

Corporate Average Fuel Economy (CAFE)

Enforcement Programs for Footprint Calculations and Credit Tracking and Allocation

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Presentation Overview

- CAFE Enforcement Programs
 - Footprint Calculation and Verification
 - Credit Tracking and Allocation
 - Penalty Assessment
 - CAFE Reporting
- NHTSA Points-of-Contact
- Questions



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OVSC CAFE PROGRAMS

Program	Purpose	Applies to	Initiated
Footprint Calculation and Verification	Verifies manufacturer's reported vehicle attribute information track width and wheelbase per 49 CFR 523, 531, 533 and 537 used to calculate new target fleet fuel economy standards	At mfr's optional for MY 2008 to 2010 Light trucks (LTs) Mandatory for MY 2011 LTs and Passenger cars (PCs)	April 6, 2006 (71FR17566) March 30, 2009 (74FR14196, per 49 U.S.C. § 32902 (b)(3))
Credit Tracking and Allocation	<u>Pre-MY 2011 (old provisions):</u> Tracks credits for each credit holder. Allocation program includes carry-fwd and carry-back of all available credits. <u>MY 2011 and beyond (new provisions):</u> CAFE credit trades and transfers begin MY 2011. Carry-fwd and carry-back continued	All LTs and PCs	December 19, 1980 (45FR83235, also see 49 U.S.C. § 32903) March 30, 2009 (74FR14196) and September 28, 2009 (74FR49454, est. 49 CFR Part 536)
Penalty Assessment	How manufacturers resolve or pay for CAFE credit shortfalls	All LTs and PCs	See above
CAFE Reporting	- Summary of Fuel Economy Performance Report - Fines Collected Status Table - Flex Fuel Table - Credit Status Table (Future)	All LTs and PCs	Various



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Footprint Calculation and Verification Program

- Measures production wheelbases and track widths to calculate footprint and verify reported values used to calculate new CAFE fleet target fuel economy standards
- OVSC test procedure issued March 30, 2009
 - Uses precise attribute measurement methodology
 - Measures the variation between measured and reported attribute values
 - Addresses how significant discrepancies will be resolved with manufacturers



Footprint

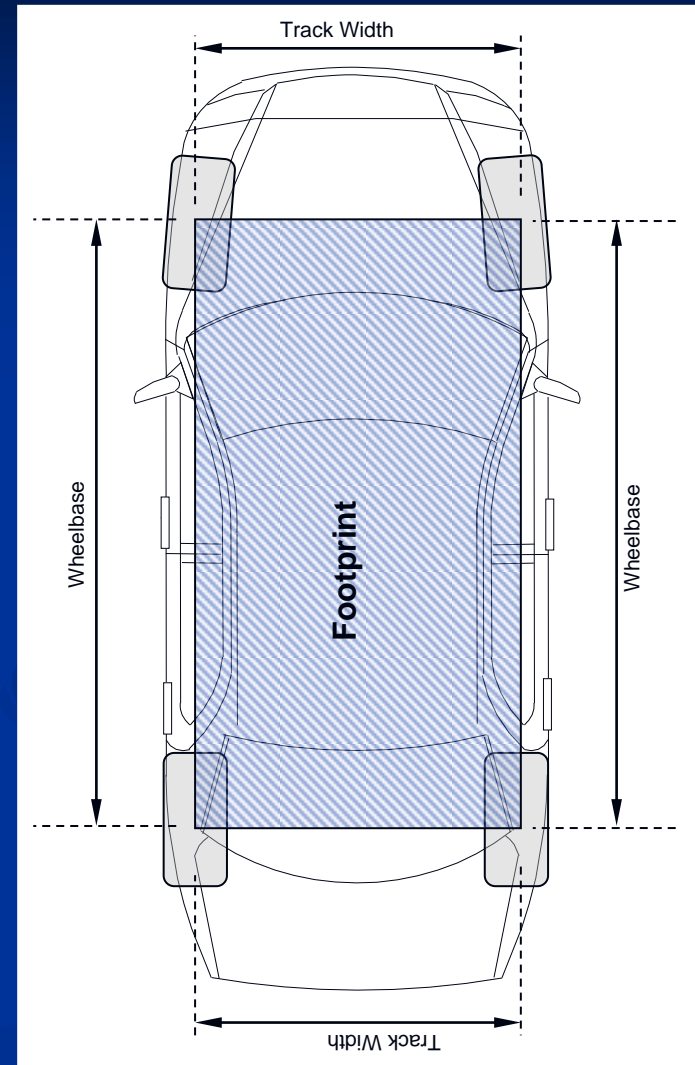
Defined at 49 CFR § 523.2 and in NHTSA's test procedure

Track width (in) = Lateral distance between the centerlines of the base tires at ground, including the camber angle (rounded to nearest 1/10 in.)

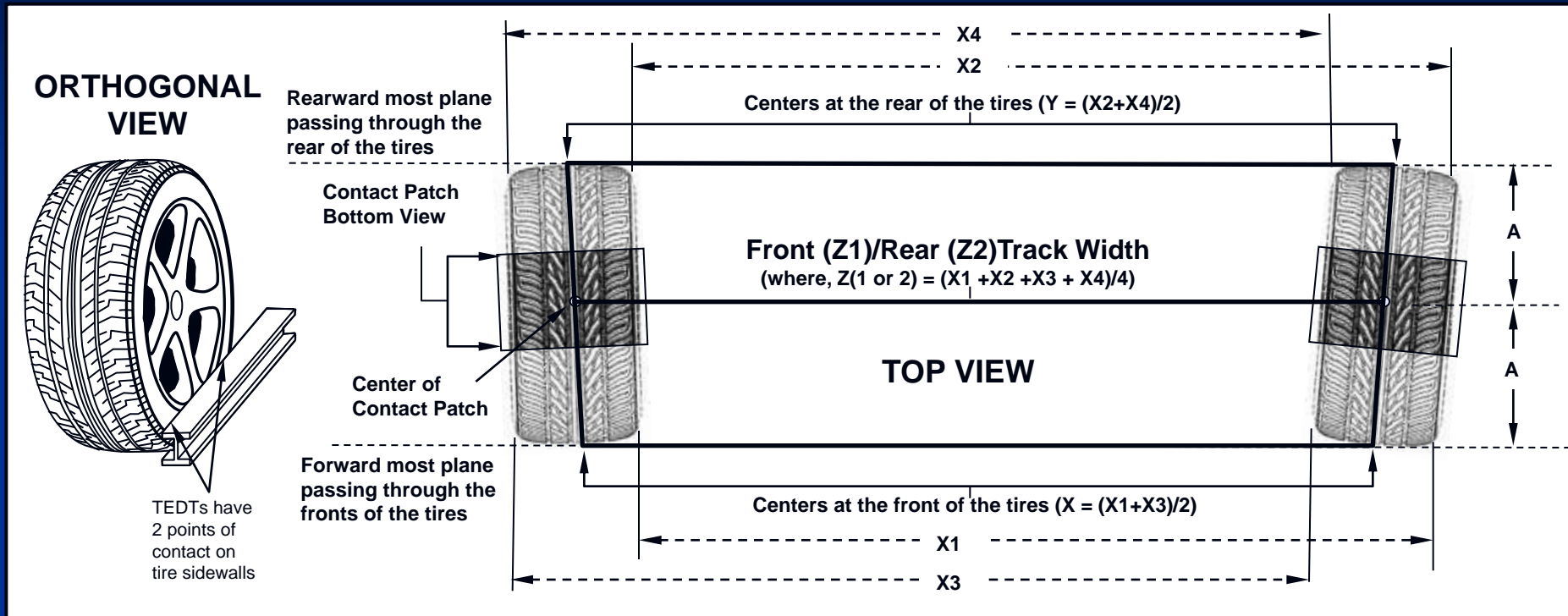
Wheelbase (in) = Longitudinal distance between front and rear wheel centerlines (rounded to nearest 1/10 in.)

Footprint (ft²) = [track width (in) * wheelbase (in)] / 144 (in²/ft²) (rounded to nearest 1/10 ft²)

Base Tire = Tire specified as standard equipment by a manufacturer on each vehicle configuration of a model type.



Geometric Overview of The Track Width Measurement Procedure



VEHICLE TRACK WIDTH (Z)

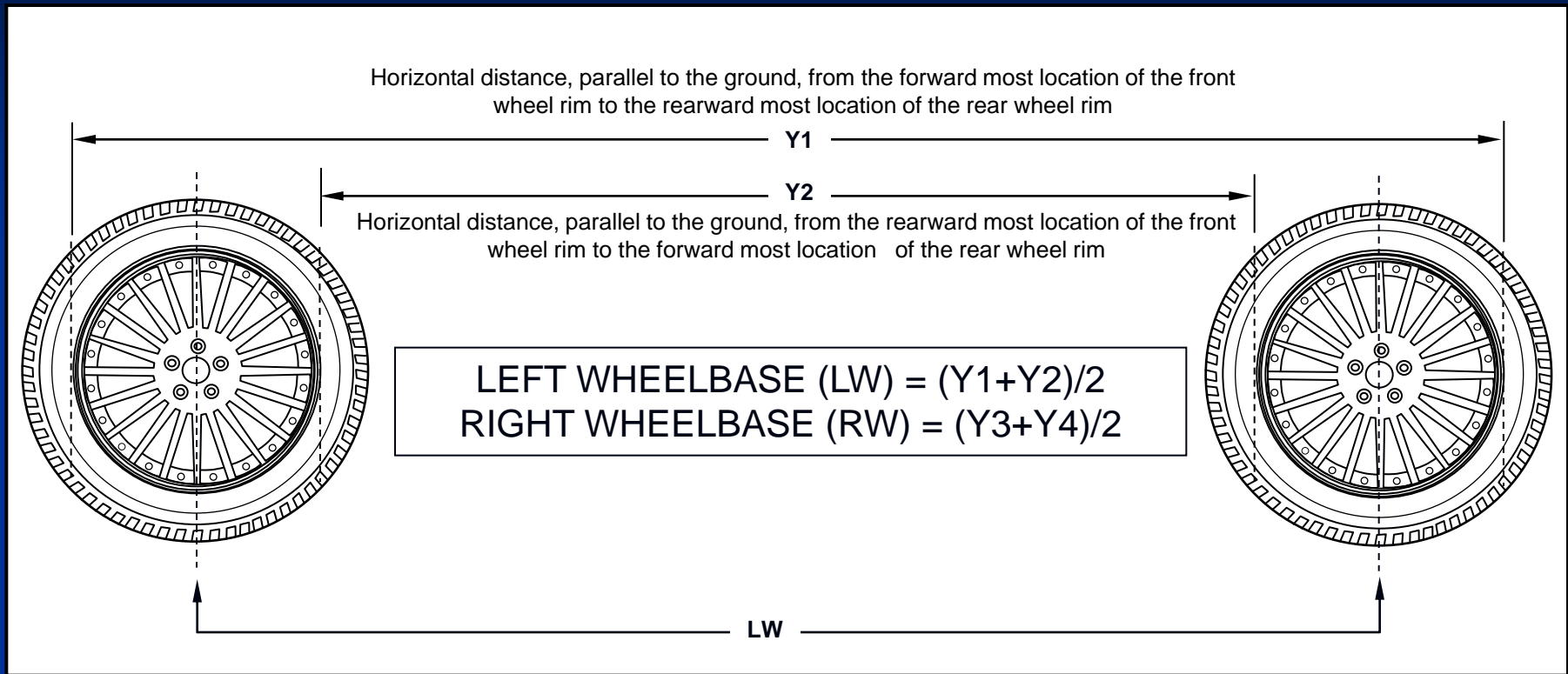
$$Z = (Z1+Z2)/2$$

Where:

The average of the lateral distances from the centers at the front (X) and the rear (Y) of the tires is equal to the lateral distance between the centers of the tire-to-ground contact patches at the front and rear of the tires

- (1) Assumes the centers of the contact patches are in-line with the longitudinal centerlines of the tire and equidistant from the forward and rearward most planes of the tires
- (2) Accounts for differences in toe and camber angles

Geometric Overview of the Wheelbase Measurement Procedure



VEHICLE WHEELBASE (W)

$$W = (LW+RW)/2$$

Where:

The average of the longitudinal distances from the rim edges from outermost and innermost edges is equal to the average of the longitudinal distances between the centers of the rims on both sides of the vehicle

OVSC CAFE FOOTPRINT ACTIVITIES

■ MY 2009 OVSC Accomplishments

- New test procedure issued March 30, 2009
- 16 LT indicant tests conducted March-June 2009
- NHTSA held CAFE public meeting and demonstration June 24, 2009

■ MY 2010 Goals

- 30 LT compliance tests
- 5 PC indicant tests
- Conduct additional research on variation and testing methodologies
- Develop guidance on how to resolve differences between design and measured values



2009 Indicant Test Results

VEHICLE NUMBER	MODEL YEAR	VEHICLE TYPE	VARIATION (DESIGN MINUS MEASURED DIMENSIONS)			VARIATION IN CALCULATED VALUES	
			VEHICLE WHEELBASE (IN)	FRONT TRACK (IN)	REAR TRACK (IN)	VEHICLE TRACK (IN)	FOOTPRINT (FT2)
1	2009	MPV	-0.06	-0.14	-0.15	0.15	0.19
2	2009	MPV	0.07	0.01	-0.02	0.00	0.04
3	2009	MPV	-0.04	-0.02	-0.20	0.11	0.08
4	2009	MPV	0.03	-0.02	-0.14	0.08	0.11
5	2009	MPV	-0.08	-0.13	0.00	0.07	0.05
6	2009	MPV	-0.15	-0.15	-0.01	0.08	0.03
7	2009	MPV	0.24	Single Track Width Value		0.12	0.20
8	2009	MPV	0.30	0.33	-0.27	0.02	0.11
9	2009	MPV	0.12	0.04	0.08	-0.06	0.02
10	2009	MPV	0.08	-0.02	-0.10	0.06	0.10
11	2009	MPV	0.27	Single Track Width Value		0.23	0.31
12	2009	PASS CAR	-0.24	-0.08	-0.01	0.04	-0.02
13	2009	TRUCK	-0.18	-0.07	-0.17	0.07	-0.06
14	2009	TRUCK	0.05	-0.19	-0.04	0.12	0.09
15	2009	TRUCK	0.14	-0.08	0.05	0.01	0.05
16	2009	MPV	0.20	NA	NA	0.01	0.02



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IMPORTANCE OF MEASUREMENT VARIATIONS

Worst Case Scenario

- Assume smaller footprints if wheelbase and track widths are both less than design dimensions
- Also, assume a manufacturer's actual EPA tested FE = 23.1 mpg for total fleet population = 9,500 vehicles
- The effect of variations for all models and all dimensions by -0.25 and - 0.50 inches are as follows :

	FE (mpg)	Change (mpg)	Potential Shortfalls	
			Credits	CAFE Penalty
Target	23.1	0	0	\$0.00
Target FE -.25	23.2	0.1	-9,500	-\$52,250.00
Target FE -.50	23.3	0.2	-19,000	-\$104,500.00

The current penalty for failing to meet CAFE standards is \$5.50 per tenth of a mile per gallon under the target value times the total volume of vehicles in the manufacturer's fleet for a given model year

Credit Allocation Program

Pre-MY 2011 vs. MY 2011 and beyond

Credit Allocation Program	Applies to	Credits	Credit Carry Forward	Credit Carry Backward	Trade **	Transfer***	Penalties (credit short fall)
Pre-MY 2011	MY 1978 to 2010 PC and LTs*	Each 1/10 mpg above or below STD x number of vehicles No credit if STD = Actual mpg	MY 1978 to MY2007 +3 MYs (Positive credits within same category)	-3 MYs (Positive credits within same category)	No	No	If sufficient credit are not available to offset shortfalls mfg is liable for civil penalty \$5.50 each negative credit
MY 2011 and beyond	MY 2011+ PC and LTs		MY 2008 +5 MYs (Positive credits within same category)		Credits earned MY 2011+ (Between different credit holders within same compliance category)	Credits earned MY 2011+ (Across compliance categories held by same manufacturer)	

* LTs have option of old or new in MY 2008-2010

** A trade occurs when NHTSA receives instructions from a credit holder to place credits held by that credit holder into the account of another credit holder

*** A transfer occurs when NHTSA receives instructions from a credit holder to move credits from one of its compliance categories to another of its (or another manufacturers) compliance categories



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New Process for Resolving CAFE Non-Compliance

- EPA measures fuel economy, calculates average fuel economy, and reports measurements and calculations to NHTSA
- Credits calculated
- Manufacturer notified when standard not met
- Manufacturer must confirm shortfall
- Manufacturers must submit plan to resolve shortfall with earned, transferred and/or traded credits
- Plan must be approved by NHTSA
- Otherwise, manufacturers must pay civil penalty



Additional Steps in CAFE Compliance

- NHTSA must be notified of any corporate relationship changes
- Periodically NHTSA will:
 - Send credit status letters to each credit holder
 - Publish credit holders names and holdings



Limitations on Use of Credits

- Minimum standard for domestic PC compliance category (49 U.S.C. § 32902 (b)(4))
- Domestic PC minimum standard cannot be met with traded and transferred credits
- Traded and transferred credits must be adjusted (49 CFR Part 536)
- Credit transfer limitations (49 U.S.C. § 32903 (g)(3))
 - MY 2011 - 2013, 1.0 mpg; MY 2014 - 2017, 1.5 mpg; MY 2018 and there after, 2.0 mpg
- Maximum increase limited from dual fueled automobiles (49 U.S.C. § 32906(a))
 - Phased out over time from 1.2 mpg through MY 2014 to 0.0 mpg after MY 2019



Example of Credit Allocation Process

MANUFACTURER A				
<i>Domestic Passenger Automobiles</i>				
Model Year	Actual CAFE (mpg)	CAFE Standard (mpg)	Production Volume	MY Credit Balance Excess or (Shortfall)
2012	32.2	32.5	1190157	-3570471

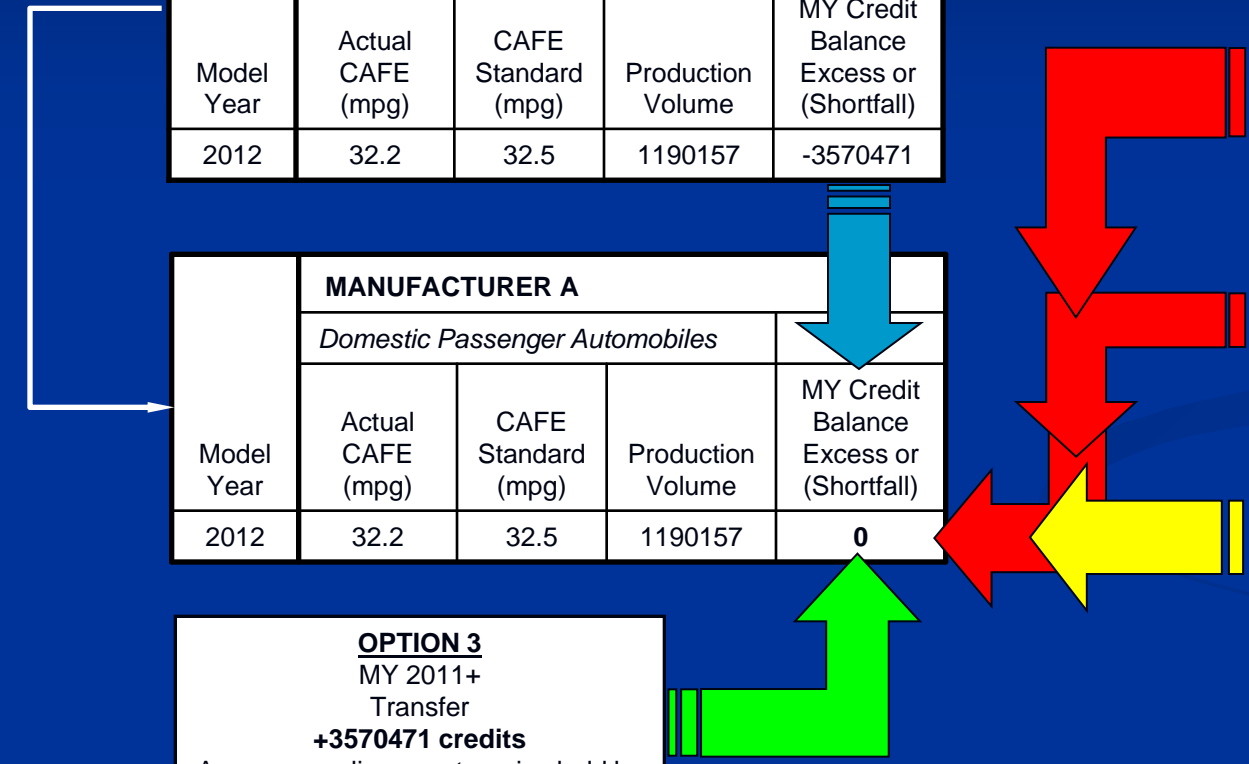
MANUFACTURER A				
<i>Domestic Passenger Automobiles</i>				
Model Year	Actual CAFE (mpg)	CAFE Standard (mpg)	Production Volume	MY Credit Balance Excess or (Shortfall)
2012	32.2	32.5	1190157	0

OPTION 1
 Carry forward
+3570471 credits
 From previous MYs in same compliance category

OPTION 2
 Carry backwards
+3570471 credits
 From subsequent MYs in same compliance category

OPTION 4
 MY 2011+
 Trade
+3570471 credits
 Between different credit holders within same compliance category

OPTION 3
 MY 2011+
 Transfer
+3570471 credits
 Across compliance categories held by same manufacturer



CAFE Reporting

- Summary of Fuel Economy Performance Report
- Fines Collected Status Table
- Flexible Fuel Table
- Credit holders credit status table (available in near future)
- <http://www.nhtsa.gov/portal/fueleconomy.jsp>



NHTSA OVSC Points of Contact

- Credit Allocation Program - Mr. John Finneran, (202)366-0645
- Footprint Testing - Mr. Maurice Hicks, (202)366-1708
- CAFE Reporting - Terry Anderson, (202)366-6030



Any Questions?



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