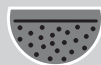




COVERAL*



PRODUCTS FOR MELT TREATMENT OF ALUMINIUM ALLOYS

- + Optimised melt quality
- + Customised product range
- + Improved mechanical properties
- + Environmentally friendly
- + Cost effective treatment



Committed to aluminium foundries

Aluminium foundries deal with a huge number of different alloys and use various processes to produce a variety of castings. To acknowledge this high diversity, Foseco has developed a wide range of products for the melt treatment of aluminium alloys. A team of technical experts who can advise and help you to develop an optimised process supports all Foseco products.

Melt treatment

Melt treatment is an important step in foundries to ensure a high casting quality. The melt shop has to supply aluminium in a defined composition at required temperature but also at the right purity and hydrogen level. The degree of grain refining and modification are additional parameters to characterise a melt.

In recent years economical aspects have become more and more important; the need to reduce metal content in the dross has increased due to the high price of the raw material and energy on the world market. The issue of refractory or crucible life in contact with fluxes began to be questioned and the chemical product development has been focused on this subject as well.

Grain refining

- In-situ formation of nuclei, such as TiB_2 , in the melt
- Fine grain structure improves the solidified structure and reduces shrinkage porosity
- Grain refining improves mechanical properties of the casting, such as elongation

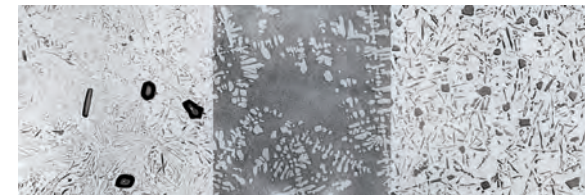
Modification

- Improvement in hot tear resistance and feeding
- Reduction in shrinkage porosity
- Sodium is the most effective modification agent

Cleaning, degassing and covering

- Cleaning fluxes remove oxides and other non-metallic inclusions from the melt
- Dressing fluxes provide a dry dross with a low metal content
- Covering fluxes protect the melt against oxidation and hydrogen pick-up
- A low hydrogen content in the melt reduces gas porosity in the casting
- Removal of impurities improves mechanical properties and avoids distortions during heat treatment and machining

Different grain sizes
AlSi7Mg



Different structures
of a sodium
modified AlSi alloy

Recommendations

for the melt treatment of aluminium alloys

Type of alloy	Grain refining	Modification	Cleaning	Drossing
AlSi AlSiMg AlSiCu (5-11% Si) AlZn	COVERAL GR 2812 COVERAL GR 2818 ALUFLUX B NUCLEANT* 70 NUCLEANT 70 SS	COVERAL GR 2712 COVERAL GR 2715 COVERAL CXS COVERAL 32D SIMODAL 77	COVERAL GR 2220 COVERAL GR 2410 COVERAL 105	COVERAL GR 2510 COVERAL GR 2531 COVERAL GR 2561 COVERAL 55 COVERAL 90 COVERAL 93
AlSi modified with Antimony or Strontium (sodium free products)	COVERAL GR 2818 NUCLEANT 70 NUCLEANT 70 SS		COVERAL GR 6511 COVERAL GR 6512 COVERAL 67 COVERAL 68	COVERAL GR 6511 COVERAL GR 6512 COVERAL 67 COVERAL 68
AlSi13 AlSi12CuNi		COVERAL GR 2712 COVERAL GR 2715 COVERAL CXS COVERAL 32D SIMODAL 97	COVERAL GR 2220 COVERAL GR 2410 COVERAL 105	COVERAL GR 2510 COVERAL GR 2531 COVERAL GR 2561 COVERAL 55 COVERAL 90 COVERAL 93
Hypereutectic alloys (sodium and calcium free products)			COVERAL GR 6512 COVERAL 67	COVERAL GR 6512 COVERAL 67
HPDC			COVERAL GR 2220 COVERAL GR 2410 COVERAL 105	COVERAL GR 2510 COVERAL GR 7520 COVERAL 78 COVERAL 90
AlCu	COVERAL GR 2818 NUCLEANT 70 NUCLEANT 70 SS		COVERAL GR 6511 COVERAL GR 6512 COVERAL 67 COVERAL 68	COVERAL GR 6511 COVERAL GR 6512 COVERAL 67 COVERAL 68
AlMg	COVERAL GR 2818 NUCLEANT 70 NUCLEANT 70 SS		COVERAL GR 6511 COVERAL GR 6512 COVERAL 67 COVERAL 68	COVERAL GR 6511 COVERAL GR 6512 COVERAL 67 COVERAL 68

Products in bold type are the most recommended

Special applications

- Furnace cleaners and fluxes for furnace wall protection
 - COVERAL OR 1
 - COVERAL 88
- Fluoride free flux
 - COVERAL GR 2002
- Fluxes for element removal such as sodium, calcium or magnesium
 - COVERAL MTS 1591
 - ELIMAG 3
- Gassing agents to get a controlled hydrogen level to the melt
 - HYDRAL 40
 - DYCASTAL* 40
- Degassing tablets
 - NITRAL 10
 - NITRAL 10 MG

Easy application at reduced emission level



All products are applicable with FDU rotor degassing



Dry powder dross formed

COVERAL GR

Granulated products

COVERAL GR granular fluxes are an environmentally friendly range of fluxes for melt treatment of aluminium alloys. Powder fluxes possess certain disadvantages such as dust generation during application, toxic emissions, and problems of inconsistent efficiency due to their morphology. In order to overcome these disadvantages, fluxes in dust free granular form have been developed.

Applications

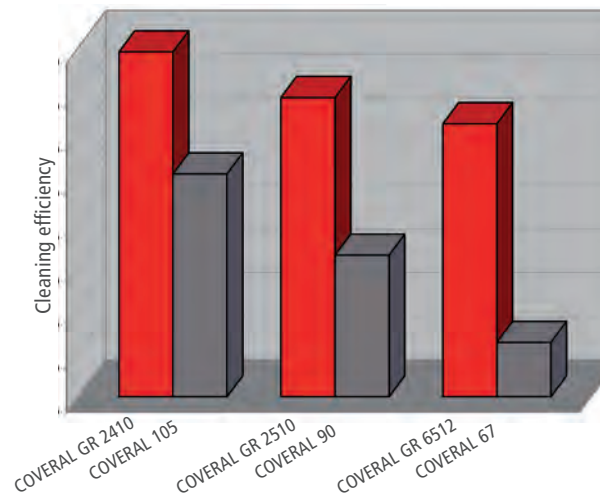
- Grain refining
- Sodium modification
- Cleaning
- Dressing / covering
- Element removal

Features and benefits

- No dust
- Low addition rates
- Easily applied
- Low fume
- All alloys and furnaces

Comparison of powder and granular flux cleaning efficiency

COVERAL powder addition rate: 0.35% of metal weight
COVERAL GR addition rate: 0.10% of metal weight



Environmental aspects

	Powder	Granular
	Concentration in mg/m ³	
Total particulate	1.5	0.46
Total Cl	0.73	0.72
F	11	3.4
NO _x	-	-
SO _x	8.5	1.6

For all details about the trial (procedures, parameters and complete results) shown on this page please refer to Foundry Practice 247 (2008).



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COMMITTED TO FOUNDRIES

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