Our heart-lung machine, a Sorin S5, was used with a phosphorylcholine-coated (Physio) Inspire 6F oxygenator and an arterial roller-pump. We prime the circuit with 1L Ringers Lactate, 500 ml Voluven (starch) and 250ml's of Mannitol. We don't use CO2-flush beforehand. Once we are certain a patient is [to be] put on bypass we add 50 ml 4.2% Sodium Bicarbonate to compensate the slightly acid priming. After adding the sodium bicarbonate the perfusionist put the sweep-gas flow on 2.5l/min 60% oxygen for about 3 minutes when we saw the priming [solution] go from totally clear to cloudy/misty with little flakes floating around. Note: the patient was not yet connected to the heart-lung machine. We immediately thought about crystallization of bicarbonate, when bicarbonate saturates and when the right conditions met, it goes from a liquid to a solid state and creates these flakes. Our solution was to connect the gas inlet of the Inspire oxygenator with the CO2 gauge from the wall-mount and let 2 l/min pure CO2 flush trough the oxygenator while the heart-lung machine priming recirculates for a few minutes. In a matter of seconds all the crystallization of the bicarbonate was gone. After a thorough inspection of the tubing/priming of the heart-lung machine we concluded that it was safe to continue the procedure with this circuit. On reflection the precipitate was calcium carbonate resulting from the interaction of CaCl2 (in the Ringers Lactate) and the NaHCO3. This is described in a 1986 publication (Thorax 1986;41:148-151 Chalk in the prime).

GOOD CATCH - what went well
The bicarbonate flakes were noted before the patient was attached to the heart-lung machine. The attending perfusionist had seen a similar scenario a while ago and used this remedy.

What could we do better
Added the Bicarbonate after commencement of surgery.

Preventive actions
While a non-calcium containing prime could be used, the decision has been made to add the bicarbonate after initiation of bypass using the existing constituents.

Type of incident: Equipment
Hospital incident filed: No
Ext Authority Advised No
Discussed with team: No
Rule issue No
Skill issue No
Protocol issue Yes
Patient outcome variance f Nil