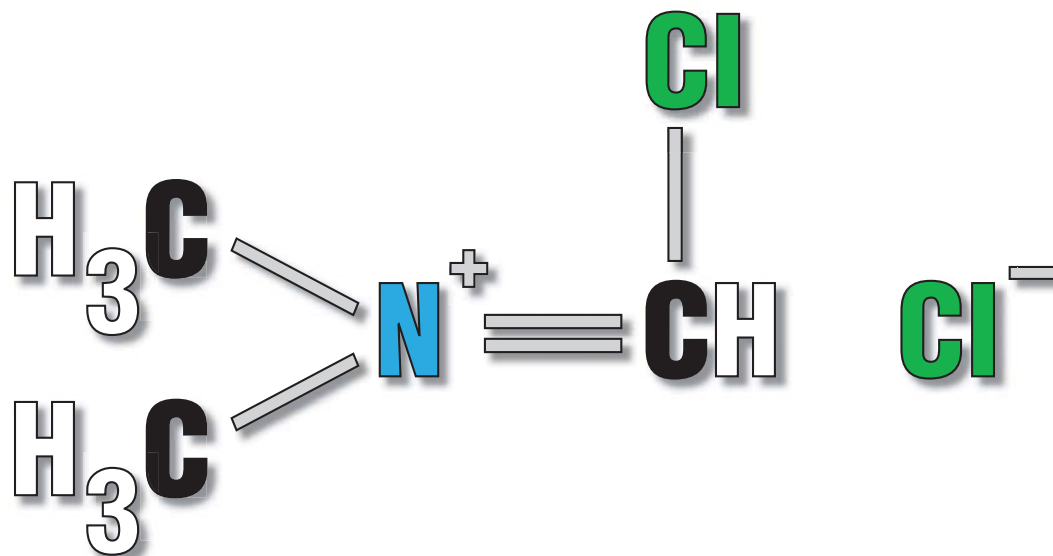


Vilsmeier Reagent

N,N-Dimethylchloromethyliminium Chloride
DMF-COCl₂ Vilsmeier-Haack Reagent



Molecular Weight = 128
CAS #3724-43-4

SPECIFICATIONS

Assay	DMF	Fe (ppm)	Ni (ppm)	Cr (ppm)
95% min.	5% max.	12 max.	3 max.	2 max.

PHYSICAL PROPERTIES

Appearance: White Crystalline Solid
FW: 128.00
MP: 139 - 141°C
Solubility: 26% in Chloroform

Vapor Pressure: 1 hPa @ 20°C
Bulk Density: 0.756 kg/m³
Flash Point: > 200°F / > 93°C

NOTICE: The technical information and suggestions for use made herein are based on VanDeMark's research and experience and are believed to be reliable, but such information and suggestions do not constitute a warranty, and no patent liability can be assumed. This publication is not to be taken as a license to operate under or infringe on any patents. Since VanDeMark has no control over the conditions under which the product is transported, stored, handled, used or applied, buyer must determine for himself by preliminary tests or otherwise, the suitability of the product for his purposes. VanDeMark's liability on any basis is limited to the price of the product used. The information in this bulletin supersedes all previously issued bulletins on the subject matter covered.

APPLICATIONS

Vilsmeier Reagent is a stable, free-flowing, crystalline solid prepared from dimethylformamide (DMF) and carbonyl dichloride (phosgene). The use of VanDeMark's pre-formed Vilsmeier Reagent eliminates the need of the user to handle highly toxic phosgene, thionyl chloride, phosphoryl chloride or oxalyl chloride to generate a reagent.

Vilsmeier Reagent has been found to be useful in dehydration, chlorination, and formylation reactions. VanDeMark's Vilsmeier Reagent is one of the purest that can be produced, reducing by-product formation in reactions and simplifying workup. The overall utility of Vilsmeier Reagents in effecting chemical transformations can be found in the references below. The effectiveness of the (chloromethylene) dimethylammonium chloride in any specific reaction in which a Vilsmeier Reagent is used must be determined beforehand, as its reactivity can vary.

SAFETY AND HANDLING

Vilsmeier Reagent is classified as a Corrosive Solid, NOS. The product is stable under normal conditions, but will decompose at elevated temperatures and will react violently with water, emitting toxic hydrogen chloride fumes. An organic vapor respirator, approved for use with dimethylformamide, and with a high efficiency particulate filter must be worn when handling this product to provide respiratory protection. Also, acid resistant clothing, gloves, boots and goggles must be worn to provide body protection. Consult the MSDS for more information.

FIRST AID

Seek immediate medical attention. Show MSDS to doctor.

Eye Contact: Rinse immediately with copious amounts of water for at least 15 minutes. Do not rub.

Skin Contact: Wash immediately with soap and water, removing all contaminated clothing and shoes.

REFERENCES

- Marson, C.M., Giles, P.R., "Synthesis Using Vilsmeier Reagents", CRC Press, (1994) ISBN: 0-8493-7869-9
- Himmeler, T., DE Patent 102005035617
- Kawano, Y., Kaneko, N., Muraiyama, T., Chemistry Letters (2005), 34(12), 1612-1213
- Kanwar, S., Sharma, S.D., Journal of Chemical Research (2005), (11), 705-707
- Maier, T., Beckers, T., Baer, T., Gimmnich, Petra., Dullweber, F., Vennemann, M., WO Patent 2005087724
- Guenther, T., Neuhauser, K.H., WO Patent 2005068438
- Sridhar, R., Sivaprasad, G., Perumal, P.T., Journal of Heterocyclic Chemistry (2004), 41(3), 405-408
- Himmeler, T., WO Patent 2004002969
- Rao, M., Yang, M., Kuehner, D., Grosso, J., Deshpande, R.P., Organic Process Research & Development (2003), 7(4), 547-550
- Sreenivasan, B., Nair, M.G., US Patent 5981775
- Reichardt, C., Journal fuer Praktische Chemie (Weinheim, Germany) (1999), 341(7), 609-615
- Endova, M., Masojdkova, M., Rosenberg, I., Nucleosides & Nucleotides (1997), 16(12), 2151-2164
- Navia, J.L., Walkup, R.E., Vernon, N.M., Neiditch, D.S., US Patent 5498709
- Bergman, J., Stalhandske, C., Tetrahedron (1996), 52(3), 753-770
- Makinabakan, O., Salman, Y.G., Yuceer, L., Carbohydrate Research (1996), 280(2), 339-343
- Benazza, M., Massoui, M., Uzan, R., Demailly, G., Carbohydrate Research (1995), 275(2), 421-431
- Maryanoff, C.A., US Patent 5399757
- Ismail, Z.M., Hamdan, A.J., Arabian Journal for Science and Engineering (1994), 19(4A), 661-665
- Affandi, H., Bayquen, A.V., Read, R.W., Tetrahedron Letters (1994), 35(17), 2729-2732
- Korshin, E.E., Soboleva, G.I., Levin, Y.A., Podval'nyi, E.A., Efremov, Y.Y., Zhurnal Organicheskoi Khimii (1993), 29(3), 577-587
- Daloia, E., Lim, G., Melton, J., Roubie, J., Synthetic Communications (1993), 23(18), 2617-2622
- Alcaraz, J.M., Lecacheur, M., Robin, Y., FR Patent 2679556
- Benazza, M., Uzan, R., Beaupere, D., Demailly, G., Tetrahedron Letters (1992), 33(34), 4901-4904

Inhalation: Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

SPILLS AND DISPOSAL

Use appropriate PPE (see MSDS). Ensure adequate ventilation. Evacuate personnel to safe areas. Cover powder spills with plastic sheet or tarp to minimize spreading and keep powder dry. Prevent dust cloud. Prevent product from entering drains. DO NOT use water or wet materials for cleaning up. Sweep up and shovel into suitable containers for disposal. Clean contaminated surfaces thoroughly. After cleaning, flush away traces with water. Dispose of contaminated product as hazardous waste. Dispose of empty containers according to local regulations. DO NOT reuse empty containers.

STORAGE

The product should be refrigerated and has a recommended shelf life of 6 months when stored below 15°C; however this can be greatly extended by reducing the storage temperature to below 0°C. The product should be stored in its original, sealed containers to maintain product quality and integrity. Consult the MSDS for more information.

PACKAGING AND SHIPPING

VanDeMark's Vilsmeier Reagent is available in 30 kg containers. The product is sealed under nitrogen in double polyethylene bags and packaged in fiber drums. Vilsmeier Reagent can be shipped via truck, rail, ship and cargo air. Customer specific packaging can be considered upon request.

EMERGENCY RESPONSE

*Contact CHEMTREC 1-800-424-9300 in case of a transportation incident.

*Contact VanDeMark 1-716-433-6764 for all other incidents.