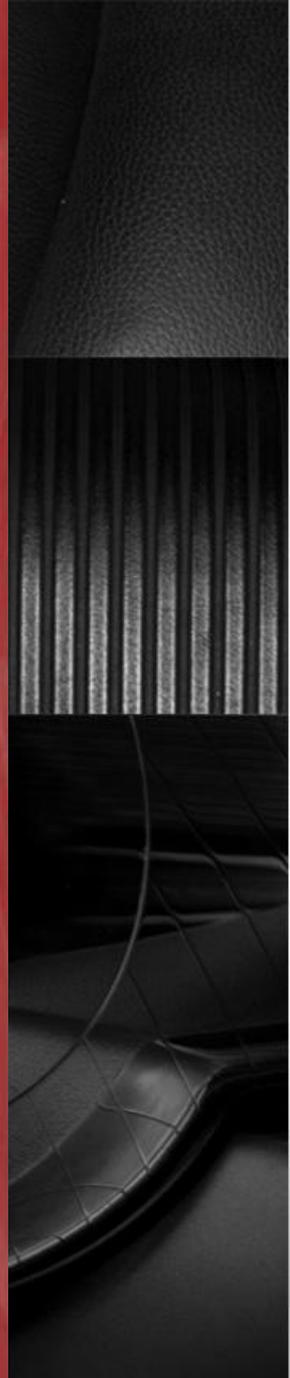


# **Motor Vehicle Brake Friction Materials - Senate Bill 346**

California's  
Copper in Brake Pads Law  
Implementation  
January 2014



# Brake Friction Material Law

**2010**  
**SB 346**

**2014**  
Cd, Cr VI, Hg, Pb,  
Abestiform fibers  
**De Minimis**

**2021**  
Copper  
**5.0 wt %**

**2025**  
Copper  
**0.5 wt %**



# Implementation

- Development of Analytical Testing Methodology
- Mark of Proof (Product Labeling)
- Certification Requirement
- Environmentally Preferred Purchasing
- Working with Stakeholders



# Developing Analytical Laboratory Methodology

- Worked with DTSC ECL, State of Washington Department of Ecology, and the brake friction material manufacturers to develop analytical test methodology for brake friction materials.
  - Outcome = SAE J2975
- Worked with ECL to determine if XRF was a viable tool to screen commercially available brake pads in the field.
  - Outcome = DTSC's Environmental Laboratory Report.





# Analytical Methodology

- Existing off-the-shelf formulations
- “Public Domain” formulations
  - Cu (8%)\* Cu (8%)\* Cu (5%)\* Cu (~5%)\* Cu (2%) Cu (0.5%)
  - \* formulations varied using different forms of copper
- Scope of Work
  - Generation of Friction Sample
  - Friction Sample Preparation for Analysis
  - Chemical Analysis



# Existing Product Mark of Proof

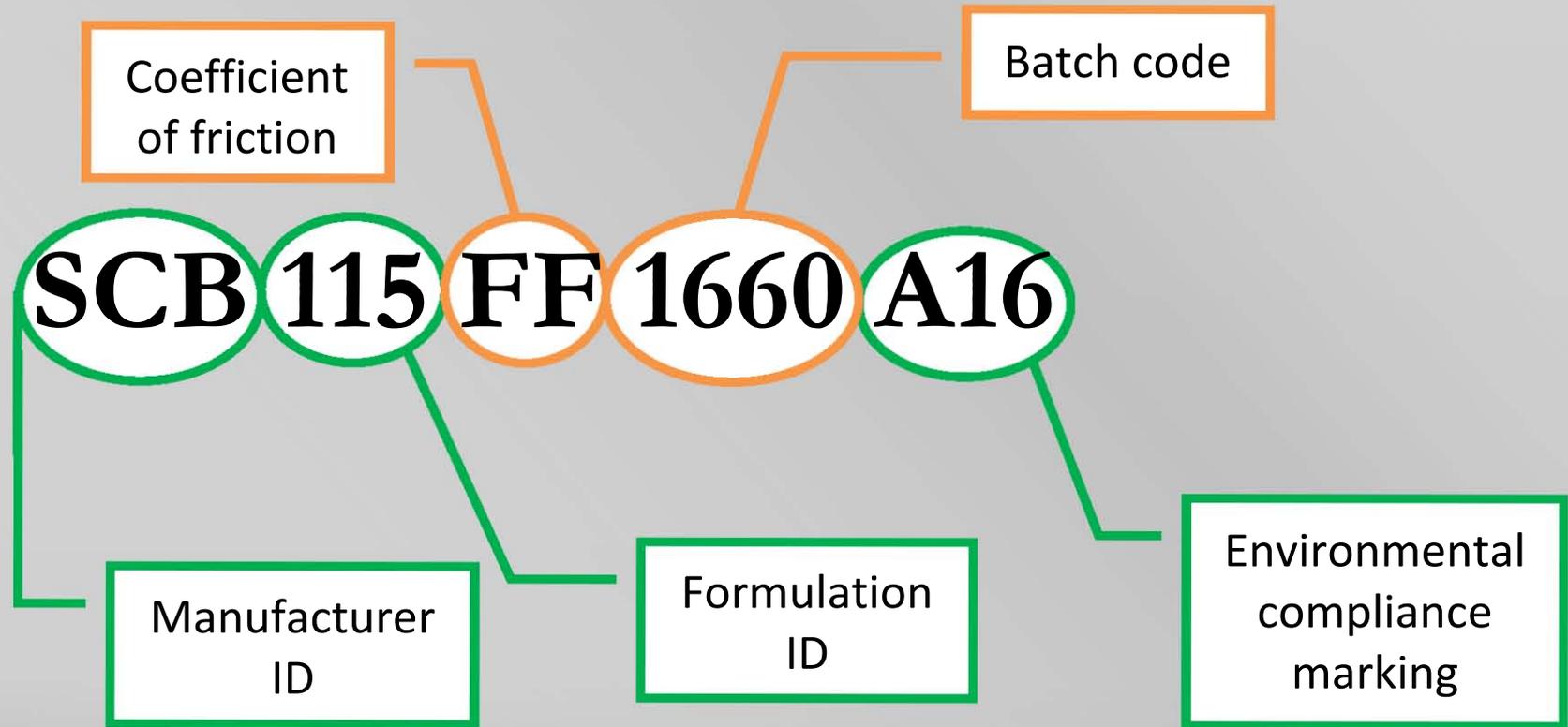
- Updated existing industry standard to include environmental code
  - Outcome = SAE Standard J866:2012 (Friction Coefficient Identification and Environmental Marking System for Brake Linings)
- The certification is overseen by a testing certification agency (NSF International)
- NSF certifies the environmental code and posts the certifications on its website
- California recognizes SAE J866:2012 as the standard for showing “a consistent date format, designation, and labeling to facilitate acceptance in all 50 states and United States territories for purposes of demonstrating compliance with all applicable requirements.” [California H&SC section 25250.60(j)]



# SAE Standard J866:2012 Environmental Codes

- “A” indicates the brake friction material does not contain any of the following compounds, in amounts exceeding the given concentrations:
  - Asbestiform fibers, 0.1 percent by weight;
  - Cadmium and its compounds, 0.01 percent by weight;
  - Chromium(VI)-salts, 0.1 percent by weight;
  - Lead and its compounds, 0.1 percent by weight;
  - Mercury and its compounds, 0.1 percent by weight.
- “B” indicates copper content between 0.5 % and 5% copper by weight along with the requirements specified for “A”.
- “N” indicates copper content less than 0.5% copper by weight long with the requirements specified for “A”.
- “A”, “B”, and “N” also have a two digit code to indicate year manufactured (e.g., 2014 = 14).

# Example of a Mark of Proof





# Certification Requirement

- “Testing certification agency”
  - Third-party testing certification agency;
  - Utilized by a vehicle brake friction materials manufacturer;
  - Has an accredited laboratory program that provides testing in accordance with the certification agency requirements that are approved by the department.



## California Brake Friction Material Certification Process

- **Step 1. TESTING:** Test brake friction material per the SAE Standard J2975:2011 at a laboratory approved by the testing certification agency (a.k.a., registrar). NSF International has been identified by the industry as the testing certification agency and has identified Link Engineering as an [approved testing lab](#) .
- **Step 2. CERTIFICATION:** Certify brake friction material with NSF International. Under the California Brake Pad law, the [certification of brake friction material](#) is performed by the testing certification agency which is NSF International.
- **Step 3. MARK of PROOF:** Mark [certified product](#) with the “mark of proof” per the format provided in Society of Automotive Engineers (SAE) Standard J866:2012.

Starting January 1, 2015, the State of Washington will require brake pads sold in their state to have the mark of proof as well as a packaging mark.

# LeafMark™ Package Logo (Optional in CA)

Effective Date	SAE Environmental Marking	Optional Packaging Logo	Description of Environmental Marking
On and After January 1, 2014	<b>A</b>		<p>The “A” marking means the brake friction material contains less than the following concentrations:</p> <ul style="list-style-type: none"> <li>- 0.01% by weight of cadmium and its compounds.</li> <li>- 0.1% by weight of chromium (VI) salts.</li> <li>- 0.1% by weight of lead and its compounds.</li> <li>- 0.1% by weight of mercury and its compounds.</li> <li>- 0.1% by weight of asbestiform fibers.</li> </ul>
On and After January 1, 2021	<b>B</b>		<p>The “B” marking means the brake friction material contains <b><u>less than 5.0% by weight of copper</u></b> and also meets the conditions listed for an “A” designator above.</p>
On and After January 1, 2025	<b>N</b>		<p>The “N” marking means the brake friction material contains <b><u>less than 0.5% by weight of copper</u></b> and also meets the conditions listed for an “A” marking.</p>



# Environmentally Preferred Purchasing

- Working with Department of General Services to develop mandated Environmentally Preferable Purchasing Requirements
- Started with vehicle purchasing
- Goal is to reward those products that exceed the minimum legal requirements.
  - Such as, fuel efficiency, greenhouse gas emissions, recycled content, Environmental Management System



# Working with Stakeholders

- Industry
  - Society of Automotive Engineers - Brake Materials Environmental Task Force
- Other States
  - Washington Department of Ecology
- Other Stakeholders
  - State Water Resources Control Board
  - Department of General Services
  - California Stormwater Quality Association (CASQA)



# Next Steps

- Work with management on proceeding with rulemaking in the near future
  - Memorialize guidance on test methodology (SAE J2975:2013), mark of proof (SAE J866:2012) and the testing certification agency
  - Memorialize interpretations on statutory language
- Focus on education, outreach, and compliance assistance
- Continue working with industry, state agencies, and stakeholders to implement this law



# Additional Guidance

- Brake Pad Webpage available
  - <http://www.dtsc.ca.gov/PollutionPrevention/BrakePads.cfm>
  - Updated FAQ section for repair shops
- New listserv created
- Industry specific fact sheets (being developed)
- Links to SAE standards available
- Other

# Questions or Comments?

## Molded Shim Technology\*



*\*on selected applications*