

### Storage and Handling of Emulsions

Long storage times should be avoided.

Since the emulsion contains water and the emulsion temperature can be up to 90°C (195°F) after the production, water will always evaporate from the surface of the emulsion. Should a prolonged storage time be needed, the use of vertical tanks, where the surface is smaller than that of horizontal tanks, can reduce evaporation. Tanks should be filled from below the liquid surface to avoid foaming and the mixing of any skin with the emulsions.

The Asphalt Emulsion Manufacturers Association (AEMA) makes the following recommendations for the storage temperatures of emulsions made to ASTM specifications.

<i>Emulsion Grade</i>	Temperature °C (°F)	
	Minimum	Maximum
RS-1	20 (70)	60 (140)
RS-2, CRS-1, CRS-2, HFRS-2	50 (125)	85 (185)
SS-1, SS-1h, CSS-1, CSS-1h, MS-1, HFMS-1	10 (50)	60 (140)
CMS-2, CMS-2h, MS-2, MS-2h, HFMS-2, HFMS-2h, HFMS-2s	50 (125)	85 (185)

Emulsions can generally be formulated for storage at lower temperatures, for instance to allow supply in drums or unheated containers. Certain applications, for example slurry surfacing, may require emulsions to be cooled before use in order to reduce reactivity.

All types of emulsion should be agitated for 15 minutes every second day with a slow-turning pitched-blade type stirrer, if skin formation and sedimentation are to be avoided. The emulsion may also be circulated with a pump, but this has the risk of causing breakdown of the emulsion. If this method is used, a vane pump is recommended and the pump should also use a low rpm, to avoid excess shear on the emulsion.

If the emulsion has been stored for more than 3 days, we recommend that the sieve and viscosity of CRS and CMS emulsions should be re-measured before loading onto the truck.

Different grades of asphalt emulsions should not be mixed even if they are of the same charge. For instance, mixing of CRS and CSS emulsions may lead to breaking because of different emulsion pH.

## Storage and Handling of Emulsions

Here is some more advice taken from the AEMA publication 'A Basic Asphalt Emulsion Manual':

**Do** when heating asphalt emulsion agitate it gently to eliminate or reduce skin formation.

**Do** protect pumps, valves, and lines from freezing in winter. Drain pumps and service according to manufacturer's recommendations.

**Do** blow out lines and leave drain plugs open when they are not in service.

**Do** use pumps with proper clearances for handling emulsified asphalt. Tightly fitting pumps can bind and seize.

**Do** warm the pump to about 65°C (150°F) to facilitate start-up.

**Do** when diluting emulsion check the compatibility of the water with emulsion by testing a small quantity.

**Do** if possible, use warm water for diluting and always add the water slowly to the emulsion (not the emulsion to the water).

**Do** avoid repeated pumping and recirculating, as the viscosity may drop and air may be come entrained, causing the emulsion to become unstable.

**Do** place inlet pipes and return lines at the bottom of tanks to prevent foaming.

**Do** pump from the bottom of the tank to minimize contamination from skinning that may have formed.

**Do** remember that emulsions with the same grade designation can be very different chemically and in performance.

**Do** haul emulsion in truck transports with baffle plates to prevent sloshing.

**Do** agitate emulsions that have been in prolonged storage. This may be done by recirculation.

**Do Not** mix different classes, types and grades of emulsified asphalt in storage tanks, transport, and distributors.

**Do Not** apply severe heat to pump packing glands or pump casings. The pump may be damaged.

**Do Not** dilute rapid-setting grades of asphalt emulsion with water. Medium and slow-setting grades may be diluted, but always add water slowly to the asphalt emulsion. Never add the asphalt emulsion to a tank of water when diluting.

**Do Not** load asphalt emulsion into storage tanks, tank cars, tank transports, or distributors containing the remains of incompatible materials.

**Do Not** subject emulsified asphalt or air above it to open flame, heat or strong oxidants. Adequate ventilation is required.

**Do** avoid breathing fumes, vapors and mist.

**Do** obtain a copy of the supplier's material safety datasheet (MSDS). Read the MSDS carefully and follow it.

*All information concerning this product and/or suggestions for handling and use contained herein are offered in good faith and are believed to be reliable. Akzo Nobel Chemicals Inc., however, makes no warranty as to the accuracy and/or sufficiency of such information and/or suggestions, as to the product's merchantability or fitness for any particular purpose, or that any suggested use will not infringe any patent. Nothing contained herein shall be construed as granting or extending any license under any patent. Buyer must determine for himself, by preliminary tests or otherwise, the suitability of this product for his purposes. The information contained herein supersedes all previously issued bulletins on the subject matter covered.*