

Material Management Record (plastics)

1. product identification:			
- subdetector	ECAL-EE	ECAL-EE	ECAL-EE
- component designation	Super crystal-alveolar	electronic circuit boards	electronic components
- installation labelling No			
- location	Inside EE, vertical @ Z=±/-.3.2 m	behind backplates in minicrates	behind backplates in minicrates
- application	support for lead tungstate crystals	support and connect components	convert VPT signal to digital optical output
- total subdetector quantity (volume or weight)	157 kg (for both endcaps)(600*0.261 kg)	0.07 m ³ , 120 kg (~3000 boards)	~75,000 (25 per board)
- typical dimensions	3.4 m dia. X 0.278 m (for each endcap)	130 x 114 x 1.6 mm	various
- generic material name	carbon fibre-epoxy composite(68/32%)	FR4?	NA
- trade name	none	NA	NA
- principal chem. Components	carbon, epoxy	glass fibre, epoxy	NA
- trace elements	bromine (4.8%)	bromine (/%)	NA
- supplier	Myasishchev Design Bureau	NA	NA
- start of production	July-2000	2002	2002
- other references	0-TB-0054-103-00-B		
2. principal product properties			
- density	1.58 g/cm ³	1.7 g/cm ³	NA
- surface hardness (qualitative)	hard	hard	hard
- coatings	none	none	none
- approximate yield strength	26 Mpa	unknown	NA
- toxicity upon contact	none	none	none
- outgassing/ageing requirements		none	none
- radiation hardness	T I S No. R 549 (similar material)	under test?	under test?
- principal activation products		under test?	under test?
- chemical reactions		NA	NA
- magnetic properties	non-magnetic	non-magnetic	non-magnetic
- flammability classification		NA	NA
- smoke density		NA	NA
- other test/conformity records	NA	NA	NA
3. important temperatures			
- operating range (manufacturers recommendation)	sub-zero to 200 °C (estimate)	NA	NA
- outgassing (what gas)		NA	NA
- softening		NA	NA
- ignition		NA	NA
- autoignition/flash-over		NA	NA
- melting		NA	NA
- evaporation		NA	NA

Material Management Record (plastics)

1. product identification:			
- subdetector	ECAL-EE	ECAL-EE	ECAL-EE
- component designation	wiring - internal to minicrates	connectors for minicrates	LV cables
- installation labelling No			
- location	Inside minicrate mounted behind backplate	inside + on minicrate mounted behind backplate	from patch panel to minicrates
- application	interconnections in 50 channel minicrate	connections to amplifier cards	supply power and signals to/from minicrates
- total subdetector quantity (volume or weight)	100 g per minicrate, total ~60 kg	card*3000, module*1500, minicrate*300, total=90 k	300*20 wires @ 2 m
- typical dimensions	various	10 x 10 x 50 and 10 x 10 x 25 mm	various
- generic material name	plastic sheathed wire and ribbon cable	typically plastic housing, metal contacts	NA
- trade name	NA	NA	NA
- principal chem. Components	NA	NA	NA
- trace elements	NA	NA	NA
- supplier	NA	NA	NA
- start of production	2002	2002	~2002
- other references			
2. principal product properties			
- density	not relevant	not relevant	NA
- surface hardness (qualitative)	compliant insulation, metal core	hard	NA
- coatings	none	none	NA
- approximate yield strength	not relevant	not relevant	NA
- toxicity upon contact	none	none	NA
- outgassing/ageing requirements	none	none	NA
- radiation hardness	will be selected for good radiation properties	will be selected for good radiation properties	will be selected for good radiation properties
- principal activation products	NA	NA	NA
- chemical reactions	NA	NA	NA
- magnetic properties	non-magnetic	non-magnetic	non-magnetic
- flammability classification	NA	NA	NA
- smoke density	NA	NA	NA
- other test/conformity records	NA	NA	NA
3. important temperatures			
- operating range (manufacturers recommendation)	NA	NA	NA
- outgassing (what gas)	NA	NA	NA
- softening	NA	NA	NA
- ignition	NA	NA	NA
- autoignition/flash-over	NA	NA	NA
- melting	NA	NA	NA
- evaporation	NA	NA	NA

1. product identification:				
-	subdetector	ECAL-EE	ECAL-EE	ECAL-EE
-	component designation	HV cables	fibre optics	Dry nitrogen system
-	installation labelling No			
-	location	from patch panel to supercrystals	from patch panel to minicrate+supercrystal	inside EE
-	application	supply HV to VPTs	supply signals to/from minicrate+supercrystal	ensure VPTs in dry, low helium environment
-	total subdetector quantity (volume or weight)	600*2 @ 2 m	1500*12 fibre ribbons @ 2 m	<20 kg
-	typical dimensions	o/d 2.8 mm		6 mm diameter pipe
-	generic material name	x-linked PE and RADOX125		plastic?
-	trade name			NA
-	principal chem. Components			NA
-	trace elements			NA
-	supplier	Suhner, GX02272		NA
-	start of production	2002	2002	2003
-	other references			
2. principal product properties				
-	density	1.45 kg/100m	NA	NA
-	surface hardness (qualitative)	soft	NA	NA
-	coatings	NA	NA	NA
-	approximate yield strength	NA	NA	NA
-	toxicity upon contact	NA	NA	NA
-	outgassing/ageing requirements	NA	NA	NA
-	radiation hardness	assumed OK	NA	NA
-	principal activation products	NA	NA	NA
-	chemical reactions	NA	NA	NA
-	magnetic properties	non-magnetic	non-magnetic	non-magnetic
-	flammability classification	IEC 332-1	NA	NA
-	smoke density		NA	NA
-	other test/conformity records	NA	NA	NA
3. important temperatures				
-	operating range (manufacturers recommendation)	-30 to +100 °C	NA	NA
-	outgassing (what gas)	NA	NA	NA
-	softening	NA	NA	NA
-	ignition	NA	NA	NA
-	autoignition/flash-over	NA	NA	NA
-	melting	NA	NA	NA
-	evaporation	NA	NA	NA

Material Management Record (plastics)

1. product identification:		
- subdetector	ECAL-EE	ECAL-EE
- component designation	slow controls	Neutron shielding
- installation labelling No		
- location	inside EE	front, rear and inner bore
- application	sensors to monitor heat, field, etc. + wiring	slow fast neutrons to protect electronics
- total subdetector quantity (volume or weight)	NA	rear 1 m ³ , front 0.5 m ³ , inner 0.1 m ³ , total = 1500 kg
- typical dimensions	NA	r 3.5 m x 50 mm, f 3.5 m x 25 mm, l 0.5 x 0.3 x 0.5
- generic material name	NA	polythene
- trade name	NA	NA
- principal chem. Components	NA	NA
- trace elements	NA	NA
- supplier	NA	NA
- start of production	NA	2003
- other references		
2. principal product properties		
- density	NA	950 kg/m ³
- surface hardness (qualitative)	NA	moderately hard
- coatings	NA	none
- approximate yield strength	NA	low
- toxicity upon contact	NA	none
- outgassing/ageing requirements	NA	none
- radiation hardness	NA	hard
- principal activation products	NA	NA
- chemical reactions	NA	NA
- magnetic properties	NA	non-magnetic
- flammability classification	NA	ASTM 1
- smoke density	NA	NA
- other test/conformity records	NA	NA
3. important temperatures		
- operating range (manufacturers recommendation)	NA	0-80 °C estimate
- outgassing (what gas)	NA	NA
- softening	NA	120 °C
- ignition	NA	NA
- autoignition/flash-over	NA	NA
- melting	NA	140 °C
- evaporation	NA	NA