

PHOTODEGRADATION (AQUEOUS DIRECT)

TEST SUBSTANCE

Identity: N-methylperfluorooctane sulfonamidoethanol; may also be referred to as N-MeFOSE Alcohol, FC-790, or FM-3925. (1-Octanesulfonamide, N-methyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-, CAS # 24448-09-7)

Remarks: Material is an off-white, waxy solid. Sample was taken from 3M lot number 505. Purity information was not recorded.

METHOD

Method/guideline followed: Specific method not noted. Procedure used a modified Crosby and Tang photoreactor.

Equipment: Two studies – Single-chamber Crosby and Tang photoreactor
-Triple-chamber variant of Crosby and Tang photoreactor

Type (test type): Simulated sunlight

GLP (Y/N): No

Year: 1980

Light Source: F-40BL fluorescent light

Light Spectrum (nm): Not noted.

Spectrum of substance (max lambda, max epsilon and epsilon 295): Not determined.

Remarks field:

- **Test medium (air, water, soil, other - specify):** deionized water
- **Duration:** 30 days
- **Positive Controls:** None
- **Negative Controls:** One
- **Blank Controls:** Two (one methanol and one ethyl acetate)

RESULTS

Concentration of Substance: A saturated solution created by stirring an excess of sample in water for 6 hours, filtering the resulting solution, and using the clear filtrate.

Temperature °C: Single chamber unit: 35°C
Triple chamber unit: 21±3°C

Degradation %: 0% after 30 days when analyzed by electron capture gas chromatography. Flame ionization detection showed two possible photolysis products later identified by GC/MS as acetic acid, n-propyl acetate and / or ethanol. Repeat of the experiment produced similar results. However, GC/MS

identified two other possible photolysis products; a fluorocarbon amine and N-methylperfluorohexanesulfonamide.

Remarks field: Carbon filters on the photolysis units showed insignificant amounts of FM-3925 were volatilized during the experiment.

CONCLUSIONS

Little to no photodegradation was detected in this study using simulated sunlight, indicating the test substance does not undergo photolysis at a significant rate.

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DATA QUALITY

Reliability: Klimisch ranking 3. Sample purity was not properly characterized. The concentration of FM-3925 in the standard compared to the FM-3925 control suggests some other mode of removal / degradation may be occurring. It is not clear how the control samples were handled. The concentration of FM-3925 in solution is well above the solubility limit of the test substance, indicated to be 0.82 mg/L. There was no direct measurement of the FM-3925 concentration. The concentration technique could potentially volatilize FM-3925. It's unlikely that all degradation products could be seen using GC/MS.

REFERENCES

3M Technical Report "Photolysis of RM3925 in Aqueous Solutions." James Gagnon and C. H. Schrandt, Project 9770012600, Report Number 045, Lab Request number 4649S, November 7, 1980

OTHER

Last changed: 4/01/01