

Chipseal Oils:

Label Codes: **1** = Lower Viscosity; **2** = Higher Viscosity; **AC** = Asphalt Cement; **C** = Cationic; **E** = Emulsion; **H** = Hard Base; **HF** = High Float; **LT** = Low Temperature; **MS**= Medium Set; **P** or **PM** = Polymer Modified; **R** = Rubber; **RS** = Rapid Set; **SS** = Slow Set

Some notes: **ASSHTO** formula names do change and are updated often, older names may not be here

General approach to the Formula Names / Labels = they general address: 1) Emulsifiers types; 2) Emulsifiers quantity/ %; 3) hardness of Asphalt stiffeners

- **Rapid Set (RS)** grades are non mixing grade emulsions, meaning they generally do not dilute well, or mix well with fine aggregates
- **Slow Set (SS)** grades consider mixing grade emulsions, meaning they generally do dilute well with water, and mix well with fine aggregates
- **Medium Set (MS)** generally performs somewhere between the RS & the SS products

Web sources for descriptions: <http://flh.fhwa.dot.gov/resources/pse/specs/fp-03/fp-03usc-div700.doc>
 {Ctrl-click} <http://albina.com/asphalt-portland-vancouver>
<http://www.themartincompanies.com/martin-product-sales-pavement-preservation-maintenance>

Type	Formula / Trade Name	Chipseal Oil Description	Agencies use from previous surveys
A	Emulsion / Anionic (negative charge) Standard HFRS-2; HFE-90	High Flow Rapid Set - 2 Higher Viscosity High Flow, Emulsion - 90 = penetration rate (the higher the # softer the asphalt)	2016: none; 2013: ODOT-R2 D4
B	Emulsion / Anionic: Standard HFE-150	High Flow, Emulsion - 150 (penetration rate)	2016: Spokane Co, WA (5%) 2013: Grant
C	Emulsion / Anionic: HFMS-2	High Flow, Medium Set – 2 Higher Viscosity.	2013: none; 2011: Douglas
D	Emulsion / Anionic: HFMS-2S	High Float Medium Setting – 2 S = Solvent The high float gel residue resists bleeding at high temperatures. HFRS-2 (High Float Rapid Set; 2= High Viscosity {new ASSHTO label})	2016: none; 2013: Washington Co had small %
E	Emulsion / Anionic: w/ Polymer HFRS-P1; HFE-90-1-S	High Float, Rapid Set - Polymer modified; 1 [lower polymer content – 30%]; was “91-S” High Flow, Emulsion - 90 -1 –S	2016: none; 2013: 8 agencies
F	Emulsion / Anionic: w/ Polymer HFRS-P2; HFE-100-S	High Float, Rapid Set - Polymer modified; 2 [higher viscosity] High Flow, Emulsion – 100 (penetration rate) - S	2016: Benton, Jefferson, Marrow, Marion, Polk, Washington
G	Emulsion / Anionic: w/ Polymer RS-LTP	Rapid Setting, Low Temperature, Polymer modified This emulsion is intended for use in placing sealcoat or surface treatments when the air and roadway temperatures are 5° C and rising. The emulsion must break and cure in a reasonable amount of time when aggregate is to be applied regardless of sunlight or humidity condition.	2016: Washington Co (5%)
H	Emulsion / Cationic (positive charge) CSS-1	Cationic, Slow Set – 1 Lower Viscosity Tack Coat used as Prime Coat and Fog Seal prior to paving and chipsealing.	2016: none; 2013: ODOT-R2 D4; Snohomish, WA
I	Emulsion / Cationic CSS-1H	Cationic, Slow Set – 1 H (H = Harder pen) same as above CSS-1 with harder	none
J	Emulsion / Cationic CRS-2	Cationic, Rapid Setting – 2 Higher Viscosity	2016: Curry; 2013: none; 2011: Crook, Tillamook, Wasco, Yamhill
K	Emulsion / Cationic CMS-2 or CMS-2S	Cationic, Medium Set – 2 Higher Viscosity Cationic, Medium Set – 2S (S = Stiffer) -possible air quality issues	none

Type	Formula / Trade Name	Chipseal Oil Description	Agencies use from previous surveys
L	Emulsion / Cationic w/ Polymer CRS-2P	Cationic, Rapid Setting, 2 [higher viscosity] Modified Polymer The polymer improves the durability, and polymer emulsions tend to have earlier and better chip retention. This higher quality and cost material is generally used on higher traffic volume roads where durability, traffic delays and loose chips are concerns.	2016: 8 agencies; 2013: 8 agencies; 2011: 12 agencies
M	Emulsion / Cationic w/ Polymer CRS-3P	Cationic, Rapid Setting, 3 [higher yet viscosity] Modified Polymer as above – additional polymers	2016: Linn Co
O	Emulsion / Cationic PMCRS-2H	Polymer Modified, Cationic, Rapid Setting – 2 Higher viscosity, H w/ Hard base	2016: none 2013: none; 2011: Klamath, Linn
P	Cutback Asphalt (liquid Asphalt) MC-800	Medium Cure - 800 viscosity (25% Kerosene / 75% PG64-22)	none
Q	Asphalt Cement w/ Polymer AC15P	Asphalt Cement, 15 (1500) viscosity, Polymer Modified; generally used with pre-coated rock (Hot Chip) - hot applied binder for Chipseals, designed especially for quick traffic return and durability on high volume roads	2016 & 2013: Deschutes; 2011: 5 agencies
R	Asphalt Cement / with rubber CAC 15-5TR	Asphalt Cement; 15 (1500) viscosity, TR = Tire Rubber	2016: none 2013: Vancouver WA, Pierce, WA

Fog Seal Oils:

type	Formula / Trade Name	Fog Seal Oil Description	Agencies use from previous surveys
A	Emulsion / Anionic HFRS-P1 dilute; HFE-90-1-S dilute;	High Float, Rapid Set - Polymer modified; 1 dilute High Flow, Emulsion - 90 -1 -S dilute (see notes in Chipseal Oil Description table)	2016: 4 agencies; 2013: 8 agencies; 2011: 4 agencies
B	Emulsion / Cationic CQS1-1h dilute:	CQ Quick Set – 1 h (harder)	2016: 3 agencies; 2013: none; 2011: City of Gresham
C	Emulsion / Cationic CSS-1 dilute:	Cationic Slow Setting 1 (see notes in Chipseal Oil Description table)	2016: 5 agencies; 2013: 8 agencies; 2011: 4 agencies
D	Emulsion / Cationic CSS-1H dilute:	Cationic Slow Setting w/ Hard base (see notes in Chipseal Oil Description table)	2016: Linn, Multnomah 2013: Clatsop, Josephine, Linn; 2011: 3 agencies
E	Emulsion / Cationic LMCQS dilute	Latex Modified Cationic Quick Set – same as CQS1-1h dilute with Latex (any rubber compound disperse in water)	2016: none 2013: none; 2011: Jackson
F	Emulsion / with Rubber TRMSS	Tire Rubber Modified Surface Sealer 10% minimum tire rubber loading Is intended for use on asphalt pavements that need sealing due to oxidation and weathering. Is manufactured using whole scrap ground tire rubber into the asphalt cement. It is then emulsified into a water-base liquid "surface sealer". This sealer provides a water barrier and wearing surface that withstands the rigors of weather, UV degradation, oxidation and traffic wear.	2013 & 2011: City of Portland only