

Methyl Isobutyl Ketone and Methyl Ethyl Ketone

Results of Testing

Chemical Name	CAS No.	Study Code/Type	Protocol/Guideline	Species	Exposure	Dose/Concentration	No. per Group	Results	Reference
Methyl isobutyl ketone	108-10-1	HECTOXTRFM Transformation assay	Non-TSCA Protocol/Guideline (docket OPTS-42017)	mouse BALB/3T3 cells	<i>in vitro</i>	2.4, 3.6, 4.8 µl/ml (nonactivated) 1.0, 2.0, 4.0 µl/ml (activated)	Not applicable	Results indicated that the test material was negative both with and without metabolic activation.	50 FR 5421; 2/6/85 OTS0507470
Methyl isobutyl ketone	108-10-1	HEGTOXCHRM Mammalian bone marrow micronucleus assay	Non-TSCA Protocol/Guideline (docket OPTS-42017)	mice	intraperitoneal (i.p.), single dose	0.73 ml/kg	5 males; 5 female	The test material did not induce micronucleated erythrocytes in the test animals.	50 FR 5421; 2/6/85 OTS0507470
Methyl isobutyl ketone	108-10-1	HEGTOXDNAF Unscheduled DNA synthesis	Non-TSCA Protocol/Guideline (docket OPTS-42017)	rat primary hepatocytes	<i>in vitro</i>	0.010 to 100 µL/mL	Not applicable	No evidence of unscheduled DNA synthesis was noted in any assay.	50 FR 5421; 2/6/85 OTS0507470
Methyl isobutyl ketone	108-10-1	HEGTOXMUTA Gene mutations in somatic cells	Non-TSCA Protocol/Guideline (docket OPTS-42017)	mouse L5178Y TK +/-	<i>in vitro</i>	0.32, 0.42, 0.56, 0.75, 1.0, 1.3, 1.8, 2.4, 3.2, 4.2 µg/mL	Not applicable	Three nonactivated cultures exposed to 1.8, 3.2, and 4.2 µg/mL exhibited mutant frequencies which ranged from 2.0 to 4.8 times the frequency of the solvent control. The total growth ranged from 3 to 58%. A repeat assay failed to show these effects. No effects were seen among activated cultures. The total growth of activated cultures ranged from 23 to 95%.	50 FR 5421; 2/6/85 OTS0507470
Methyl isobutyl ketone	108-10-1	HEGTOXMUTA Mutagenicity study	Non-TSCA Protocol/Guideline (docket OPTS-42017)	<i>Salmonella typhimurium</i>	<i>in vitro</i>	1.0, 4.0, 5.0, 10.0 µg/plate	Not applicable	The test material did not cause a positive response in any of the test strains (TA98, TA100, TA1535, TA1537 and TA1538) with or without metabolic activation.	50 FR 5421; 2/6/85 OTS0507470
Methyl isobutyl ketone	108-10-1	HERTOXTERA Developmental study	Non-TSCA Protocol/Guideline (docket OPTS-42017)	rats, mice	inhalation, days 6-15 of gestation	0, 300, 1000, 3000 ppm	unreported number of pregnant females	Rats exposed to 3000 ppm showed maternal toxicity (decreased body weight gain, food consumption, and an increase in relative kidney weight). Mice exposed to 3000 ppm had increased absolute and relative liver weights. At the same dose level, both rats and mice had an increase in the incidence of dead fetuses, reduced fetal weight gain, and reductions in skeletal ossification. At 300 and 1000 ppm, there was no maternal, embryo, or fetal toxicity (including malformations).	50 FR 5421; 2/6/85 OTS0507470

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Methyl isobutyl ketone	108-10-1	HESTOX Subchronic study	Non-TSCA Protocol/ Guideline (docket OPTS-42017)	rats, mice	inhalation, 6 hr/d; 5d/w; 90 days	0.50, 250, 1000 ppm	14 male; 14 female	Male rats and mice exposed to 1000 ppm of test material had approximately an 11% increase (compared to controls) in values of absolute and relative (percent of body weight) liver weights. Male mice at 250 ppm had an increase in absolute liver weights, rats did not. Female liver weights both in rats and mice were similar to the controls.	49 FR 5187; 2/10/84 OTS0507467
Methyl isobutyl ketone	108-10-1	HERTOXTERE Reproduction and fertility effects	60 FR 20298	rats	inhalation	0, 491, 999, 1996 ppm	30 male 30 female	Parental survival in both generations was unaffected by exposure. Only transient deviations of body weight from control levels were observed in F ₀ rats. F ₁ parental males showed transient depressed body weight at 2073 and 4105 mg/m ³ , and consistently depressed body weight at 8219 mg/m ³ . Among F ₀ rats, increased relative liver weights (males and females at 8178 mg/m ³) and increased relative kidney weights (males at ≥2012 mg/m ³ ; females at ≥4093 mg/m ³) were observed. Significantly increased relative adrenal and ovary weights were also observed in F ₀ females at 8178 mg/m ³ . In the F ₁ parental groups, significant increases in relative liver weight (males at ≥4105 mg/m ³ ; females at 8219 mg/m ³) and relative kidney weight (males at ≥2073 mg/m ³ ; females at 8219 mg/m ³) were observed, and significantly increased relative seminal vesicle, right testis, left cauda epididymis, and adrenal glands were seen in F ₁ parental males at 8219 mg/m ³ . Signs suggestive of CNS depression were observed in mid- and high-exposure parental groups in both generations. The only effect reported in offspring was significantly depressed body weights on day 14 post-partum in F ₁ and F ₂ male and female pups in mid- and high-exposure groups; however, pup body weights were not different from controls on days 7 and 21 post-partum. Pre-mating, mating, gestational, and lactational exposures up to 8219 mg/m ³ (2055 mg/m ³ HEC), no MIBK-induced effects were observed in either generation in the number of pups with gross external malformations at birth, number of stillbirths, number of live pups, body weight on post-natal day 1, or survival to post-natal day 4 (WIL Research Laboratories, 2000).	Docket OPPTS- 42205B

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Methyl ethyl ketone	78-93-3	HECTOXTRFM Transformation assay	Non-TSCA Protocol/ Guideline (docket OPTS-42017)	mouse BALB/3T3 cells	<i>in vitro</i>	9, 13, 18 µL/mL (non-activated); 6, 8, 10 µL/mL (activated)	Not applicable	Results indicated that the test material was negative both with and without metabolic activation.	50 FR 5421; 2/6/85 OTS0507470
Methyl ethyl ketone	78-93-3	HEGTOXCHRM Mammalian bone marrow micronucleus assay	Non-TSCA Protocol/ Guideline (docket OPTS-42017)	mice	intraperitoneal (i.p.), single dose	1.90 ml/kg	5 males; 5 female	The test material did not induce micronucleated erythrocytes in the test animals.	50 FR 5421; 2/6/85 OTS0507470
Methyl ethyl ketone	78-93-3	HEGTOXDNAF Unscheduled DNA synthesis	Non-TSCA Protocol/ Guideline (docket OPTS-42017)	rat primary hepatocytes	<i>in vitro</i>	0.0005 to 5.0 µL/plate	Not applicable	No evidence of unscheduled DNA synthesis was noted in any assay.	50 FR 5421; 2/6/85 OTS0507470
Methyl ethyl ketone	78-93-3	HEGTOXMUTA Gene mutations in somatic cells	Non-TSCA Protocol/ Guideline (docket OPTS-42017)	mouse L5178Y TK +/-	<i>in vitro</i>	0.89 to 12 µL/plate (nonactivated); 0.67 to 8.9 µL/plate (activated)	Not applicable	No evidence of increased mutation frequencies were noted in any assay.	50 FR 5421; 2/6/85 OTS0507470
Methyl ethyl ketone	78-93-3	HEGTOXMUTA Mutagenicity study	Non-TSCA Protocol/ Guideline (docket OPTS-42017)	<i>Salmonella typhimurium</i>	<i>in vitro</i>	0, 16, 32, 150 µL/plate	Not applicable	No evidence of increased mutant frequency was seen in any of the strains tested (strains TA98, TA100, TA1535, TA1537 and TA1538) with or without activation.	50 FR 5421; 2/6/85 OTS0507470