

Additional information related to the raw material used by IRMM for the production of GMO CRMs

The European Commission (EC) - Joint Research Centre (JRC) - Institute for Reference Materials and Measurements (IRMM) develops GMO Certified Reference Materials (CRMs) as demanded in Article 5 and 17 of Regulation (EC) No 1829/2003 and further specified in Annex II of Regulation (EC) No 641/2004.

The GMO CRMs produced are gravimetric mixtures of pure GMO and non-GMO powders certified for a specific GM event as mass fraction (g/kg). Those CRMs are either prepared from whole seeds, tuber or roots delivered to IRMM by Biotech companies and have generally a high purity.

IRMM verifies the purity of those raw materials for the presence of the particular event that is certified. However, those CRMs are not certified for the absence or adventitious presence of other possibly contaminating GM events.

The GMO CRMs can be used as positive controls for instance to validate a screening method. However, the GMO CRMs should not be used as negative controls for any other GM event than the one certified. The blank CRMs are indeed certified to potentially contain a mass fraction which is below the detection limit for a specific GM event but not for the absence of any other contaminating event that could be present as trace.

IRMM has conducted a study to verify the GM composition of 33 raw materials used for the production of our CRMs. Those samples have been tested by quantitative PCR for the presence/absence of 39 single GM targets:

Bt10, Bt11, NK603, GA21, MON863, 1507, T25, 59122, MON810, MIR604, Bt176, MON88017, LY038, 3272 and MON89034 were tested as maize specific GM targets.

SAH7, 281-24-236, 3008-210-23, LL25, MON531, MON1445, MON15985, and MON88913 were tested as cotton specific GM targets. For the GM sugar beat both H7-1 and GS were tested. T45, Ms8, Rf3, GT73, Rf1, Rf2, Ms1 and Topas 19/2 were tested as rapeseed specific GM targets.

The GM Rice targets tested were PLD, LLRice62, P35::BAR, LLRice601 and Bt63.

The soybean GM targets tested were A2704-12, 40-3-2, MON89788 and DP356043.

EH-92-527-1 was tested as GM potato target.

In the large majority of the CRMs produced by IRMM no-cross contamination could be found with those GM targets except for the maize 1507 CRMs in which MON810 targets were detected at a level below 0.4 % m/m (Table 1). In the other materials listed in Table 1 the trace levels found were all below 0.005 % m/m. Traces of MON810 were detected in NK603 and in conventional non-GM maize powders used for MON810, GA21, NK603, MON863 and Bt 176 series, respectively. Traces of MON 863 maize targets were detected in the MIR604 maize. Please be aware that the P35::BAR rice target can also found in the Bt176 maize which is containing that construct specific target. Bt176 and GM rice can nevertheless easily be discriminated as the rice specific target is absent in maize. Traces of 40-3-2 soybean target can also be detected in the non-GM soybean material as mentioned earlier in the certification report.

It needs to be noted that adventitious presence of other GM events is likely to be heterogeneously distributed over the batch of raw material.

Table 1: Presence of GM traces in the raw materials used for the production of GMO CRMs

Raw material	used for CRMs with the code	Event certified	Traces ¹⁾
pure GM	ERM-BF410b-f	40-30-2	40-30-2 ²⁾
pure non-GM	ERM-BF410a		
pure GM	ERM-BF410bk-gk		
pure non-GM	ERM-BF410ak		
pure GM	ERM-BF411b-f	Bt176	MON810 ²⁾
pure non-GM	ERM-BF411a		
pure GM	ERM-BF412b-f	Bt11	
pure non-GM	ERM-BF412a		
pure GM	ERM-BF413b-f	MON810	MON810 ²⁾
pure GM	ERM-BF413ck-gk		
pure non-GM	ERM-BF413ak		
pure GM	ERM-BF414b-f		
pure non-GM	ERM-BF414a	GA21	MON810 ²⁾
pure GM	ERM-BF415b-f	NK603	MON810 ²⁾
pure non-GM	ERM-BF415a		MON810 ²⁾
pure GM	ERM-BF416b-d	MON863	MON810 ²⁾
pure non-GM	ERM-BF416a		
pure GM	ERM-BF417b-d	MON863 x MON810	
pure non-GM	ERM-BF417a		
pure GM	ERM-BF418b-d	1507	MON810 ³⁾
pure non-GM	ERM-BF418a		
pure GM	ERM-BF419b	H7-1	
pure non-GM	ERM-BF419a		
pure GM	ERM-BF421b	EH92-527-1	
pure non-GM	ERM-BF421a		
pure GM	ERM-BF422b-d	281-24-236 x 3006-210-23	
pure non-GM	ERM-BF422a		
pure GM	ERM-BF423b-d	MIR604	MON863 ²⁾
pure non-GM	ERM-BF423a		
pure GM	ERM-BF424b-d	59122	
pure non-GM	ERM-BF424a		
pure GM	ERM-BF425b-d	356043	
pure non-GM	ERM-BF425a		
pure GM	ERM-BF426b-d	305423	
pure non-GM	ERM-BF426a		

1) The following targets have been tested: Bt10, Bt11, NK603, GA21, MON863, 1507, T25, 59122, MON810, MIR604, Bt176, MON88017, LY038, 3272 and MON89034 were tested as maize specific GM targets. SAH7, 281-24-236, 3008-210-23, LL25, MON531, MON1445, MON15985, and MON88913 were tested as cotton specific GM targets. For the GM sugar beat both H7-1 and GS were tested. T45, Ms8, Rf3, GT73, Rf1, Rf2, Ms1 and Topas 19/2 were tested as rapeseed specific GM targets.

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2) The trace level is below 0.005 % m/m.

3) The trace level is around 0.4 % m/m.