INVERT SUGAR

MODULE 1

SUBSTANCE INFORMATION SHEET

Invert Sugar

CAS number	8013-17-0
Natural Origin	Sugarcane or beet. Invert sugar is a mix of sugars obtained by enzymatic or acid conversion of sucrose into its monosaccharide components glucose and fructose. Sucrose, glucose and fructose are ubiquitous in nature.
Chemical Formula	N/A
Synonyms	Calorose; Insubeta; Inverdex; Invertogen; Invertose; Nulomoline; Sugar invert; Travert; Invertix; Lumolinine; Metabol; Nevuline; Trimolin
E number	N/A
FEMA GRAS number	N/A

General Information

Council of Europe (CoE)

Number	Comment
N/A	N/A

US Food & Drug Administration (FDA)

Number	Comment
21 CFR 184.1859	Direct food substances affirmed as generally recognized as safe

Joint FAO/WHO Expert Committee on Food Additives (JECFA)

Number	ADI	Comment
N/A	N/A	N/A

European Food Safety Authority (EFSA)

Number	Comment
N/A	N/A

Flavors & Extracts Manufacturers Association (FEMA)

Number	Comment
N/A	N/A

Uses and Exposure

Invert Sugar is used as liquid sweetener in food and beverages, and as humectant in food products, and in confectionary, to hold moisture and to prevent drying out. It is also used as parenteral nutrient.

Estimated Intake from Food and Drink

The daily intake of sugar (all sweeteners) for consumers in the United States ranges from 95 to 182 g per person[1,2]

Summary of the Toxicological Investigations on the Use of the Substance in Tobacco Products

Smoke Chemistry

Internal Studies	Level Tested ppm	Comment
Carmines for Philip Morris	825 and 1,392	The effect of the addition of invert sugar at concentrations up to 1,392 ppm on the composition of the cigarette smoke was investigated.
Philip Morris	25,000; 50,000; 100,000	The effect of the addition of Invert Sugar at concentrations up to 100,000 ppm on the composition of the cigarette smoke was investigated..
Philip Morris	33,000	The effect of the addition of Invert Sugar as a mix at concentrations up to 33,000 ppm on the composition of the cigarette smoke was investigated.
Philip Morris	33,000	The effect of the addition of Invert Sugar as a mix at concentrations up to 33,000 ppm on the composition of the cigarette smoke condensate was investigated.

Neutral Red Uptake Assay (NRU)

Internal Studies	Level Tested ppm	Comment
Carmines for Philip Morris	825 and 1,392	The effect of the addition of invert sugar at concentrations up to 1,392 ppm on the cytotoxicity, as measured by the Neutral Red Uptake assay, was investigated.
Philip Morris	25,000; 50,000; 100,000	The effect of the addition of Invert Sugar at concentrations up to 100,000 ppm on the cytotoxicity, as measured by the Neutral Red Uptake assay, was investigated.
Philip Morris	33,000	The effect of the addition of Invert Sugar as a mix at concentrations up to 33,000 ppm on the cytotoxicity, as measured by the Neutral Red Uptake assay, was investigated.

AMES Assay

Internal Studies	Level Tested ppm	Comment
Carmines for Philip Morris	825 and 1,392	The effect of the addition of invert sugar at concentrations up to 1,392 ppm on the mutagenic response, as measured by the Salmonella reverse mutation assay, was investigated.
Philip Morris	25,000; 50,000; 100,000	The effect of the addition of Invert Sugar at concentrations up to 100,000 ppm on the mutagenic response, as measured by the Salmonella reverse mutation assay, was investigated.

Mouse Lymphoma Assay (MLA)

Internal Studies	Level Tested ppm	Comment
Philip Morris	25,000; 50,000; 100,000	The effect of the addition of Invert Sugar at concentrations up to 100,000 ppm on the mutagenic response, as measured by the Mouse Lymphoma Assay, was investigated.

In vivo Micronucleus (MN)

Internal Studies	Level Tested ppm	Comment
N/A	N/A	N/A

Inhalation studies

Internal Studies	Level Tested ppm	Comment
Carmines for Philip Morris	825 and 1,392	The effect of the addition of invert sugar at concentrations up to 1,392 ppm on the toxicity of cigarette smoke, as suggested in a 90-day inhalation study, was investigated.
Philip Morris	25,000; 50,000; 100,000	The effect of the addition of Invert Sugar at concentrations up to 100,000 ppm on the toxicity of cigarette smoke, as suggested in a 90-day inhalation study, was investigated.
Philip Morris	33,000	The effect of the addition of Invert as a mix at concentrations up to 33,000 ppm on the toxicity of cigarette smoke, as suggested in a 90-day inhalation study, was investigated.

References

1- Glinsmann, W.H., Irausquin, H. and Park, Y.K. (1986). Evaluation of health aspects of sugars contained in carbohydrate sweeteners. J. Nutr. 116:S1-S216.

2- USDA Disappearance Data