Raw Material Selection

A summary list of the main materials is given below. The materials are divided into groups which have relevance for the environmental impact.

Description	Tonnes Used (2002)
Steel Shot	54
Scrap Metal	7,128.17
Ferro-alloys	630
Pig Iron	460
Fluxing Agents	1
Refractories	81
Mould / core making sands	1,986
Resins & Hardeners	38
Core Coatings	14
Solvents	2.88
Diesel, oil products	46
Coal Dust	336
Clay H, Bond 100	1,056

The primary raw materials for metal/casting production are scrap metal, pig iron and ferro alloys, which are used to adjust the composition. The selection of scrap is based on the following criteria:

1) Production alloy specification requirements
2) Need to minimise residual contaminants, e.g., phosphorus and sulphur
3) Price and availability

The purchase specifications are given in our Quality Control System, procedure no. 6.2, with a summary of the general purchase specifications as follows :

i) Free of dirt, non-ferrous metals or foreign material of any kind, excessive oil, grease, rust and corrosion, as in practicably achievable for the grade involved.
ii) Material must not be radioactive.
iii) All grades shall exclude pressurised gas, fuel or other sealed containers.

The receipt and inspection of incoming materials is covered in our procedure no. 10.1, which includes the following actions :

i) Visual inspection of loads during offloading
ii) Rejection of any loads containing excessive contamination or non-compliance with purchase specification

SUMMARY OF WASTE & BY-PRODUCT ARISINGS

Ref.	Material	Area Generated	Annual Arisings (Tonnes)	Internal Re-use or Recovery	External Re-use or Recovery	Disposal
F1	SLAG	MELTING	177			LAND FILL
F2	SLAG	PRESSPOUR	44.8			LAND FILL
F3	SLAG		77.2			LAND FILL
F4	MAG OXIDE	CONVERSTION	10.74			LAND FILL
F5	LINING	MELTING	80			LAND FILL
F6	FINE DUST	MELTING	60.08			LAND FILL
F7	SAND	CORE SHOP	97	THERMAL RECLAIM		
F8	SAND	SAND PLANT	1,048		TARMAC	
F9	FINE DUST	SAND PLANT	442			LAND FILL
F10	FINE DUST	GRINDING	17			LAND FILL
F11	FINE DUST	WHEELABRATOR	34			LAND FILL
F12	PAPER / CARDBOARD	SITE	22			
F13	WOOD	DESPATCH			WEST BROM PALLET	
F14	OIL	SITE		RE-USE		
F15	OIL CONTAMINATED	SITE	3			
F16	COOLANT	M/C DEPT.	106.8			

Detailed information on each waste stream that is sent for off-site disposal is given in the tables below.

SUMMARY OF WASTE STORAGE AND HANDLING ARRANGEMENTS

Storage Area	Material Collected	Collection Mode & Size (S/D/I/T) [1]	Frequency of collection	Appropriate Signature (Y/N)	Inspections (Y/N)	Storage area secured (Y/N)	Special requirements [2]	Location of storage area
North Foundry	Furnace Dust	S	When required	Y	Y	N	Y	North Foundry
North Foundry	Grinding Dust	S	When required	Y	N	N	N	North Foundry
North Foundry	Sand Plant Dust	S	When required	Y	N	N	Y	North Foundry
North Foundry	Greensand	Lorry / Skip	3 per week	Y	Y	Y	Y	North Foundry
South Works	Wood Pallet	Lorry	When required	Y	Y	N	Y	South Works
North Works	Paper/Cardboard	8 yard Ral	When required	Y	Y	N	N	North Foundry
South Works	Coolant	I.B.C.	When required	Y	Y	Y	Y	South Works
North Works	Magnesium Oxide	Bags	When required	Y	Y	N	Y	North Works
North Works	Oil Contaminated	8 Yard Ral	When required	Y	Y	N	Y	North Works

Notes :

1) S = skip, D= drum, I = I.B.C., T = bulk tank
2) e.g., temperature, sunlight, incompatible materials

SUMMARY OF WASTE STORAGE AND HANDLING ARRANGEMENTS

A summary of disposal and recovery of wastes and by-products is provided in the table below.

Waste Stream	Fate (Recovery or Disposal)	Justification for Disposal where used.
		E.g., volume too small for recovery, unfavourable economics, technically impossible [with further details where possible]
Magnesium Oxide	Land Fill	Volume too small for recovery
Green Sand	Third party or Land fill	Tarmac (West Midlands Quarry)
Slag	Land Fill	At present looking at possible third party use.
Core Sand	Recovery	Brockmoor thermal reclaim
Paper / cardboard	Land Fill	Unfavourable economics
Wood, pallet	Third party use	West Bromwich Pallets
Coolant	Disposal	Accessing Filtration Unit (For Oil separation)
Oils	Internal	Use for general lubricant

Basic Waste Characterisation.

Ref. No.	**F1**	**Tonnes/month**	**12 - 45**	**Tonnes/annum**	**137**
Source & Origin of Waste	Electric Melting Plant				
Industrial Process	Iron Castings SIC 27510				
Physical State & Appearance	Grey Lumps				
Collection Method	Steel Bin (Material is taken off by Forklift)				
Composition of Waste & Leaching Behaviour	The waste consists of : 65% Silica 35% Other oxides Likely to contain metal droplets. The source material is well defined and compiled of predominantly none hazardous substance				
Hazardous Properties	None that warrant classification as UK special waste or E.C. hazardous				
EU Waste Code	10.09.03	**Landfill Class / Disposal Facility**			Non-Hazardous Landfill
Additional Precautions Required at the landfill / Disposal Facility	Material will be sharp to handle and contain some dust				
Issue No.		**Compiled By**		**Date**	
Reviewed By				**Date**	

Basic Waste Characterisation.

Ref. No.	**F2**	**Tonnes/month**	**4**	**Tonnes/annum**	**44**
Source & Origin of Waste	Presspour (De-slagging)				
Industrial Process	Iron Castings SIC 27510				
Physical State & Appearance	Grey Lumps				
Collection Method	Steel Bin (Material is taken off by Forklift)				
Composition of Waste & Leaching Behaviour	The waste consists of : 65% Silica 35% Other oxides Likely to contain metal droplets. The source material is well defined and compiled of predominantly none hazardous substance				
Hazardous Properties	None that warrant classification as UK special waste or E.C. hazardous				
EU Waste Code	10.09.03	**Landfill Class / Disposal Facility**			Non-Hazardous Landfill
Additional Precautions Required at the landfill / Disposal Facility	Material will be sharp to handle and contain some dust				
Issue No.		**Compiled By**		**Date**	
Reviewed By				**Date**	

Basic Waste Characterisation.

Ref. No.	**F3**	**Tonnes/month**	**654 Kg**	**Tonnes/annum**	**7 - 2**
Source & Origin of Waste	Converter Ladle				
Industrial Process	Iron Castings SIC 27510				
Physical State & Appearance	Grey Lumps				
Collection Method	Steel Bin (Material is taken off by Forklift)				
Composition of Waste & Leaching Behaviour	The waste consists of : 65% Silica 35% Other oxides Likely to contain metal droplets. The source material is well defined and compiled of predominantly none hazardous substance				
Hazardous Properties	None that warrant classification as UK special waste or E.C. hazardous				
EU Waste Code	10.09.03	**Landfill Class / Disposal Facility**			Non-Hazardous Landfill
Additional Precautions Required at the landfill / Disposal Facility	Material will be sharp to handle and contain some dust				
Issue No.		**Compiled By**		**Date**	
Reviewed By				**Date**	

Basic Waste Characterisation.

Ref. No.	**F4**	**Tonnes/month**		**Tonnes/annum**	**10.74**
Source & Origin of Waste	Conversation Station				
Industrial Process	Iron Casting SIL 2751				
Physical State & Appearance	White Powder dust - Dry				
Collection Method	Bags sealed around the abatement Plant Discharge				
Composition of Waste & Leaching Behaviour	The waste consists of : Phenols and metal oxides. Leachable Phenols 5				
Hazardous Properties	None that warrant classification as UK Special Waste				
EU Waste Code	12-01-04	**Landfill Class / Disposal Facility**			N.H.W
Additional Precautions Required at the landfill / Disposal Facility	1) Contains respirable Dust				
Issue No.		**Compiled By**		**Date**	
Reviewed By				**Date**	

Basic Waste Characterisation.

Ref. No.	**F5**	**Tonnes/month**	**7.27**	**Tonnes/annum**	**80**
Source & Origin of Waste	Refractory lining, Melters, Presspour, Ladles Manual Grinding				
Industrial Process	Iron Casting SIC 2751				
Physical State & Appearance	Grey				
Collection Method	Steel Bin				
Composition of Waste & Leaching Behaviour	The waste consists of : Silica and likely to contain some Slag and Metal droplets				
Hazardous Properties	None that warrant classification as UK Special Waste				
EU Waste Code	16-11-04	**Landfill Class / Disposal Facility**			N.H.W
Additional Precautions Required at the landfill / Disposal Facility	Respirable Dust				
Issue No.		**Compiled By**		**Date**	
Reviewed By				**Date**	

Basic Waste Characterisation.

Ref. No.	**F6**	**Tonnes/month**	**5.52**	**Tonnes/annum**	**60.8**
Source & Origin of Waste		**Electric Melting Plant**			
Industrial Process		Iron Casting SIC 2751			
Physical State & Appearance		Light Grey Fine Dust			
Collection Method	Bags around abatement outlet				
Composition of Waste & Leaching Behaviour	The waste consists of :Dust, Zinc and other oxides Compound — Solubility Zinc Oxide — 0.00016 gm per 100ml (29C) Zinc Hydroxide — Very slightly soluble, believed to be less than 0.1 gm per 100 ml Zinc oxide is the likely form of zinc emission both from your furnaces and from the Fischer converter emission (the nodularisation treatment leads to zinc oxide emissions as the zinc in the melt is rapidly oxidised and released by the vigorous stirring action of the treatment process At such low solubility it is most unlikely that there would be a significant zinc leachabilirty from the dusts from the furnace or treatment bag filters. The typical zinc content of any leachate would be expected to be about 1.3 mg/litre, although this could easily be confirmed by leachate tests on your waste streams.				
Hazardous Properties	None that warrant classification as UK Special Waste				
EU Waste Code	10-09-10	**Landfill Class / Disposal Facility**			Industrial Difficult
Additional Precautions Required at the landfill / Disposal Facility		Respirable Dust			
Issue No.		**Compiled By**		**Date**	
Reviewed By				**Date**	

Basic Waste Characterisation.

Ref. No.	**F7**	**Tonnes/month**	**8.81**	**Tonnes/annum**	**97**
Source & Origin of Waste	Core Box Core making				
Industrial Process	Iron Casting SIC 2751				
Physical State & Appearance	Yellow Material				
Collection Method	1 Tonne skips				
Composition of Waste & Leaching Behaviour	Thermally reclaimed internally				
Hazardous Properties					
EU Waste Code		**Landfill Class / Disposal Facility**			
Additional Precautions Required at the landfill / Disposal Facility					
Issue No.		**Compiled By**		**Date**	
Reviewed By				**Date**	

Basic Waste Characterisation.

Ref. No.	**F8**	**Tonnes/month**	**95-27**	**Tonnes/annum**	**1,048**
Source & Origin of Waste	Greensand Moulding				
Industrial Process	Iron Casting SIC 2751				
Physical State & Appearance	Black, can be dry or damp				
Collection Method	Steel 2 tonne tipping skips or lorry				
Composition of Waste & Leaching Behaviour	Silica Sand - Clay, Coal Dust 11% - Clay 7% - Coal 82% - Silica Sand Leachable Phenols < 0.5				
Hazardous Properties	None that warrant classification as UK Special Waste				
EU Waste Code	10-09-14	**Landfill Class / Disposal Facility**			N.H.W
Additional Precautions Required at the landfill / Disposal Facility	-				
Issue No.		**Compiled By**		**Date**	
Reviewed By				**Date**	

Basic Waste Characterisation.

Ref. No.	**F9**	**Tonnes/month**	**44.18**	**Tonnes/annum**	**442**
Source & Origin of Waste	Green Sand Plant Abatement				
Industrial Process	Iron Castings SIL 27510				
Physical State & Appearance	Fine Dust				
Collection Method	Blown back into Foundry, collected in (1 Tonne Skip)				
Composition of Waste & Leaching Behaviour	Waste consists of : Silica sand fines Clay Coal dust Total Phenols 50 (Leachable Phenol 7) Trace of metallics.				
Hazardous Properties	None that warrants Classification as UK Special Waste.				
EU Waste Code		**Landfill Class / Disposal Facility**		N.HL	
Additional Precautions Required at the landfill / Disposal Facility					
Issue No.		**Compiled By**		**Date**	
Reviewed By				**Date**	

Basic Waste Characterisation.

Ref. No.	**F10**	**Tonnes/month**	**1.54**	**Tonnes/annum**	**17**
Source & Origin of Waste	Manual Grinding				
Industrial Process	Iron Casting, SIC 27510				
Physical State & Appearance	Fine dusts - dry				
Collection Method	1 - tonne bags sealed around the abatement plant discharge point				
Composition of Waste & Leaching Behaviour	The waste consists of : - Ferrous metal scales & spent shot (> 80%) - Sand system sand & dusts (<20 %) : silica, clay & cold dust The leaching behaviour has not been determined.				
Hazardous Properties	None that warrant classification as UK Special Waste				
EU Waste Code	12 01 02	**Landfill Class / Disposal Facility**			N.H.W
Additional Precautions Required at the landfill / Disposal Facility	1) Contains respirable dust - avoid inhalation during handling.				
Issue No.		**Compiled By**		**Date**	
Reviewed By				**Date**	

Basic Waste Characterisation.

Ref. No.	**F11**	**Tonnes/month**	**3.09**	**Tonnes/annum**	**34**
Source & Origin of Waste	Wheelabrator of castings (cleaning)				
Industrial Process	Iron Castings SIC 27510				
Physical State & Appearance	Fine Dust - Dry				
Collection Method	Bag on abaitment Plant				
Composition of Waste & Leaching Behaviour	This Material consists of Ferrous Metal and spent shot, Silica Sand and Dust Silica, Clay, Coal Dust. Leachable Phenols 0.5				
Hazardous Properties	None that warrants Classification as UK Special Waste.				
EU Waste Code	12-01-02	**Landfill Class / Disposal Facility**			N.H.W
Additional Precautions Required at the landfill / Disposal Facility	(1) Contains respirable dust - Avoid inhalation when handling				
Issue No.		**Compiled By**		**Date**	
Reviewed By				**Date**	

Basic Waste Characterisation.

Ref. No.	**F12**	**Tonnes/month**		**Tonnes/annum**	**22**
Source & Origin of Waste		Paper / Cardboard 'Goods Inwards/Despatch'			
Industrial Process		-			
Physical State & Appearance		Cardboard Paper Waste			
Collection Method		8 Yard Covered Skip			
Composition of Waste & Leaching Behaviour		Waste paper / cardboard / other packaging materials			
Hazardous Properties		None that warrants Classification as UK Special Waste.			
EU Waste Code	20-03-01	**Landfill Class / Disposal Facility**			N.H.W.
Additional Precautions Required at the landfill / Disposal Facility		-			
Issue No.		**Compiled By**		**Date**	
Reviewed By				**Date**	

Basic Waste Characterisation.

Ref. No.	**F13**	**Tonnes/month**		**Tonnes/annum**	
Source & Origin of Waste	Wood Euro Pallets 'Goods Inwards/Despatch'				
Industrial Process	-				
Physical State & Appearance	Broken Wood Pallets/Collars				
Collection Method					
Composition of Waste & Leaching Behaviour	External Re-use/Recovery				
Hazardous Properties					
EU Waste Code		**Landfill Class / Disposal Facility**		N.H.W.	
Additional Precautions Required at the landfill / Disposal Facility					
Issue No.		**Compiled By**		**Date**	
Reviewed By				**Date**	

Basic Waste Characterisation.

Ref. No.	**F14**	**Tonnes/month**		**Tonnes/annum**	
Source & Origin of Waste					
Industrial Process		Iron Casting SIC 2751			
Physical State & Appearance		Oils			
Collection Method					
Composition of Waste & Leaching Behaviour	Internally reused as lubricants				
Hazardous Properties					
EU Waste Code		**Landfill Class / Disposal Facility**			
Additional Precautions Required at the landfill / Disposal Facility					
Issue No.		**Compiled By**		**Date**	
Reviewed By				**Date**	

Basic Waste Characterisation.

Ref. No.	**F15**	**Tonnes/month**		**Tonnes/annum**	**15,000 Gallons**
Source & Origin of Waste		Machine Shop			
Industrial Process					
Physical State & Appearance		White liquid			
Collection Method	I.B.C.				
Composition of Waste & Leaching Behaviour	Special Waste				
Hazardous Properties	Oils				
EU Waste Code	**21-01-08**	**Landfill Class / Disposal Facility**			**Hazardous Waste**
Additional Precautions Required at the landfill / Disposal Facility					
Issue No.		**Compiled By**		**Date**	
Reviewed By				**Date**	

Basic Waste Characterisation.

Ref. No.	**F16**	**Tonnes/month**		**Tonnes/annum**	
Source & Origin of Waste	Machining of Castings				
Industrial Process	Iron Casting SIC 2751				
Physical State & Appearance	White / Grey coloured liquids				
Collection Method	I.B.C.				
Composition of Waste & Leaching Behaviour	Comprises of : Soluble Oil Water Some metal particulants				
Hazardous Properties	Special Waste				
EU Waste Code	21-01-08	**Landfill Class / Disposal Facility**		Special Waste	
Additional Precautions Required at the landfill / Disposal Facility					
Issue No.		**Compiled By**		**Date**	
Reviewed By				**Date**	

Storage and waste handling

A summary of waste storage and handling arrangements is provided in the table that follows below.

Waste Management on site is covered by our internal procedure, Environmental Management BS EN ISO 14001 reference B2.12, this incorporates the following elements.

- Responsibility Structure
- Purchase of Materials
- Work Procedures
- Segregation of Waste
- Dealing with Spillage
- General Emergency Procedure
- Training and Awareness for staff

The Environmental Management System BS EN ISO 14001 has been implemented on the site and the Company Objective is to obtain full accreditation.