

Part 2

The cost-effective carriageway
treatments to arrest
or remedy deterioration

Surface dressing advantages....

1. The most cost effective road maintenance treatment of all

2. Lives in excess of 10 years achievable

3. Very fast

4. Minimal road traffic delays

Disadvantages

1. Can be a very noisy surfacing if poor choice of maximum chipping size
2. Public perception of loose chippings with broken windscreens and chipped paintwork
3. Public annoyance if uncovered bitumen sticks to pedestrians' shoes, dogs' paws etc

Most English LA's now have "Partners" ie contractors with 5 year contracts to do their maintenance work.

LA's specify by performance with a 2 year guarantee.

Contractors use modified bitumen emulsions to reduce their risk of failure.

Surface Dressing, what it can do

- Seal the road surface against ingress of water
- Stop oxidation of the bitumen in the road surface
- Provide a skid resistant road surface
- Provide a distinctive colour to road surfaces
- Provide a uniform appearance to a patched road
- (Can reduce spray with small aggregate)

Surface Dressing

What it cannot do.....

Strengthen a road structure

Restore poor riding quality in a road

Eliminate wheel tracking ruts

Typical sites

Roads where a close graded AC surface course is 8 to 10 years old

Sites dressed about 8 to 10 years ago

Sites needing better the skid resistance

Sites needing more uniform appearance

Two "dense" AC's (close graded) , 11yrs and 8 yrs old



Minor patching and surface dressing



Needs a thin inlay then all dressing



Typical rural road for dressing



A1173 Riby Drag towards Swallow Crossroads

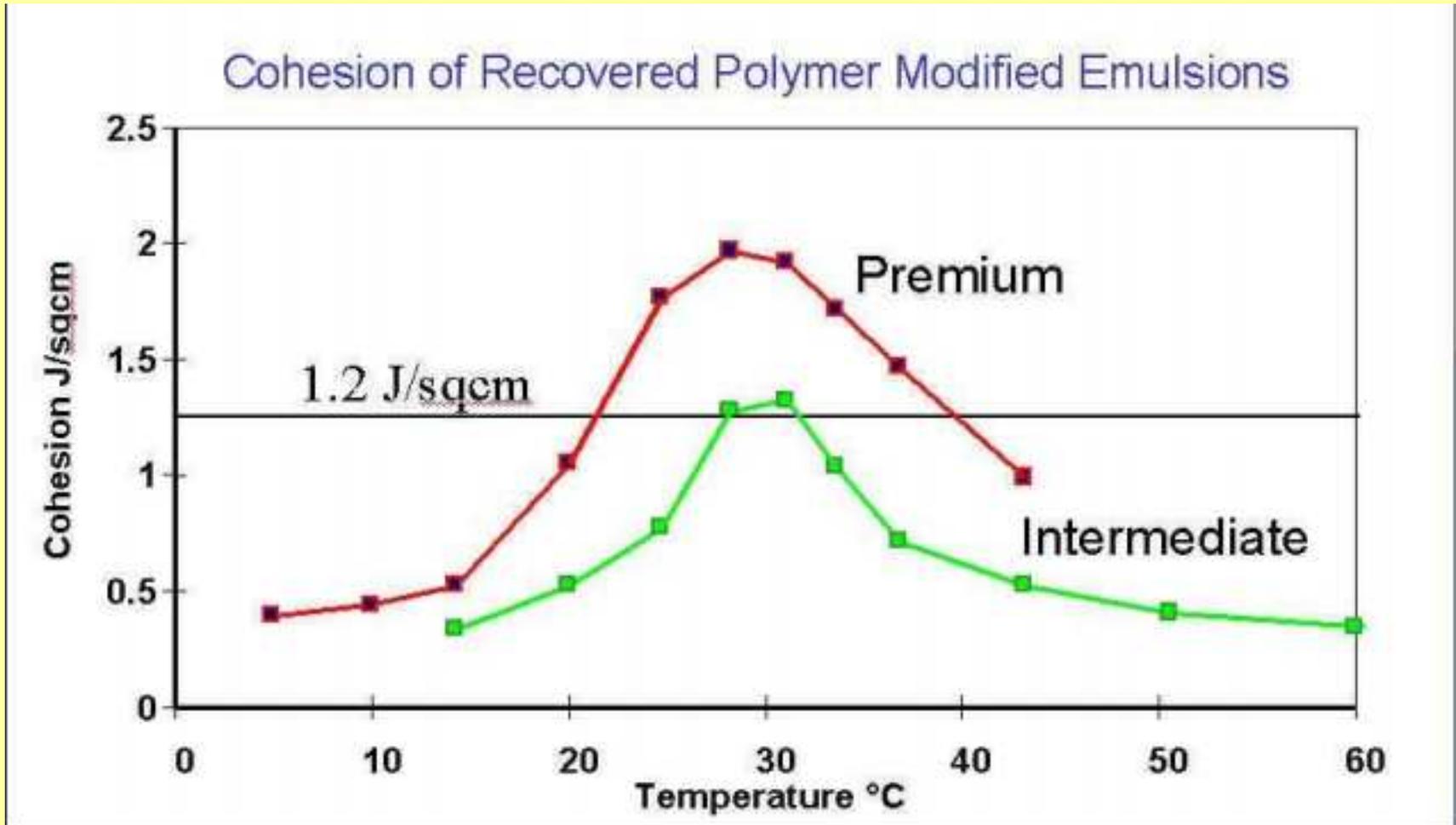
Typical urban road for patching and surface dressing



Vialit cohesion test



Vialit Cohesion



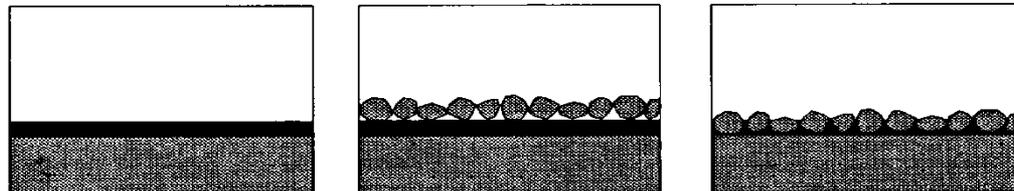
Single dressing, the simplest technique

Only suitable for low stress sites such as rural lanes and lightly trafficked housing estate roads

One thick layer of bitumen emulsion binder is fully covered with a single size of chipping and well-rolled

Traffic completes the rolling process

Excess chippings should be swept-up within 24 hrs.



Single dressing

Advantages.....

Cheap, fast, very little traffic delay

Disadvantages.....

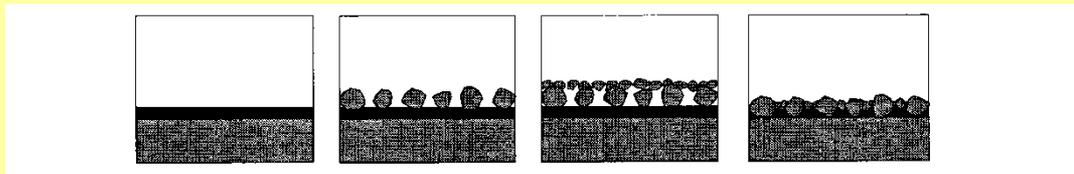
Easily damaged, can be very noisy especially with chippings larger than 6mm

Racked-in dressing, most often used

Binder is a polymer modified bitumen emulsion but in a thicker layer than with single dressing.

Uses 2 layers of chippings, first larger size spread at 90% of single dressing rate, leaving gaps of uncovered emulsion.

Then smaller chippings applied to fill the gaps before rolling and sweeping.



Advantages.....

Racked-in is suitable for more heavily stressed sites, ie where traffic is heavy or fast

Disadvantages.....

Can be noisy if wrong chipping sizes are used

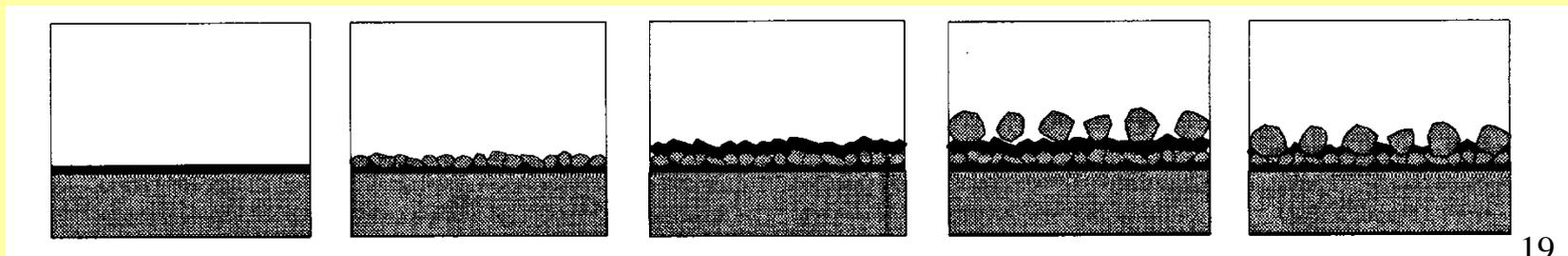
Inverted Double dressing

(Also known as pad coat and single dressing)

First a single dressing with small chippings

Then a second dressing with larger chippings

Useful on harder surfaces (old HRA, concrete) or surfaces with uneven hardness, possibly due to multiple NRSWA patches.



The French are masters of surface dressing
(as in other aspects of highway material)

In the last 15 years the UK has increasingly
adopted many French surface dressing concepts
and items of plant.

Virtually all binder distributors now used by
surface dressing contactors are French.

French techniques (1) Double dressing

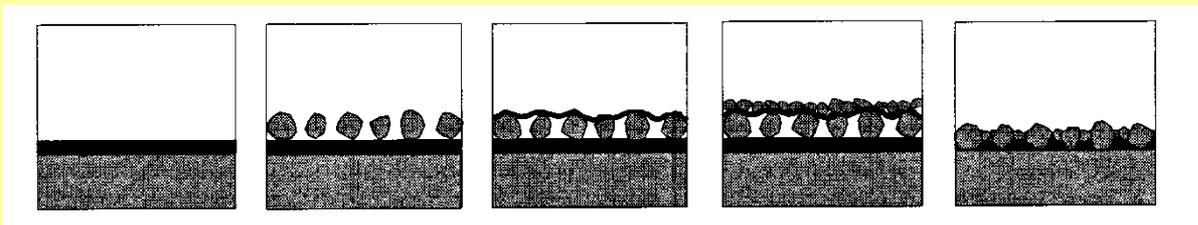
Apply binder then chippings to give full cover

Then second binder spray then second cover of smaller chippings, roll and eventually, sweep.

Suitable for most stressed sites

More robust than racked-in dressing

Quieter than racked-in dressing

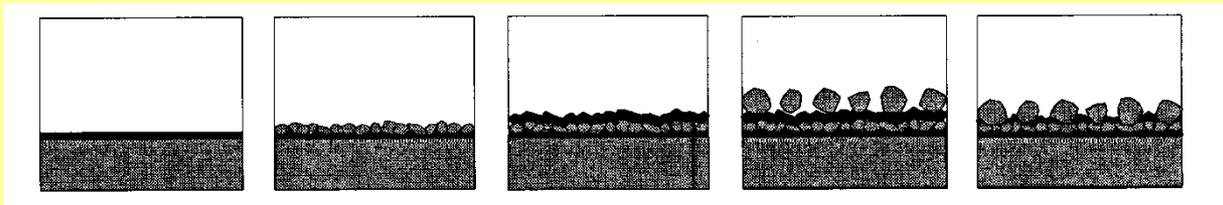


French techniques (2) Inverted Double Dressing

Applied to roads of uneven hardness.

First single dressing with small size stone produces a more even surface.

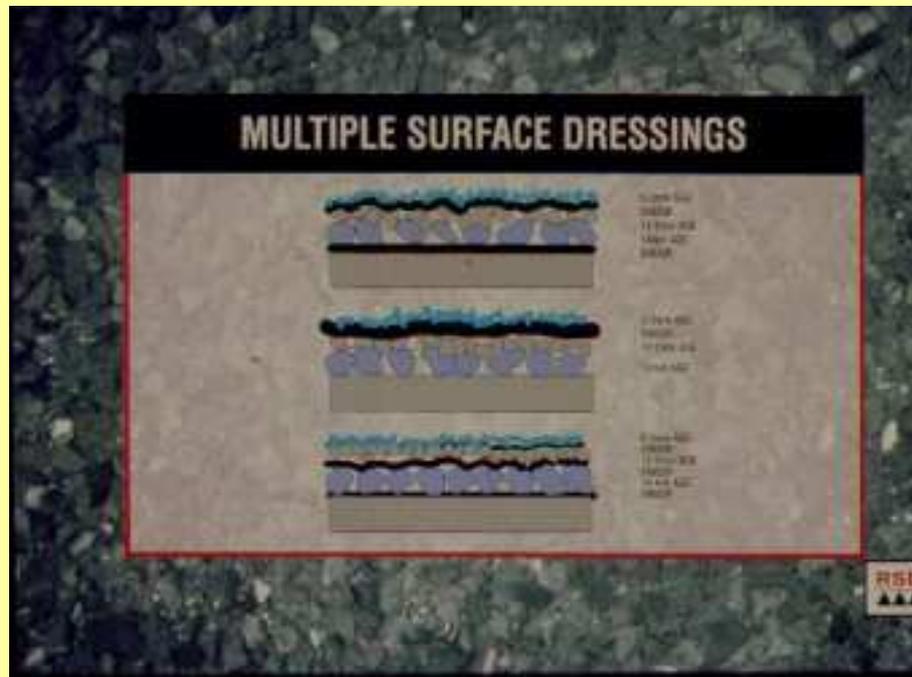
Then followed by second single layer of larger sized stone



French techniques (2) Multiple dressing

**Developed for more stressful sites,
also gives improved noise reduction.**

**Used as a trial on A614 site in Notts, lasted 15
years!!!**



Early morning photo! No other traffic, ideal, no damage to new dressing.



Carriageway Surface Dressing, 2012



Spray bar test rig



Checking jets at start of day



Carriageway Surface Dressing



Double washed, recycled chippings



“Combi”, Sprayer and chipper, French



Checking rate of spread of binder after changing a blocked jet



UK Specialist Combined Sprayer Gritters purpose designed to dress narrow estate roads and culs de sac



Hiab truck to replenish chippings



Glass fibre reinforcement option(Fibredec)



French surface dressing tanker, spray bar controlled remotely by foreman walking behind machine



Site preparation work

- All patching and “siding” ie getting rid of overgrown verges overlapping the paved road, should be done in the previous year.
- New reinstatements show up as fatty areas in the new work. Avoid by dressing new patches with 6mm dressing before the planned dressing. (*Can also use cement paste on very small areas*)



Vital to dress a clean substrate



Note chippings stripped beneath trees, sprayer should have applied extra binder here



Micro-surfacing

- German concept and they are the leaders.
- Most plant is German
- Contractor designs and lays with a warranty
- Always uses confidential polymer modified emulsions
- Aggregates are carefully selected for electrostatic compatibility with emulsions, some from Norway!

The Germans developed “schlamme” to fill the abraded areas with one pass then dress the whole road with the second pass,



Typical machine



Typical repave site, too far gone for dressing.
First coat will fill the potholes and the low areas at the
edges



This site is cracked, too far gone for surface dressing or micro-surfacing. Try retread.



View of applicator



Second coat being applied after first regulating course



Estate road in very poor condition



The same road, after treatment with polymer modified, glass reinforced micro-asphalt



Occasionally get problems but dealt with under warranty



Affect of VERY hot weather





Sheeted-off micro-asphalt



Any questions?