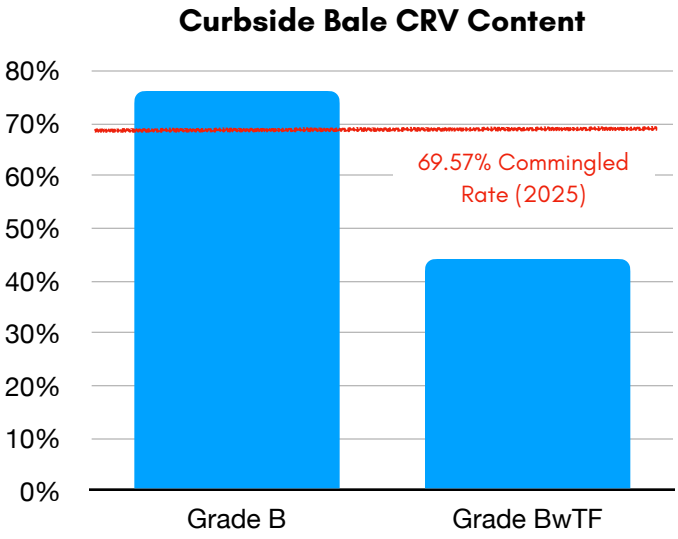
PRCC goals include:
- Add value to quality loads
- Increase yield
- Increase PET recycling rate
- Improve efficiency of the CRV program

PRCC's PET Bale Composition Analyses show a persistent overpayment to some curbside operators

PRCC carries out an annual PET Bale Composition Analyses that has consistently documented a CRV overpayment to many curbside operators. Specifically, CalRecycle's commingled rate overpays those facilities that include non-bottle PET with their PET bottles, due to its' higher contamination rates and far lower levels of CRV.

PRCC's original PET Bale Composition Analysis—begun in 2020—revealed two primary types of curbside bales in California: those that include non-bottle PET (thermoforms) along with PET bottles, and those which do not. PRCC introduced Grade B with Thermoforms (BwTF) bale specification in 2021.[1] Subsequently, the BwTF bale standard was adopted by national associations including ISRI, NAPCOR and APR.

To improve quality and preserve the CRV unredeemed fund's integrity, PRCC advocates revising the Commingled Rate to recognize nationally-accepted PET bale specifications



Our most important finding is that curbside bales with non-bottle PET (Grade BwTF) contain only 44% CRV PET, while curbside bales without non-bottle PET (Grade B) contain 76% CRV PET. Yet, both bale grades are paid a refund value based on the *same* commingled[2] rate!

A single Curbside Commingled Rate removes curbside operators' financial motivation to improve bale quality. In other words, curbside programs are actually rewarded for poor quality.

[1] Bale Specifications: see appendix for definitions of Grade A, B, and BwTF

[2] The Curbside Commingled Rate is the percentage of CRV in curbside bales

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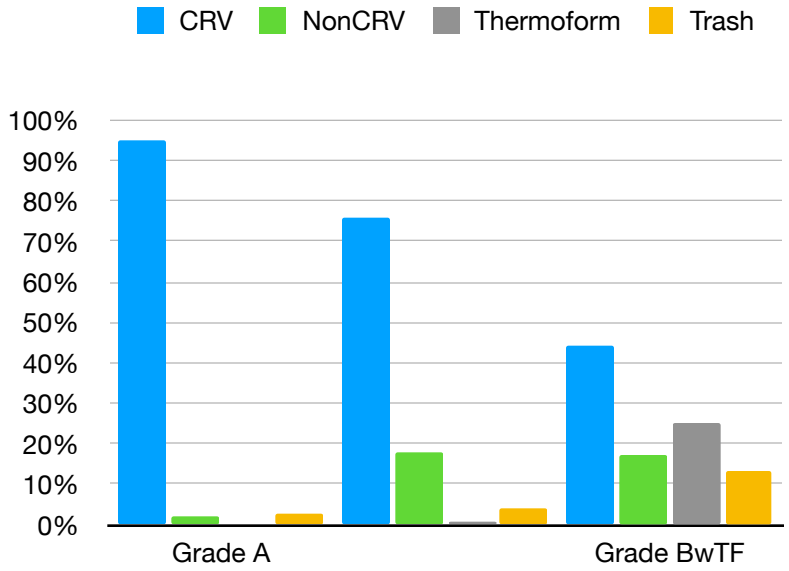
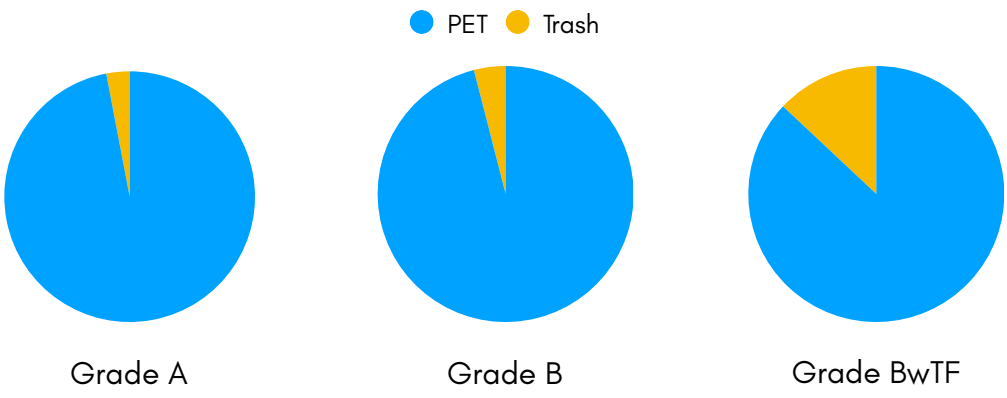
CalRecycle released new Curbside Commingled Rates, effective January 1, 2025. This single PET curbside commingled rate assumes all bales contain 69.57% CRV. CalRecycle pays a refund value of $0.64 per pound for the entire bale, up from $0.61 in 2024. As a result, CalRecycle is paying suppliers of PET bales with thermoforms even more for bales that contain even less CRV than expected. BwTF bales also contain much more trash than other grades. There are no monitoring or follow up systems in place to check the actual CRV percentage of bales.

Certified Recycling Center bale quality (Grade A) is far superior to all curbside material (B & BwTF).

The Certified Recycling Center redemption system needs to be strengthened and expanded.



PRCC strongly supports California's deposit program and recommends the program be modernized and expanded with more redemption sites. This PET Bale Composition Analysis reinforces the need to strengthen the CRV redemption system, as these bales have the best quality, from a proven system that is highly effective.



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In 2024, Curbside Grade B with Thermoforms (BwTF) bales had only 44% CRV, compared to 76% CRV in Curbside Grade B bales, and 95% CRV in redemption Grade A bales. The data shows that all BwTF bales—regardless of sortation methods—are below the new 2025 commingled rate of 69.57% PET CRV, and have much more Non-PET, metal, and waste contamination.

2024 Bale Sort	Redemption Centers Grade A	Curbside Bottles Only Grade B	Curbside Non-Bottle & Bottles Grade BwTF
PET CRV (Incl. Wine/Spirits)	95%	76%	44%
PET Non-CRV	2%	18%	17%
PET Thermoform	0%	1%	25%
PET Wine/Spirits (CRV)	1%	2%	1%
Non-PET Plastic/Metal/Waste	3%	4%	13%

CalRecycle determines the commingled rate (the percentage of CRV) that Curbside programs receive for their PET bales. In 2022, the rate was set at 61% CRV PET, and changed to 69.57% in 2025. This is a CRV overpayment of more than 25 percent equating to millions of dollars annually of unearned CRV going to curbside programs that include thermoforms with their PET bottles (BwTF).

The results of the 2024 PET Bale Composition Analysis support the findings from all PRCC's previous Bale Composition Analyses. California curbside facilities with auto-sort technology create grade BwTF bales, which have a significant amount of PET thermoforms in them (unless they successfully hand-pull thermoforms after the initial PET sort, to create a separate thermoform bale). MRFs that positive-sort [3]only PET bottles, have very few PET thermoforms, and less overall contamination, which results in clean Grade B bales.

Grade B	2024	2023	2022	2021	2020
PET CRV	76%	68%	66%	69%	74%
PET Non-CRV	18%	28%	30%	26%	22%
PET Thermoform	1%	1%	1%	1%	1%
Trash	4%	3%	3%	3%	4%

Grade BwTF	2024	2023	2022	2021	2020
PET CRV	44%	51%	47%	46%	43%
PET Non-CRV	17%	22%	23%	28%	29%
PET Thermoform	25%	16%	18%	17%	22%
Trash	13%	11%	12%	11%	8%

Note: In 2024 CRV expanded to include all sizes of juice and wine & spirits.

[3] Positive sort = removing off conveyor desired item v negative sort = removing undesired item

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All BwTF Grades—whether hand-sorted or auto-sorted—are still well below the new 2025 commingled rate of 69.57% PET CRV.

2024 Bale Grades	BwTF OPTICAL Sort	B/wTF Manual Sort	B
PET CRV	45%	37%	76%
PET Non-CRV	18%	16%	18%
PET Thermoform	26%	20%	1%
Non PET Plastic/Metal/Waste	10%	28%	4%
2025 PET Commingled Payment $0.64/Lb. ($1,280/Ton)			
2025: % Under or Over 69.57%	25%	33%	6%
2025: Over or Under Paid* per $/Ton	$314	$417	$82
2024: % Under or Over 61%	-16%	-24%	15%
2024: Over or Under Paid per $/Ton	$195	$293	-$183

**Payment calculated as the percentage under or over the commingled rate of 69.57% times the commingled payment of $1,280/ton. (1280*.2457=314.496)*

The table above illustrates how the new commingled rates and payments make the situation with BwTF bales far worse. **Where suppliers would have been overpaid as much as $293/ton for bales that were up to 24% below the commingled rate standard, now they will be overpaid as much as $417/ton for bales that are up to 33% below the new commingled rate standard!** There is now even less incentive than before for curbside programs to deliver bales that meet the CRV percentage assumptions used to determine refund payments.

Curbside operators making clean Grade B bales are being underpaid by an average of about $82/ton. The changes in the Curbside Commingled Rate have indeed improved the compensation for the cleaner operators, but they are being underpaid while still overdelivering on bale quality.

It's important to note that the entire system is funded by unredeemed deposits from beverage container sales. CRV funds are used to pay curbside collection operators who produce BwTF bales with a high percentage of thermoforms. These bales are generally too contaminated to be recycled back into bottles—the products that support the program—and are instead largely used for packaging applications, an industry that contributes nothing to the CRV system. PRCC sells nearly as many BwTF bales as it does Grade B bales, and it is our understanding that the overall percentage of BwTF bales in the market exceeds half of the curbside total.

California PET Bale Composition Analysis: 2024 Update

CAPS

PRCC sees an increasing interest in understanding how many caps remain on PET bottles after collection, thus available to be captured for recycling. In the 2024 Bale Composition Analysis, staff sorted about 20-30 lbs of CRV bottles from each bale into two groups: Caps and No Caps. We also counted the number of bottles in each group in order to calculate Containers Per Pound (CPP).

2024 Bale Sort	Grade A		Curbside	
	Percentage	Containers/Lb	Percentage	Containers/Lb
Cap	61%	26.70	56%	17.39
No Cap	39%	28.40	44%	17.18

The results show that on average, all grades had more caps on than not, with a small range between the grades—a high of 61% and a low of 56%. We saw a slightly wider variance between suppliers, with some locations below 50% caps, suggesting either a difference in how the bottles are being baled, or a difference in understanding about what to do with caps in the communities served by the recyclers.

In January 2025, PRCC did another analysis of loose, non-baled Grade A CRV bottles for a total of 119 lbs from 21 different locations. Samples were taken right off the trucks as they came into the Ming's facility in Sacramento, and had been minimally processed.

2025 Grade A - Not Baled	Percentage	Containers/Lb.
Cap	78%	22.52
No Cap	22%	27.02

As expected, the percentage of bottles with caps on was higher, supporting our belief that a good amount of caps become separated from the bottle during the baling process. The range was much greater with a high of 90% of bottles with caps and a low of 31%. Most suppliers had a bottles with caps rates above 70%, with only two suppliers dipping below 50%. And those two suppliers really swung the other direction with rates at 31% and 35%, again suggesting a different understanding of what to do with caps in the communities they serve.

PRCC will continue gathering and analyzing cap data as the industry advances toward keeping caps on bottles to ensure they are captured for recycling.

California PET Bale Composition Analysis: 2024 Update

CONCLUSION

As documented in this and all prior analyses, the PET Commingled Rate needs updating to more accurately pay for the number of CRV containers in curbside bale types; changes that will reduce contamination, improve bale quality and protect the unredeemed fund. Specifically, CalRecycle should recognize the industry standard of two types of PET curbside bales, those that are bottles-only and those with non-bottle material.

PRCC remains committed to PET thermoform recycling by working to find buyers who will consistently take PET thermoform loads. Keeping thermoforms separate from PET bottles improves the economics of PET bottle reclamation, improves yields, and results in better quality recycled PET, ready to be converted into new PET bottles.

Curbside operators making bales with non-bottle PET are overpaid for CRV. Curbside operators making bottle-only bales are being underpaid.

The Beverage Container Recycling law's commingled rate regulations are inhibiting the production of clean curbside PET bales. The current single curbside commingled rate excessively rewards programs that combine PET bottles with non-bottles, and discounts programs that don't.

California needs a robust CRV Redemption Center system to increase Bottle-to-Bottle and Cap & Label recycling.

PET from California's Recycling Centers (RCs) have less contamination, more caps, and more clear bottles than bales from curbside programs. Clear, clean PET is needed for bottle-to-bottle recycling. While the CRV redemption system is a very effective collection mechanism with a high recycling rate of quality PET bottles, we can do better!

Further modernization of the CA Beverage Deposit program by allowing more flexibility in returning deposits to consumers, modifying curbside commingled rates, and focusing on underserved areas will help ensure the CRV program can successfully serve all California residents, create jobs, reduce greenhouse gases, and provide quality feedstock to California's businesses

ACKNOWLEDGEMENTS

PRCC would like to thank Ming's Recycling for their assistance with the bale sort. Ming's provided the workspace, some bales, and skilled personnel!

California PET Bale Composition Analysis: 2024 Update

ADDENDUM - BALE SPECIFICATIONS

PRCC has four PET bale specifications, all of which can be found on PRCC's website www.PRCC.biz. PET buyers value Grade B over Grade B with Thermoforms (BwTF) and continue to value Grade A bales over Grade B bales. Grade A bales are the cleanest. Grade A also has the highest yield, the highest percentage of clear bottles, and requires less processing; thus it is lower in cost and energy to convert bottle-to-bottle.

ADDENDUM - METHODOLOGY

PRCC staff sorted 3,873 pounds of PET from bales taken from 19 different facilities throughout California. Each bale was from one of four Categories, shown below in descending order of quality.

PRCC used the Association of Plastic Recyclers' Protocol for Assessing PET Truckload Bale Grade that staff previously tested successfully to ensure that it accurately reflects the composition of bales.

ADDENDUM - SORT DETAIL

Category	Description
A	**Redemption Centers**
B+	**Curbside With Enhanced Sorting**
B	**Curbside With Manual Positive Sort of Bottles Only** **Curbside With Auto-Sort Technology, Then Remove TF Manually**
BwTF	**Curbside With Auto-Sort Technology, Then Partially Remove TF Manually or Robotically**

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For each bale, PRCC staff noted the Category, then pulled out at least 200 pounds from random locations within the bale to get a representative sample. Staff then sorted the sample material into 18 different groups according to the table below.

First Sort	Second Sort
PET CRV Bottles	**Clear or Light Blue**
PET Non-CRV Bottles	**Green**
PET Wine and Spirits Bottles	**Other Colors**
	Full Wrap
	Barrier
	Bottles With Metal
Thermoforms	**Clear PET**
	Colored PET
	Non-PET
Non-PET Other Plastic	**No Second Sort**
Metal/Aluminum	
Waste/Other Contaminants	

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Grade	Category Name	Material	Content	Packaging	Weight	% of Total
A	Buyback	CRV		Clear/Light Blue	706	87.2%
A	Buyback	CRV		Green	25	3.1%
A	Buyback	CRV		Other Color	0	0.0%
A	Buyback	CRV		Full Wrap Label	29	3.6%
A	Buyback	CRV		Barrier	0	0.0%
A	Buyback	CRV	Wine/Spirits	Clear/Light Blue	11	1.4%
A	Buyback	Non CRV		Clear/Light Blue	12	1.4%
A	Buyback	Non CRV		Other Color	1	0.1%
A	Buyback	Non CRV		Full Wrap Label	1	0.1%
A	Buyback	Non CRV		Barrier	0	0.0%
A	Buyback	Non CRV		With Metal	0	0.0%
A	Buyback	Thermoform		Clear/Light Blue	0	0.0%
A	Buyback	Non PET		None	4	0.5%
A	Buyback	Metal		None	1	0.1%
A	Buyback	Waste		None	19	2.3%
Subtotal					810	

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Grade	Category Name	Material	Content	Packaging	Weight	% of Total
B	Manual Sort (Enhanced B+)	CRV		Clear/Light Blue	412	69.1%
B	Manual Sort (Enhanced B+)	CRV		Green	19	3.2%
B	Manual Sort (Enhanced B+)	CRV		Full Wrap Label	20	3.4%
B	Manual Sort (Enhanced B+)	CRV		Barrier	9	1.5%
B	Manual Sort (Enhanced B+)	CRV	Wine/Spirits	Clear/Light Blue	17	2.9%
B	Manual Sort (Enhanced B+)	Non CRV		Clear/Light Blue	66	11.0%
B	Manual Sort (Enhanced B+)	Non CRV		Green	5	0.8%
B	Manual Sort (Enhanced B+)	Non CRV		Other Color	4	0.7%
B	Manual Sort (Enhanced B+)	Non CRV		Full Wrap Label	26	4.3%
B	Manual Sort (Enhanced B+)	Non CRV		Barrier	2	0.3%
B	Manual Sort (Enhanced B+)	Non CRV		With Metal	4	0.7%
B	Manual Sort (Enhanced B+)	Thermoform		Clear/Light Blue	2	0.3%
B	Manual Sort (Enhanced B+)	Non PET		None	2	0.3%
B	Manual Sort (Enhanced B+)	Metal		None	2	0.4%
B	Manual Sort (Enhanced B+)	Waste		None	6	1.0%
Subtotal					596	

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Grade	Category Name	Material	Content	Packaging	Weight	% of Total
B	Manual Sort (Bottles & Containers)	CRV		Clear/Light Blue	295	71.9%
B	Manual Sort (Bottles & Containers)	CRV		Green	10	2.5%
B	Manual Sort (Bottles & Containers)	CRV		Other Color	1	0.2%
B	Manual Sort (Bottles & Containers)	CRV		Full Wrap Label	18	4.5%
B	Manual Sort (Bottles & Containers)	CRV		Barrier	0	0.0%
B	Manual Sort (Bottles & Containers)	CRV	Wine/Spirits	Clear/Light Blue	4	1.1%
B	Manual Sort (Bottles & Containers)	Non CRV		Clear/Light Blue	31	7.4%
B	Manual Sort (Bottles & Containers)	Non CRV		Green	4	0.9%
B	Manual Sort (Bottles & Containers)	Non CRV		Other Color	12	3.0%
B	Manual Sort (Bottles & Containers)	Non CRV		Full Wrap Label	18	4.4%
B	Manual Sort (Bottles & Containers)	Non CRV		Barrier	1	0.3%
B	Manual Sort (Bottles & Containers)	Non CRV		With Metal	4	0.9%
B	Manual Sort (Bottles & Containers)	Thermoform		Clear/Light Blue	0	0.1%
B	Manual Sort (Bottles & Containers)	Non PET		None	1	0.1%
B	Manual Sort (Bottles & Containers)	Metal		None	1	0.2%
B	Manual Sort (Bottles & Containers)	Waste		None	10	2.5%
Subtotal					410	

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Grade	Category Name	Material	Content	Packaging	Weight	% of Total
B	Optical Sort | TF Removal Manual	CRV		Clear/Light Blue	516	62.8%
B	Optical Sort | TF Removal Manual	CRV		Green	30	3.6%
B	Optical Sort | TF Removal Manual	CRV		Other Color	1	0.1%
B	Optical Sort | TF Removal Manual	CRV		Full Wrap Label	31	3.8%
B	Optical Sort | TF Removal Manual	CRV		With Metal	0	0.0%
B	Optical Sort | TF Removal Manual	CRV	Wine/Spirits	Clear/Light Blue	10	1.3%
B	Optical Sort | TF Removal Manual	Non CRV		Clear/Light Blue	104	12.7%
B	Optical Sort | TF Removal Manual	Non CRV		Green	7	0.8%
B	Optical Sort | TF Removal Manual	Non CRV		Other Color	6	0.8%
B	Optical Sort | TF Removal Manual	Non CRV		Full Wrap Label	31	3.7%
B	Optical Sort | TF Removal Manual	Non CRV		Barrier	4	0.5%
B	Optical Sort | TF Removal Manual	Non CRV		With Metal	8	1.0%
B	Optical Sort | TF Removal Manual	Thermoform		Clear/Light Blue	23	2.8%
B	Optical Sort | TF Removal Manual	Thermoform		Other Color	0	0.0%
B	Optical Sort | TF Removal Manual	Non PET		None	15	1.8%
B	Optical Sort | TF Removal Manual	Metal		None	4	0.5%
B	Optical Sort | TF Removal Manual	Waste		None	31	3.8%
Subtotal					822	

Optical Sort | TF Removal Manual = Thermoforms Removal Manual

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Grade	Category Name	Material	Content	Packaging	Weight	% of Total
BwTF	Manual Sort (B/C/TF)	CRV		Clear/Light Blue	69	33.1%
BwTF	Manual Sort (B/C/TF)	CRV		Green	3	1.3%
BwTF	Manual Sort (B/C/TF)	CRV		Other Color	0	0.1%
BwTF	Manual Sort (B/C/TF)	CRV		Full Wrap Label	3	1.3%
BwTF	Manual Sort (B/C/TF)	CRV	Wine/Spirits	Clear/Light Blue	2	1.1%
BwTF	Manual Sort (B/C/TF)	Non CRV		Clear/Light Blue	21	10.2%
BwTF	Manual Sort (B/C/TF)	Non CRV		Green	1	0.3%
BwTF	Manual Sort (B/C/TF)	Non CRV		Other Color	3	1.6%
BwTF	Manual Sort (B/C/TF)	Non CRV		Full Wrap Label	5	2.2%
BwTF	Manual Sort (B/C/TF)	Non CRV		Barrier	2	0.8%
BwTF	Manual Sort (B/C/TF)	Non CRV		With Metal	2	0.8%
BwTF	Manual Sort (B/C/TF)	Thermoform		Clear/Light Blue	42	19.9%
BwTF	Manual Sort (B/C/TF)	Thermoform		Other Color	1	0.3%
BwTF	Manual Sort (B/C/TF)	Non PET		None	18	8.7%
BwTF	Manual Sort (B/C/TF)	Metal		None	0	0.1%
BwTF	Manual Sort (B/C/TF)	Waste		None	39	18.3%
Subtotal					210	

Manual Sort (B/C/TF) = Manual Sort (Bottles/Containers/Thermoforms)

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Grade	Category Name	Material	Content	Packaging	Weight	% of Total
BwTF	Optical Sort (B/C/TF)	CRV		Clear/Light Blue	416	40.6%
BwTF	Optical Sort (B/C/TF)	CRV		Green	15	1.5%
BwTF	Optical Sort (B/C/TF)	CRV		Other Color	1	0.1%
BwTF	Optical Sort (B/C/TF)	CRV		Full Wrap Label	21	2.0%
BwTF	Optical Sort (B/C/TF)	CRV		Barrier	1	0.1%
BwTF	Optical Sort (B/C/TF)	CRV	Wine/Spirits	Clear/Light Blue	11	1.1%
BwTF	Optical Sort (B/C/TF)	Non CRV		Clear/Light Blue	123	12.0%
BwTF	Optical Sort (B/C/TF)	Non CRV		Green	5	0.5%
BwTF	Optical Sort (B/C/TF)	Non CRV		Other Color	12	1.2%
BwTF	Optical Sort (B/C/TF)	Non CRV		Full Wrap Label	32	3.1%
BwTF	Optical Sort (B/C/TF)	Non CRV		Barrier	4	0.4%
BwTF	Optical Sort (B/C/TF)	Non CRV		With Metal	5	0.5%
BwTF	Optical Sort (B/C/TF)	Thermoform		Clear/Light Blue	265	25.8%
BwTF	Optical Sort (B/C/TF)	Thermoform		Other Color	2	0.2%
BwTF	Optical Sort (B/C/TF)	Non PET		None	35	3.4%
BwTF	Optical Sort (B/C/TF)	Metal		None	4	0.4%
BwTF	Optical Sort (B/C/TF)	Waste		None	73	7.2%
Subtotal					1,025	
Grand Total					3,873	

Optical Sort (B/C/TF) = Optical Sort (Bottles/Containers/Thermoforms)

California PET Bale Composition Analysis: 2024 Update

Caps On Caps Off

Grade	Category Name	Packaging	Count	CPP	Weight	% of Total
A	Buyback	Cap	543	26.7	20	61.3%
B	Manual Sort (Enhanced B+)	Cap	610	16.99	36	54.0%
B	Manual Sort (B/C)	Cap	445	16.70	27	54.4%
B	Optical Sort | TF Removal Manual	Cap	1,144	17.90	64	57.9%
BwTF	Manual Sort (B/C/TF)	Cap	123	18.92	7	42.6%
BwTF	Optical Sort (B/C/TF)	Cap	775	15.27	51	59.4%
Subtotal		Cap	3640	17.76	205	48.6%
A	Buyback	No Cap	365	28.4	13	38.7%
B	Manual Sort (Enhanced B+)	No Cap	518	16.93	31	46.0%
B	Manual Sort (B/C)	No Cap	388	17.40	22	45.6%
B	Optical Sort | TF Removal Manual	No Cap	800	17.23	46	42.1%
BwTF	Manual Sort (B/C/TF)	No Cap	159	18.17	9	57.4%
BwTF	Optical Sort (B/C/TF)	No Cap	492	14.18	35	40.6%
Subtotal		No Cap	2722	17.45	156	51.4%