

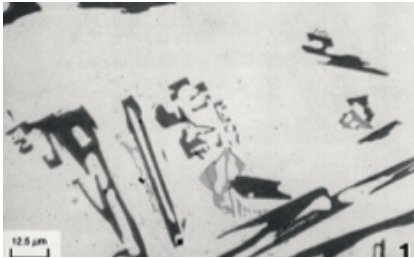
Modification of the morphology of the silicon phase in aluminium-silicon alloy castings from coarse platelets to a fine fibrous eutectic structure results in improved soundness and mechanical properties, particularly ductility. The use of strontium to “modify” the structure of aluminium-silicon casting alloys is a very effective and widely accepted practice.

Strontium differs from other modifiers in that it retains its modification effectiveness for extended periods of melt holding time. The modification provided by strontium tends to survive repeated remelting so that strontium is commonly referred to as a “permanent” modifier. In master alloy form, strontium is the preferred choice in foundries for recovery, safety, storage, and handling. Aluminium-strontium master alloys provide convenient, stable, and effective sources of strontium for the aluminium foundry market as well as producers of aluminium foundry ingots.

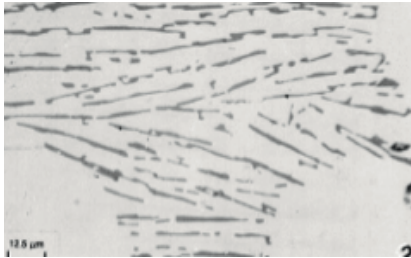
Alloy	Designation	Color Code	Sr	Si	Fe	Ca	P	Mg	Ba	Others		Form
										Each	Total	
<b>10% Strontium</b>	AA-H2007		9.0 - 11.0%	0.20%	0.30%	0.03%	0.01%	0.05%	0.10%	0.05%	0.15%	Waffle / rod
	CEN-93804		9.0 - 11.0%	0.30%	0.30%	0.10%	0.01%	0.10%	0.10%	0.04%	0.10%	
<b>15% Strontium</b>	AA-H2019		14.0 - 16.0%	0.20%	0.30%	0.05%	0.01%	...	0.10%	0.05%	0.15%	Waffle / bar
<b>20% Strontium</b>	AA-H2020		18.0 - 22.0%	0.20%	0.30%	...	...	...	0.10%	0.05%	0.15%	bar

Composition is a maximum unless shown as a range.

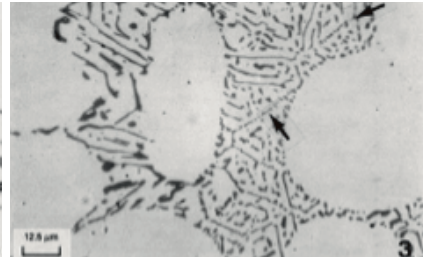
## Levels of Aluminium Silicon Eutectic Modification



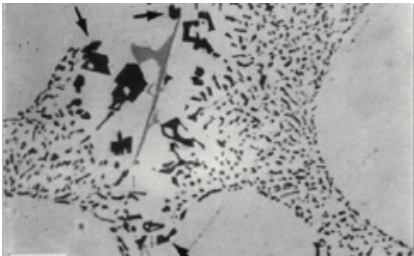
AFS Rating #1 – Non-modified.



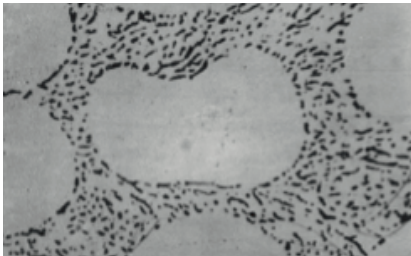
AFS Rating #2 – Lamellar structure with some acicular silicon but no large plates.



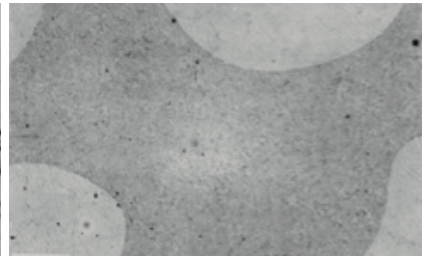
AFS Rating #3 – Partial modification showing lamellar structure breaking up.



AFS Rating #4 – Absence of lamellar structure with small amounts of acicular silicon.



AFS Rating #5 – Fibrous silicon eutectic structure with no acicular phase. Referred to as ‘fully modified’.



AFS Rating #6 – Fibrous silicon where individual particles are not easily distinguishable under optical viewing.

Photos courtesy of AFS, Inc.