PM Speciation Profiles for Light-Duty Vehicle Brake Wear

—PM4008, PM4009, and PM4010

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I. Introduction

In California, the reduction of tailpipe emissions of particulate matter (PM) from on-road vehicles has been a significant achievement due to stringent standards and regulations. However, as tailpipe emissions decrease, the role of non-exhaust sources in contributing to on-road mobile source emissions becomes increasingly crucial. On-road non-exhaust sources include brake wear, tire wear and road dust resuspension. They are released through processes unrelated to fuel combustion and not emitted from the exhaust pipe of the vehicle. The EMFAC model predicts that on-road PM emissions will eventually be dominated by non-exhaust sources as vehicle miles traveled increases. Therefore, better understanding of the chemical composition of these emissions is crucial for air quality modeling.

The focus of this work is light-duty vehicle brake wear. CARB's Profile PM473 has been used to describe the brake dust emissions for on-road vehicles for over two decades [1]. It was created by averaging two brake wear PM profiles based on Hildemann's study [2] and Cooper's study [3]. Semi-metallic (SM) brake pads were tested in both studies. The major component in PM473 is iron (Fe), which is 28.7% of the PM mass, followed by organic carbon (OC) 10.7%, magnesium (Mg) 8.3%, silicon (Si) 6.8%, barium (Ba) 5.4%, sulfate 3.3%, and then elemental carbon (EC) 2.6%.

In 2019, the CARB research project 17RD016 was conducted to evaluate the relative level of PM emissions from braking in the light-duty fleet. The study aimed to update EMFAC emission factors and investigate variables affecting brake emissions. Two types of brake pads, non-asbestos organic (NAO) and low-metallic (LM), were studied in this project. Using the speciation test data obtained from project 17RD016, three new PM speciation profiles are developed in this work:

- PM4008: Light-duty vehicle brake wear (NAO)
- PM4009: Light-duty vehicle brake wear (LM)
- PM4010: Light-duty vehicle brake wear (composite)

II. Methodology

A. Sample Collection and Analytical Methods

The CARB research project 17RD016 was a joint endeavor between Eastern Research Group (ERG) and LINK Testing Laboratories, Inc. [4, 5]. A LINK Engineering single wheel brake dynamometer was used for the measurement of PM emissions. Six test vehicles (with common cross-platform brake components) were chosen based on their popularity (using DMV registration data), the mass of their wearable brake pads, and their weight, ensuring a diverse representation of light-duty vehicle type across the California fleet. The brakes were tested using a representative driving cycle, California Brake Driving Cycle (CBDC), developed from the 2010-2012 Caltrans Household Travel Survey. Three different pad materials were tested: original equipment service non-asbestos organic (OES-NAO), aftermarket NAO, and aftermarket LM. One of the vehicles was equipped with a regenerative braking system.

The tests were conducted using a constant volume sampling (CVS) system from September 2019 to January 2020 in Haggen-Smit Laboratory (HSL), El Monte, California. The TSI Micro-Orifice Uniform Deposition Impactor (MOUDI) 100S4 was utilized to measure gravimetric PM mass across various size classifications, employing coated aluminum impactors. In addition to the work conducted by LINK and ERG, CARB Aerosol Analysis and Methods Evaluation Section laboratory performed chemical speciation tests [5]. The PM samples for speciation tests were collected on Teflon filters after a PM10 cyclone. The elements were analyzed using Energy Dispense X-ray Fluorescence (ED-XRF) and water-soluble ions were determined using Ion Chromatography (IC).

B. Speciation Profile Development

To assure the validity of the individual species measurements, only the analytical measurements with signals above the detection limit were used for the profile development. As mentioned previously, brakes from six vehicles were tested by applying the CBDC on a brake dynamometer in the 17RD016 study. Twenty samples were collected and analyzed for OES-NAO pads, 18 samples for aftermarket-NAO pads, and 6 samples for aftermarket-LM pads. The chemical analyses were all performed for PM10.

- Elements and Ions

The weight percentage of each element or ion was determined by dividing its mass by the total PM10 mass on the filter.

- EC/OC

The profiles developed in this work face challenges due to the lack of EC and OC data from 17RD016 project. The total carbon (TC) content, i.e., EC and OC, documented in literature from brake wear emissions shows significant variability. The summarized values from selected studies are presented in Table 1.

Table 1: Carbon content in brake wear particles from selected studies

Study	Percentage of TC in brake wear PM	Brake pad material
Alves et al. [6]	6.74 – 75.4% (PM10)	NAO
Alves et al. [6]	5.07 – 14.6% (PM10)	Low steel
Hagino et al. [7]	7.3%, 7.9%, and 41% (PM10)	NAO
Hagino et al. [7]	13%, 8.3%, and 57% (PM2.5)	NAO
Malachova et al. [8]	18.5 - 49.0%	Low metallic
Hussain et al. [9]	17.618%	NAO
Hussain et al. [9]	20.918%	Semi metallic
Garg et al. [10]	4.6 – 49.9%	Semi metallic

Although the TC content in brake wear PM covers a wide range, OC consistently exhibits higher concentrations than EC. For example, Gasser et al. [11] attributed over 96% of TC mass to OC, and Grigoratos and Martini [12] reported OC concentrations one magnitude

higher than EC. Given the considerable variability in EC and OC values across different studies, selecting representative values for the new profiles from this study is impractical. Therefore, we decided to continue to use the EC and OC percentages from PM473 for the new profiles until reliable new EC/OC test data become available. Specifically, the adopted values are 2.61% for EC and 10.70% for OC.

- Non-Carbon Organic Matter (NCOM)

For non-combustion sources, organic matter (OM) can be estimated as 1.4 times OC [13]. NCOM was calculated by subtracting OC from OM, i.e., [NCOM] = [OM] – [OC] = 1.4 x [OC] – [OC] = 0.4 x [OC].

- Others

The 'others' was obtained by the difference between 100% and the total percentage of all known species. It primarily consists of oxygen, which is bonded with metals. The high concentration of oxygen in brake wear particles is mainly due to the oxidation process occurring during the intense friction generated when brakes are applied [14-16].

III. Results and Discussion

A. Size Fractions

The data obtained from Project 17RD016 demonstrates a strong correlation between PM2.5 and PM10. Based on this correlation, a PM2.5/PM10 ratio of 0.35 was adopted in the EMFAC2021 model to facilitate the conversions of PM10 emissions to PM2.5 emissions, specifically for light-duty vehicle brake wear [17]. Additionally, the EMFAC model assumes a PM10/TPM ratio of 1.0, which is used to convert PM10 emissions to TPM emissions. To maintain consistency with the EMFAC model, we apply the same size fractions for our profiles, i.e., PM2.5/TPM=0.35, and PM10/TPM=1.0.

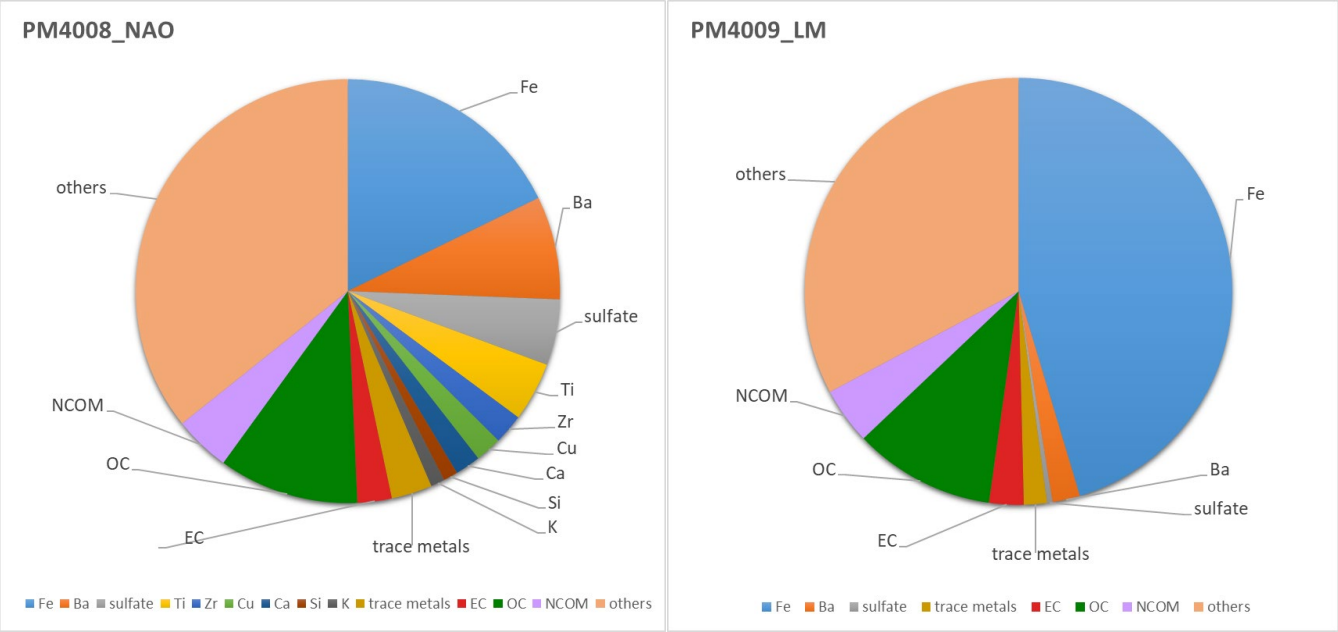
B. Chemical Speciation

The 44 individual speciation profiles were categorized into three groups based on their pad type, i.e., OES-NAO, aftermarket-NAO, and aftermarket-LM pads. Subsequently, the profiles were averaged to produce a single profile for each group. However, since no significant differences were observed between the OES-NAO and aftermarket-NAO profiles, we decided to combine them to form a single profile for NAO pads. Therefore, the two PM speciation profiles generated from the tests are: PM4008 for NAO pads and PM4009 for LM pads. Given that chemical composition analyses were only conducted for PM10, it is assumed that the chemical composition is homogeneous across all PM size ranges. That is, the chemical speciation profiles of TPM, PM10 and PM2.5 are considered to be identical. Detailed information on PM4008 and PM4009 can be found in Appendix Table 3 and Table 4.

The major chemical species distributions of these two profiles are illustrated in the pie chart presented in Figure 1. It shows that the metals determined by ED-XRF account for about half

of the total PM mass collected on PM10 filters for both NAO pads and LM pads. Both cases highlight iron (Fe) and barium (Ba) as the key metals; however, their respective quantities differ greatly. In PM4008 (NAO), Fe constitutes 17.8% and Ba makes up 7.9%; while in PM4009 (LM), 45.4% of the PM10 is Fe and Ba comprises just 2.1%. This suggests that the chemical composition of brake wear is highly sensitive to the type of pad material [17]. In addition to Fe and Ba, the brake wear particles from the NAO system (PM4008) contain several trace elements: titanium (Ti) at 4.5%, zirconium (Zr) at 2.3%, copper (Cu) at 2.0%, silicon (Si) at 1.1%, potassium (K) at 1.1%, and many other trace metals below 1%. For the LM system, aside from Fe and Ba, trace elements such as manganese (Mn), silicon (Si), magnesium (Mg), and others are all below 1%.

Figure 1. Major species of profiles PM4008 (NAO) and PM4009 (LM)



It's also worth noting the difference in sulfate content between the two systems. The NAO profile (PM4008) contains 5.0% sulfate, much higher than the 0.4% found in the LM profile (PM4009).

C. Composite Speciation Profile

The real-world vehicle fleet consists of various vehicles equipped with different brake pads. As discussed previously, the composition of the brake wear particles is highly dependent on the type of brake pad materials used. However, CARB's brake dust inventory categories do not contain specific brake pad information. Therefore, it is necessary to create a composite profile that considers the overall distribution of brake pads within the fleet to more accurately represent the general real-world situation.

According to survey data provided by LINK, estimates of pad material balanced by vehicle model at ages 3 and 11 years were averaged to produce a straightforward estimate for a 7-

year-old vehicle [5]. This revealed that approximately 75% of light-duty vehicles in California use NAO pads, while 25% use LM pads.

Studies have shown that the brake wear particles emitted from LM pads are substantially higher than those from NAO pads. Some studies report that LM pads produce two to five times more PM10 compared to NAO pads [5, 16-20]. When creating a comprehensive profile, it is essential to consider the particle emissions contributed by different brake pads rather than their relative market share in the fleet. For this analysis, we assume that PM10 emissions from LM pads are three times that of NAO pads. This assumption falls within the range of previously reported data and will be applied to subsequent calculations for the composite profile.

Considering the market share ratio of the two pads (NAO:LM = 75%:25% or 3:1) and the ratio of their emission rates (LM:NAO = 3:1), their contributions to overall break wear emissions are almost comparable. To fully represent the brake wear emissions profile of California's light-duty vehicle fleet, we apply a weighted approach. We incorporate the PM profiles of the two major types of brake pads by considering their relative PM emission contributions. The comprehensive profile, PM4010, is essentially the average of the NAO pads profile (PM4008) and the LM pads profile (PM4009). Detailed information on the composite profile PM4010 is provided in Appendix Table 5.

IV. Estimated Impacts of Profile Update

The new PM4010 profile, initially developed for light-duty vehicles, will also be applied to heavy-duty vehicles due to the current lack of specific profiles for heavy-duty vehicle brake wear. Profiles for heavy-duty vehicles will be updated subsequently, and PM4010 will be replaced once the new profiles are available. Emission Inventory Codes (EICs) for brake dust from all types of on-road vehicles are summarized in Appendix Table 6, including the new EICs generated for EMFAC202Y. Using the 2023 emissions data as an example, the statewide annual average TPM emissions from brake wear for all types of on-road vehicles are 46.0 tons/day, according to CEPAM: California 2022 Ozone SIP Baseline Emission Projection Planning Inventory (version 1.01B) [21]. The emissions constitute approximately 52.7% of the statewide total mobile source TPM emissions and 77.0% of the on-road motor vehicle TPM emissions.

The new profile, PM4010, has a lower PM2.5/TPM ratio (0.35) compared to the current profile, PM473 (0.42). Applying the PM2.5/TPM ratio of the new profile (PM4010) to the associated categories, the overall calculated brake wear PM2.5 emissions are 16.1 tons/day, which is 16.7% lower than the estimated value calculated using the current PM473 for year 2023.

With the new profile, the EC and OC emissions of brake dusts are 0.42 and 1.72 tons/day, respectively, which are reductions of 16.0% and 16.9% compared to the current estimates. Emissions of sulfate, iron and magnesium emissions also decreased by 32.3%, 8.3%, and 97.5%. Conversely, manganese emissions increased by 33.3% (Table 2).

Table 2: Impacts of selected PM2.5 species on emissions for on-road vehicle brake wear using updated profile PM4010 (2023)

Statewide annual average emissions	Using current profile PM473 (tons/day)	Using new profile PM4010 (tons/day)	Change of emissions (tons/day)	Percentage of change
EC	0.50	0.42	-0.08	-16.0%
OC	2.07	1.72	-0.35	-16.9%
sulfate	0.65	0.44	-0.21	-32.3%
iron (Fe)	5.54	5.08	-0.46	-8.3%
magnesium (Mg)	1.60	0.04	-1.56	-97.5%
manganese (Mn)	0.03	0.04	+0.01	+33.3%

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V. Appendix

Table 3. Profile PM4008: Light-duty vehicle brake wear (NAO)

Species Name	CARB-SAROAD	TPM Weight Percentage (%)	PM10 Weight Percentage (%)	PM2.5 Weight Percentage (%)
elemental carbon (EC)	12116	2.6100	2.6100	2.6100
organic carbon (OC)	11102	10.7000	10.7000	10.7000
non-carbon organic matter (NCOM)	11103	4.2800	4.2800	4.2800
sulfate	12403	5.0227	5.0227	5.0227
nitrate	12306	0.3796	0.3796	0.3796
chloride	12203	0.2106	0.2106	0.2106
aluminum	12101	0.5569	0.5569	0.5569
antimony	12102	0.6777	0.6777	0.6777
barium	12107	7.8649	7.8649	7.8649
calcium	12111	1.9362	1.9362	1.9362
chromium	12112	0.0406	0.0406	0.0406
cobalt	12113	0.0260	0.0260	0.0260
copper	12114	2.0113	2.0113	2.0113
gallium	12124	0.0001	0.0001	0.0001
iron	12126	17.7557	17.7557	17.7557
lead	12128	0.0002	0.0002	0.0002
magnesium	12140	0.2008	0.2008	0.2008
manganese	12132	0.1925	0.1925	0.1925
molybdenum	12134	0.0436	0.0436	0.0436
nickel	12136	0.0071	0.0071	0.0071
phosphorus	12152	0.0413	0.0413	0.0413
potassium	12180	1.0593	1.0593	1.0593
silicon	12165	1.1061	1.1061	1.1061
strontium	12168	0.0973	0.0973	0.0973
tin	12160	0.3902	0.3902	0.3902
titanium	12161	4.5135	4.5135	4.5135
vanadium	12164	0.0057	0.0057	0.0057
yttrium	12183	0.0001	0.0001	0.0001
zinc	12167	0.2344	0.2344	0.2344
zirconium	12185	2.2976	2.2976	2.2976
others	12999	35.7380	35.7380	35.7380
Total		100.0000	100.0000	100.0000

Table 4. Profile PM4009: Light-duty vehicle brake wear (LM)

Species Name	CARB-SAROAD	TPM Weight Percentage (%)	PM10 Weight Percentage (%)	PM2.5 Weight Percentage (%)
elemental carbon (EC)	12116	2.6100	2.6100	2.6100
organic carbon (OC)	11102	10.7000	10.7000	10.7000
non-carbon organic matter (NCOM)	11103	4.2800	4.2800	4.2800
sulfate	12403	0.4101	0.4101	0.4101
nitrate	12306	0.1421	0.1421	0.1421
chloride	12203	0.0683	0.0683	0.0683
barium	12107	2.0902	2.0902	2.0902
calcium	12111	0.1174	0.1174	0.1174
chromium	12112	0.0478	0.0478	0.0478
cobalt	12113	0.1287	0.1287	0.1287
copper	12114	0.0359	0.0359	0.0359
iron	12126	45.3673	45.3673	45.3673
magnesium	12140	0.3213	0.3213	0.3213
manganese	12132	0.3571	0.3571	0.3571
nickel	12136	0.0042	0.0042	0.0042
potassium	12180	0.0194	0.0194	0.0194
silicon	12165	0.3534	0.3534	0.3534
strontium	12168	0.0188	0.0188	0.0188
titanium	12161	0.1090	0.1090	0.1090
vanadium	12164	0.0094	0.0094	0.0094
zirconium	12185	0.0041	0.0041	0.0041
others	12999	32.8055	32.8055	32.8055
Total		100.0000	100.0000	100.0000

Table 5. Profile PM4010: Light-duty vehicle brake wear (composite)

Species Name	CARB-SAROAD	TPM Weight Percentage (%)	PM10 Weight Percentage (%)	PM2.5 Weight Percentage (%)
elemental carbon (EC)	12116	2.6100	2.6100	2.6100
organic carbon (OC)	11102	10.7000	10.7000	10.7000
non-carbon organic matter (NCOM)	11103	4.2800	4.2800	4.2800
sulfate	12403	2.7164	2.7164	2.7164
nitrate	12306	0.2609	0.2609	0.2609
chloride	12203	0.1395	0.1395	0.1395
aluminum	12101	0.2784	0.2784	0.2784
antimony	12102	0.3388	0.3388	0.3388
barium	12107	4.9776	4.9776	4.9776
calcium	12111	1.0268	1.0268	1.0268
chromium	12112	0.0442	0.0442	0.0442
cobalt	12113	0.0774	0.0774	0.0774
copper	12114	1.0236	1.0236	1.0236
gallium	12124	0.0001	0.0001	0.0001
iron	12126	31.5615	31.5615	31.5615
lead	12128	0.0001	0.0001	0.0001
magnesium	12140	0.2610	0.2610	0.2610
manganese	12132	0.2748	0.2748	0.2748
molybdenum	12134	0.0218	0.0218	0.0218
nickel	12136	0.0057	0.0057	0.0057
phosphorus	12152	0.0207	0.0207	0.0207
potassium	12180	0.5394	0.5394	0.5394
silicon	12165	0.7297	0.7297	0.7297
strontium	12168	0.0580	0.0580	0.0580
tin	12160	0.1951	0.1951	0.1951
titanium	12161	2.3112	2.3112	2.3112
vanadium	12164	0.0076	0.0076	0.0076
zinc	12167	0.1172	0.1172	0.1172
zirconium	12185	1.1508	1.1508	1.1508
others	12999	34.2717	34.2717	34.2717
Total		100.0000	100.0000	100.0000

Table 6. Mapping of PM4010 to all on-road vehicle brake wear categories

EIC	EIC Name
71072054100000	Light-Duty Passenger (LDA) - Non-Catalyst Brake Wear - Brake Dust
71072254100000	Light-Duty Passenger (LDA) - Non-Catalyst Gasoline Brake Wear - Brake Dust
71074554100000	Light-Duty Passenger (LDA) - Catalyst Gasoline Brake Wear - Brake Dust
71074654100000	Light-Duty Passenger (LDA) - Catalyst Brake Wear - Brake Dust
71075754100000	Light-Duty Passenger (LDA) - Catalyst PHEV Brake Wear - Brake Dust
71076854100000	Light-Duty Passenger (LDA) - Diesel Brake Wear - Brake Dust
71077354100000	Light-Duty Passenger (LDA) - EV Brake Wear - Brake Dust
71077654100000	Light-Duty Passenger - Fuel Cell EV Brake Wear
72272054100000	Light-Duty Trucks - 1 (LDT1) - Non-Catalyst Brake Wear - Brake Dust
72272254100000	Light-Duty Trucks - 1 (LDT1) - Non-Catalyst Gasoline Brake Wear - Brake Dust
72274554100000	Light-Duty Trucks - 1 (LDT1) - Catalyst Gasoline Brake Wear - Brake Dust
72274654100000	Light-Duty Trucks - 1 (LDT1) - Catalyst Brake Wear - Brake Dust
72275754100000	Light-Duty Trucks - 1 (LDT1) - Catalyst PHEV Brake Wear - Brake Dust
72276854100000	Light-Duty Trucks - 1 (LDT1) - Diesel Brake Wear - Brake Dust
72277354100000	Light-Duty Trucks - 1 (LDT1) - EV Brake Wear - Brake Dust
72277654100000	Light-Duty Trucks - 1 - Fuel Cell EV Brake Wear
72372054100000	Light-Duty Trucks - 2 (LDT2) - Non-Catalyst Brake Wear - Brake Dust
72372254100000	Light-Duty Trucks - 2 (LDT2) - Non-Catalyst Gasoline Brake Wear - Brake Dust
72374554100000	Light-Duty Trucks - 2 (LDT2) - Catalyst Gasoline Brake Wear - Brake Dust
72374654100000	Light-Duty Trucks - 2 (LDT2) - Catalyst Brake Wear - Brake Dust
72375754100000	Light-Duty Trucks - 2 (LDT2) - Catalyst PHEV Brake Wear - Brake Dust
72376854100000	Light-Duty Trucks - 2 (LDT2) - Diesel Brake Wear - Brake Dust
72377354100000	Light-Duty Trucks - 2 (LDT2) - EV Brake Wear - Brake Dust
72377654100000	Light-Duty Trucks - 2 - Fuel Cell EV Brake Wear
72472054100000	Medium-Duty Trucks (MDV) - Non-Catalyst Brake Wear - Brake Dust
72472254100000	Medium-Duty Trucks (MDV) - Non-Catalyst Gasoline Brake Wear - Brake Dust
72474554100000	Medium-Duty Trucks (MDV) - Catalyst Gasoline Brake Wear - Brake Dust
72474654100000	Medium-Duty Trucks (MDV) - Catalyst Brake Wear - Brake Dust
72475754100000	Medium-Duty Trucks (MDV) - Catalyst PHEV Brake Wear - Brake Dust
72476854100000	Medium-Duty Trucks (MDV) - Diesel Brake Wear - Brake Dust
72477354100000	Medium-Duty Trucks (MDV) - EV Brake Wear - Brake Dust
72477654100000	Medium-Duty Trucks - Fuel Cell EV Brake Wear
72572254100000	Light Heavy-Duty Trucks - 1 (LHDT1) - Non-Catalyst Gasoline Brake Wear - Brake Dust

EIC	EIC Name
72572254107081	Light Heavy-Duty Trucks - 1 - Non-Catalyst Gasoline Brake Wear
72572254107082	Light Heavy-Duty Trucks - 1 - Non-Catalyst Gasoline Brake Wear
72574554100000	Light Heavy-Duty Trucks - 1 (LHDT1) - Catalyst Gasoline Brake Wear - Brake Dust
72574554107081	Light Heavy-Duty Trucks - 1 - Catalyst Gasoline Brake Wear
72574554107082	Light Heavy-Duty Trucks - 1 - Catalyst Gasoline Brake Wear
72576854100000	Light Heavy-Duty Trucks - 1 (LHDT1) - Diesel Brake Wear - Brake Dust
72576854107081	Light Heavy-Duty Trucks - 1 - Diesel Brake Wear
72576854107082	Light Heavy-Duty Trucks - 1 - Diesel Brake Wear
72577354100000	Light Heavy-Duty Trucks - 1 (LHDT1) - EV Brake Wear - Brake Dust
72577354107081	Light Heavy-Duty Trucks - 1 - EV Brake Wear
72577354107082	Light Heavy-Duty Trucks - 1 - EV Brake Wear
72577654107081	Light Heavy-Duty Trucks - 1 - Fuel Cell EV Brake Wear
72577654107082	Light Heavy-Duty Trucks - 1 - Fuel Cell EV Brake Wear
72672254100000	Light Heavy-Duty Trucks - 2 (LHDT2) - Non-Catalyst Gasoline Brake Wear - Brake Dust
72672254107083	Light Heavy-Duty Trucks - 2 - Non-Catalyst Gasoline Brake Wear
72672254107084	Light Heavy-Duty Trucks - 2 - Non-Catalyst Gasoline Brake Wear
72674554100000	Light Heavy-Duty Trucks - 2 (LHDT2) - Catalyst Gasoline Brake Wear - Brake Dust
72674554107083	Light Heavy-Duty Trucks - 2 - Catalyst Gasoline Brake Wear
72674554107084	Light Heavy-Duty Trucks - 2 - Catalyst Gasoline Brake Wear
72676854100000	Light Heavy-Duty Trucks - 2 (LHDT2) - Diesel Brake Wear - Brake Dust
72676854107083	Light Heavy-Duty Trucks - 2 - Diesel Brake Wear
72676854107084	Light Heavy-Duty Trucks - 2 - Diesel Brake Wear
72677354100000	Light Heavy-Duty Trucks - 2 (LHDT2) - EV Brake Wear - Brake Dust
72677354107083	Light Heavy-Duty Trucks - 2 - EV Brake Wear
72677354107084	Light Heavy-Duty Trucks - 2 - EV Brake Wear
72677654107083	Light Heavy-Duty Trucks - 2 - Fuel Cell EV Brake Wear
72677654107084	Light Heavy-Duty Trucks - 2 - Fuel Cell EV Brake Wear
72772254107066	Medium Heavy-Duty Trucks (MHDT) - Non-Catalyst Gasoline Brake Wear - Brake Dust - T6 TS
72774554107066	Medium Heavy-Duty Trucks (MHDT) - Catalyst Gasoline Brake Wear - Brake Dust - T6 TS
72774854107044	Medium Heavy-Duty Trucks (MHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T6 Cairp Class 7
72774854107045	Medium Heavy-Duty Trucks (MHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T6 Instate Delivery Class 4
72774854107046	Medium Heavy-Duty Trucks (MHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T6 Instate Delivery Class 5
72774854107047	Medium Heavy-Duty Trucks (MHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T6 Instate Delivery Class 6

EIC	EIC Name
72774854107048	Medium Heavy-Duty Trucks (MHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T6 Instate Delivery Class 7
72774854107049	Medium Heavy-Duty Trucks (MHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T6 Instate Other Class 4
72774854107050	Medium Heavy-Duty Trucks (MHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T6 Instate Other Class 5
72774854107051	Medium Heavy-Duty Trucks (MHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T6 Instate Other Class 6
72774854107052	Medium Heavy-Duty Trucks (MHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T6 Instate Other Class 7
72774854107053	Medium Heavy-Duty Trucks (MHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T6 Instate Tractor Class 6
72774854107054	Medium Heavy-Duty Trucks (MHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T6 Instate Tractor Class 7
72774854107059	Medium Heavy-Duty Trucks (MHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T6 Public Class 4
72774854107060	Medium Heavy-Duty Trucks (MHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T6 Public Class 5
72774854107061	Medium Heavy-Duty Trucks (MHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T6 Public Class 6
72774854107062	Medium Heavy-Duty Trucks (MHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T6 Public Class 7
72774854107063	Medium Heavy-Duty Trucks (MHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T6 Utility Class 5
72774854107064	Medium Heavy-Duty Trucks (MHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T6 Utility Class 6
72774854107065	Medium Heavy-Duty Trucks (MHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T6 Utility Class 7
72776854107041	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Cairp Class 4
72776854107042	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Cairp Class 5
72776854107043	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Cairp Class 6
72776854107044	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Cairp Class 7
72776854107045	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Instate Delivery Class 4
72776854107046	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Instate Delivery Class 5
72776854107047	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Instate Delivery Class 6
72776854107048	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Instate Delivery Class 7
72776854107049	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Instate Other Class 4
72776854107050	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Instate Other Class 5
72776854107051	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Instate Other Class 6
72776854107052	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Instate Other Class 7
72776854107053	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Instate Tractor Class 6

EIC	EIC Name
72776854107054	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Instate Tractor Class 7
72776854107055	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Oos Class 4
72776854107056	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Oos Class 5
72776854107057	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Oos Class 6
72776854107058	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Oos Class 7
72776854107059	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Public Class 4
72776854107060	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Public Class 5
72776854107061	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Public Class 6
72776854107062	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Public Class 7
72776854107063	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Utility Class 5
72776854107064	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Utility Class 6
72776854107065	Medium Heavy-Duty Trucks (MHDT) - Diesel Brake Wear - Brake Dust - T6 Utility Class 7
72777354107041	Medium Heavy-Duty Trucks (MHDT) - EV Brake Wear - Brake Dust - T6 Cairp Class 4
72777354107042	Medium Heavy-Duty Trucks (MHDT) - EV Brake Wear - Brake Dust - T6 Cairp Class 5
72777354107043	Medium Heavy-Duty Trucks (MHDT) - EV Brake Wear - Brake Dust - T6 Cairp Class 6
72777354107044	Medium Heavy-Duty Trucks (MHDT) - EV Brake Wear - Brake Dust - T6 Cairp Class 7
72777354107045	Medium Heavy-Duty Trucks (MHDT) - EV Brake Wear - Brake Dust - T6 Instate Delivery Class 4
72777354107046	Medium Heavy-Duty Trucks (MHDT) - EV Brake Wear - Brake Dust - T6 Instate Delivery Class 5
72777354107047	Medium Heavy-Duty Trucks (MHDT) - EV Brake Wear - Brake Dust - T6 Instate Delivery Class 6
72777354107048	Medium Heavy-Duty Trucks (MHDT) - EV Brake Wear - Brake Dust - T6 Instate Delivery Class 7
72777354107049	Medium Heavy-Duty Trucks (MHDT) - EV Brake Wear - Brake Dust - T6 Instate Other Class 4
72777354107050	Medium Heavy-Duty Trucks (MHDT) - EV Brake Wear - Brake Dust - T6 Instate Other Class 5
72777354107051	Medium Heavy-Duty Trucks (MHDT) - EV Brake Wear - Brake Dust - T6 Instate Other Class 6
72777354107052	Medium Heavy-Duty Trucks (MHDT) - EV Brake Wear - Brake Dust - T6 Instate Other Class 7
72777354107053	Medium Heavy-Duty Trucks (MHDT) - EV Brake Wear - Brake Dust - T6 Instate Tractor Class 6
72777354107054	Medium Heavy-Duty Trucks (MHDT) - EV Brake Wear - Brake Dust - T6 Instate Tractor Class 7
72777354107059	Medium Heavy-Duty Trucks (MHDT) - EV Brake Wear - Brake Dust - T6 Public Class 4
72777354107060	Medium Heavy-Duty Trucks (MHDT) - EV Brake Wear - Brake Dust - T6 Public Class 5
72777354107061	Medium Heavy-Duty Trucks (MHDT) - EV Brake Wear - Brake Dust - T6 Public Class 6
72777354107062	Medium Heavy-Duty Trucks (MHDT) - EV Brake Wear - Brake Dust - T6 Public Class 7

EIC	EIC Name
72777354107063	Medium Heavy-Duty Trucks (MHDT) - EV Brake Wear - Brake Dust - T6 Utility Class 5
72777354107064	Medium Heavy-Duty Trucks (MHDT) - EV Brake Wear - Brake Dust - T6 Utility Class 6
72777354107065	Medium Heavy-Duty Trucks (MHDT) - EV Brake Wear - Brake Dust - T6 Utility Class 7
72777354107066	Medium Heavy-Duty Trucks (MHDT) - EV Brake Wear - Brake Dust - T6 TS
72777654107041	Medium Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T6 Cairp Class 4
72777654107042	Medium Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T6 Cairp Class 5
72777654107043	Medium Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T6 Cairp Class 6
72777654107044	Medium Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T6 Cairp Class 7
72777654107045	Medium Heavy-Duty Trucks - Fuel Cell EV Brake Wear -T6 Instate Delivery Class 4
72777654107046	Medium Heavy-Duty Trucks - Fuel Cell EV Brake Wear -T6 Instate Delivery Class 5
72777654107047	Medium Heavy-Duty Trucks - Fuel Cell EV Brake Wear -T6 Instate Delivery Class 6
72777654107048	Medium Heavy-Duty Trucks - Fuel Cell EV Brake Wear -T6 Instate Delivery Class 7
72777654107049	Medium Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T6 Instate Other Class 4
72777654107050	Medium Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T6 Instate Other Class 5
72777654107051	Medium Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T6 Instate Other Class 6
72777654107052	Medium Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T6 Instate Other Class 7
72777654107053	Medium Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T6 Instate Tractor Class 6
72777654107054	Medium Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T6 Instate Tractor Class 7
72777654107059	Medium Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T6 Public Class 4
72777654107060	Medium Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T6 Public Class 5
72777654107061	Medium Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T6 Public Class 6
72777654107062	Medium Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T6 Public Class 7
72777654107063	Medium Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T6 Utility Class 5
72777654107064	Medium Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T6 Utility Class 6
72777654107065	Medium Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T6 Utility Class 7
72777654107066	Medium Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T6 TS
72872254107080	Heavy Heavy-Duty Trucks (HHDT) - Non-Catalyst Gasoline Brake Wear - Brake Dust - T7 IS
72874554107080	Heavy Heavy-Duty Trucks (HHDT) - Catalyst Gasoline Brake Wear - Brake Dust - T7 IS
72874854107067	Heavy Heavy-Duty Trucks (HHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T7 Cairp Class 8
72874854107071	Heavy Heavy-Duty Trucks (HHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T7 POAK Class 8
72874854107072	Heavy Heavy-Duty Trucks (HHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T7 POLA Class 8
72874854107073	Heavy Heavy-Duty Trucks (HHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T7 Public Class 8

EIC	EIC Name
72874854107074	Heavy Heavy-Duty Trucks (HHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T7 Single Concrete/Transit Mix Class 8
72874854107075	Heavy Heavy-Duty Trucks (HHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T7 Single Dump Class 8
72874854107076	Heavy Heavy-Duty Trucks (HHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T7 Single Other Class 8
72874854107077	Heavy Heavy-Duty Trucks (HHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T7 SWCV Class 8
72874854107078	Heavy Heavy-Duty Trucks (HHDT) - Catalyst Natural Gas Brake Wear - Brake Dust - T7 Tractor Class 8
72876854107067	Heavy Heavy-Duty Trucks (HHDT) - Diesel Brake Wear - Brake Dust - T7 Cairp Class 8
72876854107068	Heavy Heavy-Duty Trucks (HHDT) - Diesel Brake Wear - Brake Dust - T7 NNOOS Class 8
72876854107069	Heavy Heavy-Duty Trucks (HHDT) - Diesel Brake Wear - Brake Dust - T7 NOOS Class 8
72876854107070	Heavy Heavy-Duty Trucks (HHDT) - Diesel Brake Wear - Brake Dust - T7 Other Port Class 8
72876854107071	Heavy Heavy-Duty Trucks (HHDT) - Diesel Brake Wear - Brake Dust - T7 POAK Class 8
72876854107072	Heavy Heavy-Duty Trucks (HHDT) - Diesel Brake Wear - Brake Dust - T7 POLA Class 8
72876854107073	Heavy Heavy-Duty Trucks (HHDT) - Diesel Brake Wear - Brake Dust - T7 Public Class 8
72876854107074	Heavy Heavy-Duty Trucks (HHDT) - Diesel Brake Wear - Brake Dust - T7 Single Concrete/Transit Mix Class 8
72876854107075	Heavy Heavy-Duty Trucks (HHDT) - Diesel Brake Wear - Brake Dust - T7 Single Dump Class 8
72876854107076	Heavy Heavy-Duty Trucks (HHDT) - Diesel Brake Wear - Brake Dust - T7 Single Other Class 8
72876854107077	Heavy Heavy-Duty Trucks (HHDT) - Diesel Brake Wear - Brake Dust - T7 SWCV Class 8
72876854107078	Heavy Heavy-Duty Trucks (HHDT) - Diesel Brake Wear - Brake Dust - T7 Tractor Class 8
72876854107079	Heavy Heavy-Duty Trucks (HHDT) - Diesel Brake Wear - Brake Dust - T7 Utility Class 8
72877354107067	Heavy Heavy-Duty Trucks (HHDT) - EV Brake Wear - Brake Dust - T7 Cairp Class 8
72877354107070	Heavy Heavy-Duty Trucks (HHDT) - EV Brake Wear - Brake Dust - T7 Other Port Class 8
72877354107071	Heavy Heavy-Duty Trucks (HHDT) - EV Brake Wear - Brake Dust - T7 POAK Class 8
72877354107072	Heavy Heavy-Duty Trucks (HHDT) - EV Brake Wear - Brake Dust - T7 POLA Class 8
72877354107073	Heavy Heavy-Duty Trucks (HHDT) - EV Brake Wear - Brake Dust - T7 Public Class 8
72877354107074	Heavy Heavy-Duty Trucks (HHDT) - EV Brake Wear - Brake Dust - T7 Single Concrete/Transit Mix Class 8
72877354107075	Heavy Heavy-Duty Trucks (HHDT) - EV Brake Wear - Brake Dust - T7 Single Dump Class 8
72877354107076	Heavy Heavy-Duty Trucks (HHDT) - EV Brake Wear - Brake Dust - T7 Single Other Class 8
72877354107077	Heavy Heavy-Duty Trucks (HHDT) - EV Brake Wear - Brake Dust - T7 SWCV Class 8
72877354107078	Heavy Heavy-Duty Trucks (HHDT) - EV Brake Wear - Brake Dust - T7 Tractor Class 8
72877354107079	Heavy Heavy-Duty Trucks (HHDT) - EV Brake Wear - Brake Dust - T7 Utility Class 8
72877354107080	Heavy Heavy-Duty Trucks (HHDT) - EV Brake Wear - Brake Dust - T7 IS

EIC	EIC Name
72877654107067	Heavy Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T7 Cairp Class 8
72877654107070	Heavy Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T7 Other Port Class 8
72877654107071	Heavy Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T7 POAK Class 8
72877654107072	Heavy Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T7 POLA Class 8
72877654107073	Heavy Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T7 Public Class 8
72877654107074	Heavy Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T7 Class 8
72877654107075	Heavy Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T7 Single Dump Class 8
72877654107076	Heavy Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T7 Single Other Class 8
72877654107077	Heavy Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T7 SWCV Class 8
72877654107078	Heavy Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T7 Tractor Class 8
72877654107079	Heavy Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T7 Utility Class 8
72877654107080	Heavy Heavy-Duty Trucks - Fuel Cell EV Brake Wear - T7 IS
73272054100000	Light Heavy-Duty Gas Trucks - 1 (LHDGT1) - Non-Catalyst Brake Wear - Brake Dust
73274654100000	Light Heavy-Duty Gas Trucks - 1 (LHDGT1) - Catalyst Brake Wear - Brake Dust
73372054100000	Light Heavy-Duty Gas Trucks - 2 (LHDGT2) - Non-Catalyst Brake Wear - Brake Dust
73374654100000	Light Heavy-Duty Gas Trucks - 2 (LHDGT2) - Catalyst Brake Wear - Brake Dust
73472054100000	Medium Heavy-Duty Gas Trucks (MHDGT) - Non-Catalyst Brake Wear - Brake Dust
73474654100000	Medium Heavy-Duty Gas Trucks (MHDGT) - Catalyst Brake Wear - Brake Dust
73672054100000	Heavy Heavy-Duty Gas Trucks (HHDGT) - Non-Catalyst Brake Wear - Brake Dust
73674654100000	Heavy Heavy-Duty Gas Trucks (HHDGT) - Catalyst Brake Wear - Brake Dust
74276854100000	Light Heavy-Duty Diesel Trucks - 1 (LHDDT1) - Diesel Brake Wear - Brake Dust
74376854100000	Light Heavy-Duty Diesel Trucks - 2 (LHDDT2) - Diesel Brake Wear - Brake Dust
74476854100000	Medium Heavy-Duty Diesel Trucks (MHDDT) - Diesel Brake Wear - Brake Dust
74476854107000	Medium Heavy-Duty Diesel Trucks (MHDDT) - Diesel Brake Wear - Brake Dust - T6 Ag
74476854107001	Medium Heavy-Duty Diesel Trucks (MHDDT) - Diesel Brake Wear - Brake Dust - T6 Cairp Heavy
74476854107004	Medium Heavy-Duty Diesel Trucks (MHDDT) - Diesel Brake Wear - Brake Dust - T6 Cairp Small
74476854107005	Medium Heavy-Duty Diesel Trucks (MHDDT) - Diesel Brake Wear - Brake Dust - T6 Instate Construction Heavy
74476854107006	Medium Heavy-Duty Diesel Trucks (MHDDT) - Diesel Brake Wear - Brake Dust - T6 Instate Construction Small
74476854107007	Medium Heavy-Duty Diesel Trucks (MHDDT) - Diesel Brake Wear - Brake Dust - T6 Instate Heavy
74476854107008	Medium Heavy-Duty Diesel Trucks (MHDDT) - Diesel Brake Wear - Brake Dust - T6 Instate Small
74476854107009	Medium Heavy-Duty Diesel Trucks (MHDDT) - Diesel Brake Wear - Brake Dust - T6 OOS Heavy

EIC	EIC Name
74476854107010	Medium Heavy-Duty Diesel Trucks (MHDDT) - Diesel Brake Wear - Brake Dust - T6 OOS Small
74476854107011	Medium Heavy-Duty Diesel Trucks (MHDDT) - Diesel Brake Wear - Brake Dust - T6 Public
74476854107012	Medium Heavy-Duty Diesel Trucks (MHDDT) - Diesel Brake Wear - Brake Dust - T6 Utility
74676854100000	Heavy Heavy-Duty Diesel Trucks (HHDDT) - Diesel Brake Wear - Brake Dust - Sub-Category Unspecified
74676854107013	Heavy Heavy-Duty Diesel Trucks (HHDDT) - Diesel Brake Wear - Brake Dust - T7 Ag
74676854107016	Heavy Heavy-Duty Diesel Trucks (HHDDT) - Diesel Brake Wear - Brake Dust - T7 Cairp
74676854107017	Heavy Heavy-Duty Diesel Trucks (HHDDT) - Diesel Brake Wear - Brake Dust - T7 Cairp Construction
74676854107018	Heavy Heavy-Duty Diesel Trucks (HHDDT) - Diesel Brake Wear - Brake Dust - T7 NNOOS
74676854107019	Heavy Heavy-Duty Diesel Trucks (HHDDT) - Diesel Brake Wear - Brake Dust - T7 NOOS
74676854107020	Heavy Heavy-Duty Diesel Trucks (HHDDT) - Diesel Brake Wear - Brake Dust - T7 Other Port
74676854107021	Heavy Heavy-Duty Diesel Trucks (HHDDT) - Diesel Brake Wear - Brake Dust - T7 POAK
74676854107024	Heavy Heavy-Duty Diesel Trucks (HHDDT) - Diesel Brake Wear - Brake Dust - T7 POLA
74676854107025	Heavy Heavy-Duty Diesel Trucks (HHDDT) - Diesel Brake Wear - Brake Dust - T7 Public
74676854107026	Heavy Heavy-Duty Diesel Trucks (HHDDT) - Diesel Brake Wear - Brake Dust - T7 Single
74676854107027	Heavy Heavy-Duty Diesel Trucks (HHDDT) - Diesel Brake Wear - Brake Dust - T7 Single Construction
74676854107028	Heavy Heavy-Duty Diesel Trucks (HHDDT) - Diesel Brake Wear - Brake Dust - T7 SWCV
74676854107029	Heavy Heavy-Duty Diesel Trucks (HHDDT) - Diesel Brake Wear - Brake Dust - T7 Tractor
74676854107030	Heavy Heavy-Duty Diesel Trucks (HHDDT) - Diesel Brake Wear - Brake Dust - T7 Tractor Construction
74676854107031	Heavy Heavy-Duty Diesel Trucks (HHDDT) - Diesel Brake Wear - Brake Dust - T7 Utility
75072054100000	Motorcycles (MCY) - Non-Catalyst Brake Wear - Brake Dust
75072254100000	Motorcycles (MCY) - Non-Catalyst Gasoline Brake Wear - Brake Dust
75074554100000	Motorcycles (MCY) - Catalyst Gasoline Brake Wear - Brake Dust
75074654100000	Motorcycles (MCY) - Catalyst Brake Wear - Brake Dust
76076854100000	Heavy-Duty Diesel Urban Buses (UBD) - Diesel Brake Wear - Brake Dust
76272054100000	Heavy-Duty Gas Urban Buses (UBG) - Non-Catalyst Brake Wear - Brake Dust
76274654100000	Heavy-Duty Gas Urban Buses (UBG) - Catalyst Brake Wear - Brake Dust
76277354100000	Heavy-Duty Gas Urban Buses (UBG) - EV Particulate Matter Brake Wear - Brake Dust
77072054100000	School Buses (SB) - Non-Catalyst Brake Wear - Brake Dust
77074654100000	School Buses (SB) - Catalyst Brake Wear - Brake Dust
77076854100000	School Buses (SB) - Diesel Brake Wear - Brake Dust
77172054100000	School Buses - Gas (SBG) - Non-Catalyst Brake Wear - Brake Dust
77174654100000	School Buses - Gas (SBG) - Catalyst Brake Wear - Brake Dust

EIC	EIC Name
77276854100000	School Buses - Diesel (SBD) - Diesel Brake Wear - Brake Dust
77572254107200	Buses - Non-Catalyst Gasoline Brake Wear - Brake Dust - Other Bus (OB)
77572254107203	Buses - Non-Catalyst Gasoline Brake Wear - Brake Dust - School Buses (SB)
77572254107204	Buses - Non-Catalyst Gasoline Brake Wear - Brake Dust - Heavy-Duty Urban Buses (UB)
77574554107200	Buses - Catalyst Gasoline Brake Wear - Brake Dust - Other Bus (OB)
77574554107203	Buses - Catalyst Gasoline Brake Wear - Brake Dust - School Buses (SB)
77574554107204	Buses - Catalyst Gasoline Brake Wear - Brake Dust - Heavy-Duty Urban Buses (UB)
77574854107202	Buses - Catalyst Natural Gas Brake Wear - Brake Dust - All Other Buses
77574854107203	Buses - Catalyst Natural Gas Brake Wear - Brake Dust - School Buses (SB)
77574854107204	Buses - Catalyst Natural Gas Brake Wear - Brake Dust - Heavy-Duty Urban Buses (UB)
77576854107201	Buses - Diesel Brake Wear - Brake Dust - Motor Coach
77576854107202	Buses - Diesel Brake Wear - Brake Dust - All Other Buses
77576854107203	Buses - Diesel Brake Wear - Brake Dust - School Buses (SB)
77576854107204	Buses - Diesel Brake Wear - Brake Dust - Heavy-Duty Urban Buses (UB)
77577354107200	Buses - EV Brake Wear - Brake Dust - Other Bus (OB)
77577354107203	Buses - EV Brake Wear - Brake Dust - School Buses (SB)
77577354107204	Buses - EV Brake Wear - Brake Dust - Heavy-Duty Urban Buses (UB)
77577654107200	Buses - Fuel Cell EV Brake Wear - Other Bus
77577654107203	Buses - Fuel Cell EV Brake Wear - School Buses
77577654107204	Buses - Fuel Cell EV Brake Wear - Heavy-Duty Urban Buses
77672054100000	Other Buses (OB) - Non-Catalyst Brake Wear - Brake Dust
77674654100000	Other Buses (OB) - Catalyst Brake Wear - Brake Dust
77676854100000	Other Buses (OB) - Diesel Brake Wear - Brake Dust
77772054100000	Other Buses - Gas (OBG) - Non-Catalyst Brake Wear - Brake Dust
77774654100000	Other Buses - Gas (OBG) - Catalyst Brake Wear - Brake Dust
77876854100000	Other Buses - Motor Coach - Diesel (OBC) - Diesel Brake Wear - Brake Dust
77976854100000	All Other Buses - Diesel (OBD) - Diesel Brake Wear - Brake Dust
78072054100000	Motor Homes (MH) - Non-Catalyst Brake Wear - Brake Dust
78072254100000	Motor Homes (MH) - Non-Catalyst Gasoline Brake Wear - Brake Dust
78074554100000	Motor Homes (MH) - Catalyst Gasoline Brake Wear - Brake Dust
78074654100000	Motor Homes (MH) - Catalyst Brake Wear - Brake Dust
78076854100000	Motor Homes (MH) - Diesel Brake Wear - Brake Dust