Metal Ratio Estimates for Section 232 Imports

Executive Summary

To estimate the effective applied tariff rates, we need to make assumptions about the metal content of certain imports.[1] Most IEEPA tariffs do not add to Section 232 tariffs but complement them. Assumptions about what share of observed imports is due to metal content determine the application of either IEEPA or Section 232 rates.

Based on USITC DataWeb consumption import data for duties collected between January and September 2025, we use the following metal ratios in our estimates:

Metal	Derivatives	Main Products	Uncertainty
Steel	40%	85%	±15pp
Aluminium	35%	94%	±10pp
Copper	N/A	70%	Provisional

Steel estimates are unstable. Near-term forecasts should use 35% (Q3 2025 average); medium-term structural analysis may use 40% (full period). Aluminium estimates are stable across periods. Copper estimates are provisional, based on two months of data only.

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[1] As of 12 January 2026. Corresponding author is johannes.fritz@sgept.org.

1. Data and Estimation

1.1 Data Sources

Parameter	Value
Source	USITC DataWeb
Coverage	January - September 2025
Frequency	Monthly
Trade flow	US Imports
Classification	HTS 8-digit
Statistics	Customs Value, Calculated Duties

The analysis covers products within the scope of Section 232 investigations: 810 steel codes, 151 aluminium codes, and 57 copper codes (copper effective August 1, 2025).

1.2 Estimation Formula

We estimate effective incidence ratios by comparing observed tariff rates against theoretical rates calculated at 100% metal content:

$$\text{Incidence Ratio} = \frac{\text{Observed Rate} - \text{Baseline Non-S232 Rate}}{\text{Statutory S232 Rate}}$$

Where the Baseline Non-S232 Rate equals the theoretical tariff excluding the Section 232 component (HTS + IEEPA + Emergency + S301). If observed duties equal the full statutory S232 rate, the ratio is 100%. If observed duties equal half the statutory rate, the ratio is 50%.

1.3 Data Quality

Observations with ratios outside the 0-100% range are excluded from aggregate calculations. These anomalies ($9B, 7% of in-scope trade) arise from compounded exemption assumptions (e.g., aircraft parts with both aircraft exemption and metal content shares) and exclusion timing issues. The recommended ratios are based on valid observations only.

2. Aggregate Results

2.1 Trade-Weighted Averages by Product Type

Main steel products show an 85% average ratio, indicating that approximately 15% of main steel trade value benefits from exclusion mechanisms. Aluminum main products show a higher 94% ratio, suggesting more limited exclusion use. Copper products are currently main products only (no derivatives in S232 scope) and show the lowest compliance rate (70%).

Metal	Product Type	Trade Value	Mean Ratio	Median
Steel	Derivatives	$47.7B	40%	45%
Steel	Main Products	$21.2B	85%	92%
Aluminium	Derivatives	$46.4B	35%	34%
Aluminium	Main Products	$9.8B	94%	98%
Copper	Main Products	$0.7B	70%	79%

2.2 Temporal Stability

Steel derivative ratios exhibited significant instability during 2025, ranging from under 10% (January-February, during rate transition) to over 80% (April-May) to approximately 35% (August-September). This instability reflects changing exclusion utilisation and trade composition rather than changes in physical product characteristics. We recommend using the Q3 2025 average (35%) for near-term forecasting, with the full-period average (40%) as a reference for structural analysis. Aluminium ratios were more stable across both product types. The full-period trade-weighted average of 35% for derivatives is appropriate for most applications.

Copper ratios are based on August-September 2025 only. The short time series warrants treating the 70% estimate as provisional.

Month	Steel Deriv.	Steel Main	Alu. Deriv.	Alu. Main	Copper Main
Jan	2%	5%	18%	85%	—
Feb	3%	6%	20%	87%	—
Mar	20%	45%	22%	88%	—
Apr	65%	92%	32%	92%	—
May	72%	95%	42%	95%	—
Jun	48%	78%	30%	90%	—
Jul	58%	85%	32%	92%	—
Aug	25%	55%	33%	93%	64%
Sep	32%	60%	40%	96%	78%
Full Period	40%	85%	35%	94%	70%

Main product ratios are more stable than derivative ratios, particularly for aluminium where main products consistently show 85-98% ratios throughout the period.

2.3 Country-Level Variation

Country-level ratios show relative stability within product types, supporting the use of aggregate ratios for most applications. Canada and Mexico estimates are based on non-USMCA imports only.

Steel

Origin	Derivatives	Main Products
China	45%	88%
South Korea	42%	85%
India	48%	86%
Germany	44%	89%
Japan	43%	87%
Mexico (non-USMCA)	38%	78%
Canada (non-USMCA)	36%	76%
Taiwan	44%	88%
Italy	40%	84%
Brazil	45%	90%

Aluminium

Origin	Derivatives	Main Products
China	38%	92%
Japan	36%	94%
South Korea	34%	93%
Germany	37%	95%
Vietnam	32%	91%
Mexico (non-USMCA)	30%	90%
Canada (non-USMCA)	33%	92%
Taiwan	33%	93%
Thailand	30%	90%
India	40%	95%

Copper (main products only)

Origin	Main Products
Germany	63%
South Korea	70%
Peru	78%
Canada (non-USMCA)	55%
China	69%
Thailand	72%
Mexico (non-USMCA)	58%
Taiwan	63%
India	80%
Vietnam	75%

3. Calibration for Tariff Barrier Estimates

For our tariff barrier estimates, we adopt the following ratios:

Metal	Derivatives	Main Products
Steel	40%	85%
Aluminium	35%	94%
Copper	N/A	70%

Derivatives: We use full-period trade-weighted averages (40% for steel, 35% for aluminium) rather than the lower Q3 averages. The full-period estimate captures the structural relationship between derivative product composition and effective tariff incidence, smoothing over the transitional volatility observed during the S232 rate escalation.

Main products: We use observed status quo ratios (85% for steel, 94% for aluminium) rather than the theoretical 100%. Main products are physically 100% metal, but the observed ratios reflect the current exclusion regime. Since our tariff barrier estimates aim to capture actual trade costs under prevailing policy, we incorporate the effective incidence of exclusions rather than assuming full enforcement.

Copper: The 70% estimate is provisional, based on two months of data. We apply this to main products only, as no copper derivatives are currently within the S232 scope.