[redacted] CONFIDENTIAL -- CORRECTED COPY -- DATE November 29, 1966

TRIAL MANUFACTURE REQUEST NO. T.M.R.-C- 66-95

Risk Dollars—Up to $5,000 [redacted]

PRODUCT NAME Aerosol Solution: 76/24 - "F-12"/Vinyl Chloride LBS PROPOSED 13,000

AREA AND BUILDING NAME "Freon" - Service Building PRODUCT CODE NO. A78 611

REQUEST SECTION—INCLUDE THE HEADINGS NATURE OF REQUEST, AVAILABILITY OF EQUIPMENT, AVAILABILITY OF RAW MATERIALS, SCHEDULING, ANALYTICAL STATUS, PATENT STATUS, SAFETY, COST OF WORK, POTENTIAL. IF SUCCESSFUL, ATTACH CHAMBERS WORK PROCESS.

Nature of Request: To produce approximately 13,000 pounds of subject product. This material has been ordered by New York Bronze Powder Company for use as an aerosol propellent. Shipment is scheduled for October 24, 1966.

Cost Of Manufacture: The estimated cost to produce this product is $12.440/cwt.

Availability and Suitability of Equipment: Regular trailer loading facilities are suitable and will be available for this manufacture.

Availability of Materials: "Freon-12" is manufactured on the Chambers Works and is readily available. Vinyl Chloride is available by purchase from the Dow Chemical Company.

Analytical Status: Analyses will be performed by the "Freon" Control Laboratory. The analytical procedures are available except for composition. Shipment will be made on a weight basis.

Patent Status: Orchem Patent Service can foresee no patent problems from the production and sale of this product.

Potential if Successful: Sales of about 300M pounds annually are expected. (J. B. Storm, Jr.)

Safety: Vinyl Chloride is a dangerous fire and explosion hazard. Avoid contact with sparks, open flame, or a heated surface. Prevent static build-up by grounding both container and receiver. The finished product is nonflammable. Trailers and storage tanks must be grounded to prevent static build-up. Avoid use of copper or copper alloys with vinyl chloride or products thereof. A trace of the impurity acetylene in the vinyl chloride could react with copper to form the explosive acetylide.

Waste Disposal: Losses will be about 2% released to the atmosphere.

MANUFACTURING RESPONSIBILITY R. A. Chorba TECHNICAL RESPONSIBILITY T. V. Kidd EST COMP DATE

PREPARED BY T. V. Kidd RESPONSIBLE FOR CONCLUSION T. V. Kidd

APPROVED BY
DIRECTOR, R AND D DIVISION — DATE
T. D. Johnson, TECHNICAL SALES MGR.* 10-24-66 DATE
J. M. Hamilton 10-24-66 DATE
R. M. Yohannan 10-24-66 DAT

AUTHORIZED BY: T. M. Tomkowit, GEN. SUPT., PROGRESS DEPT.* 10-24-66 DATE
W. Ramsay, GEN. SUPT., PROD. AREA* 10-24-66 DAT
MGR. CHAMBERS WORKS* — DATE
DIRECTOR OF MANUFACTURE* — DATE

Verbal approvals obtained by R. R. Merner

*MARK "NOT REQUIRED" WHERE APPLICABLE OR DISTRIBUTION ATTACHED.

EID10545

Principle: This solution is a mixture of "Freon-12" and Vinyl Chloride. It is prepared by direct mixing of the components. The vapor pressure of the solution is 56 p.s.i.g. at 70°F. and 76 p.s.i.g. at 130°F. It is used as an aerosol propellent. (Calculations of vapor pressure are based on Raoult's Law.)

Reaction: None. This product is a physical mixture.

Critical Hazards: **Avoid skin contact and prolonged period of inhalation.**

Basis: On order from New York Bronze Company.

Equipment: Regular trailer loading facilities in the Service Building and Tank Farm, "Freon" Area.

Bill of Materials: Net basis (given per 100 pounds of product). May be scaled to fit any size of approved cylinder. The loading density is 107% of water capacity. (Calculated as described in CWPD Report No. 156.)

Material	Orchem Spec. No.	Lb. per 100 Lb. Produced	Wt. Ratio	Mol. Wt.
"Freon-12" (384100)	27-F-2	77.52	76.0	120.9
Vinyl Chloride (985960)	Note 1	22.48	24.0	62.5
Aerosol Solution A78 611	Note 2	100.0	24.0	-

Note 1: Purchase from the Dow Chemical Company.

Note 2: Formal specifications have not been developed. Shipment will be made on a weight basis

Specifications: Tentative specifications for this product are as follows: (R. C. McHarness)

1. The product shall be a clear, colorless liquified gas, substantially free from particulate matter.

2. The composition shall be 76.0 ± 1.0% by wt. "Freon-12"
24.0 ± 1.0% by wt. Vinyl Chloride.

This shipment will be made on a weight basis.

EID10546

Specifications: (Cont'd)

3. The odor shall be satisfactory for use in aerosol solutions.

4. The moisture content shall not exceed [illegible] p.p.m. by weight.

5. The soluble residue shall not exceed 0.01% by volume.

6. Chlorides shall be nil by the silver nitrate test.

Batch Size and Yield: Batch size may be any value which may be contained in any approved container. Standard and good yield is 98% representing handling losses only.

Procedure: (Given per 100 pounds product. Scale as required to container capacity).

1. Clean and inspect the container thoroughly.

   The container must be clean; all oil, residue, moisture, etc. should be removed as completely as possible.

2. Charge accurately in this order:

   77.52 pounds "Freon-12" } per 100 pounds of product
   24.48 pounds Vinyl Chloride } (Assuming 98% yield)

3. Mix the contents of the container thoroughly. This may be accomplished by driving the tractor and trailer about the plant.

4. Request the "Freon" Control Laboratory to sample the container and conduct the following analyses:

Analysis	Orchem Method Number
Appearance	6-50-3
Moisture	2-14-5
Soluble Residue	6-50-3
Chlorides	6-6-6
Odor	None

EID10547

Chemical Hazards:	(Starting Material) "Freon-12"	Vinyl Chloride	(Product) 75/25% "F-12"/Vinyl Chloride
Flammability:	Nonflammable	Flammable	Nonflammable
Toxicity:	TLV 1000 ppm	500 p.p.m.	TLV is 20% p.p.m. (Based on Vinyl Chloride)
Irritant:	None	Avoid skin contact and inhalation	Avoid skin contact and inhalation.
Reactivity:	Avoid decomposition by heat	Avoid contact with copper and/or heat	Avoid copper and copper alloy

Waste Disposal:

	- Material - "Freon-12"	Vinyl Chloride
Physical state	Vapor	Vapor
dor	Faintly Ethereal	Faintly Ethereal
BOD value	---	---
Volume	198 pounds	62 pounds

Patent Status: Orchem Patent Service can find no patent problems from the production and sale of this product.

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