

Vinyl Acetate

| 1. Formula:                      | $\text{CH}_3\text{COOCH} = \text{CH}_2$                                                                                                                                                                                      |                    |                     |    |      |    |      |     |      |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------|----|------|----|------|-----|------|
| 2. Molecular Weight:             | 86.1                                                                                                                                                                                                                         |                    |                     |    |      |    |      |     |      |
| 3. Boiling Point (Normal):       | 162.8°F                                                                                                                                                                                                                      |                    |                     |    |      |    |      |     |      |
| 4. Freezing Point:               | -148°F                                                                                                                                                                                                                       |                    |                     |    |      |    |      |     |      |
| 5. Specific Gravity:             | 0.9338 g./mol. @ 68°F. (liq.)<br>( $\Delta \text{Sp. Gr.} / \Delta T (^{\circ}\text{F}) = -0.0007$ )<br>2.97 (air = 1.0) -(Vap.)                                                                                             |                    |                     |    |      |    |      |     |      |
| 6. Viscosity:                    | <table><thead><tr><th><math>^{\circ}\text{F}</math></th><th>Centipoise (Liquid)</th></tr></thead><tbody><tr><td>32</td><td>0.54</td></tr><tr><td>68</td><td>0.41</td></tr><tr><td>104</td><td>0.33</td></tr></tbody></table> | $^{\circ}\text{F}$ | Centipoise (Liquid) | 32 | 0.54 | 68 | 0.41 | 104 | 0.33 |
| $^{\circ}\text{F}$               | Centipoise (Liquid)                                                                                                                                                                                                          |                    |                     |    |      |    |      |     |      |
| 32                               | 0.54                                                                                                                                                                                                                         |                    |                     |    |      |    |      |     |      |
| 68                               | 0.41                                                                                                                                                                                                                         |                    |                     |    |      |    |      |     |      |
| 104                              | 0.33                                                                                                                                                                                                                         |                    |                     |    |      |    |      |     |      |
| 7. Surface Tension:              | 23.8 Dynes/Cm @ 77°F                                                                                                                                                                                                         |                    |                     |    |      |    |      |     |      |
| 8. Index of Refraction:          | $n_d^{20} = 1.3953$                                                                                                                                                                                                          |                    |                     |    |      |    |      |     |      |
| 9. Specific Heat:                | Liquid = 0.460 BTU/lb. °F @ 68°F.                                                                                                                                                                                            |                    |                     |    |      |    |      |     |      |
| 10. Heat of Vaporization:        | 164 BTU/lb. @ 1 atm.                                                                                                                                                                                                         |                    |                     |    |      |    |      |     |      |
| 11. Flash Point (open cup):      | Inhibited material: 30°F<br>Uninhibited material: 20°F                                                                                                                                                                       |                    |                     |    |      |    |      |     |      |
| 12. Auto Ignition Temperature:   | 769°F.                                                                                                                                                                                                                       |                    |                     |    |      |    |      |     |      |
| 13. Explosive Limits:            | 2.6 to 13.4% by volume in air.                                                                                                                                                                                               |                    |                     |    |      |    |      |     |      |
| 14. Critical Properties:         | $T_c = 444.02^{\circ}\text{F}$<br>$P_c = 22.4 \text{ atm.}$<br>$D_c =$<br>$V_c =$                                                                                                                                            |                    |                     |    |      |    |      |     |      |
| 15. Solubility in Water:         | 2.3% (wt.) @ 68°F.                                                                                                                                                                                                           |                    |                     |    |      |    |      |     |      |
| 16. Solubility of Water In:      | 1.0% (wt.) @ 68°F.                                                                                                                                                                                                           |                    |                     |    |      |    |      |     |      |
| 17. Max. Allowable Conc. in Air: |                                                                                                                                                                                                                              |                    |                     |    |      |    |      |     |      |
| 18. Heat of Formation:           | 1800 BTU/lb.                                                                                                                                                                                                                 |                    |                     |    |      |    |      |     |      |
| 19. Heat of Polymerization:      | 446 BTU/lb.                                                                                                                                                                                                                  |                    |                     |    |      |    |      |     |      |
| 20. Thermal Conductivity:        |                                                                                                                                                                                                                              |                    |                     |    |      |    |      |     |      |

Note: Data calculated from:

- 1) Bulletin S-56, Celanese Corp. of America
- 2) Celanese Vinyl Acetate Monomer Brochure
- 3) Niacet Vinyl Acetate Monomer, Union Carbide

Chemical Co., Bulletin F-7575C

Date 21 MAY 1976

DISTRIBUTION

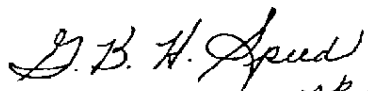
Subject VINYL CHLORIDE MONOMER DATA BOOK

from G. B. H. SPEED

|                                            |                                            |                                        |                                          |
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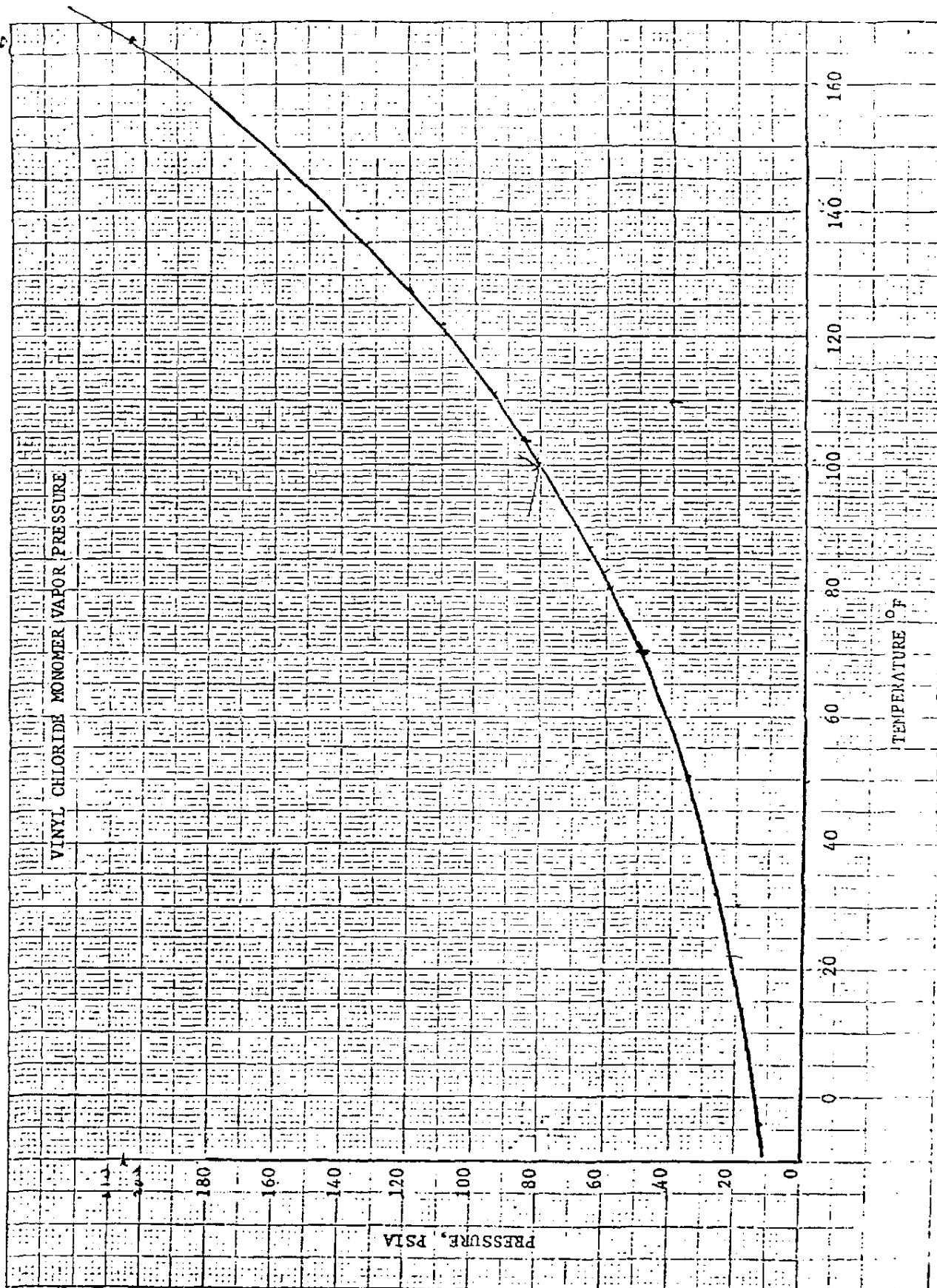
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Attached is a book of data on vinyl chloride, vinyl acetate and propylene that I have accumulated over the years that may be of some benefit to you.

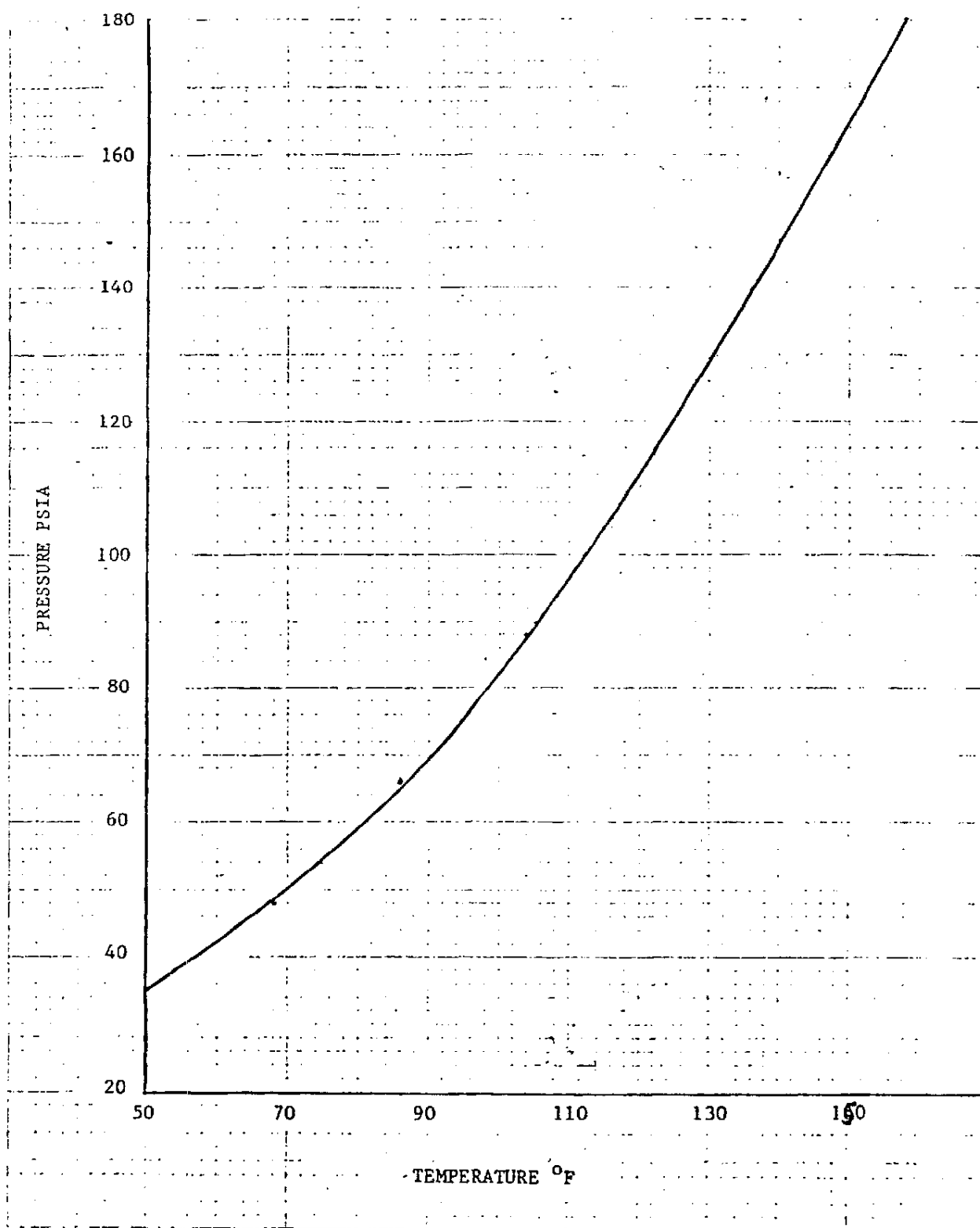
  
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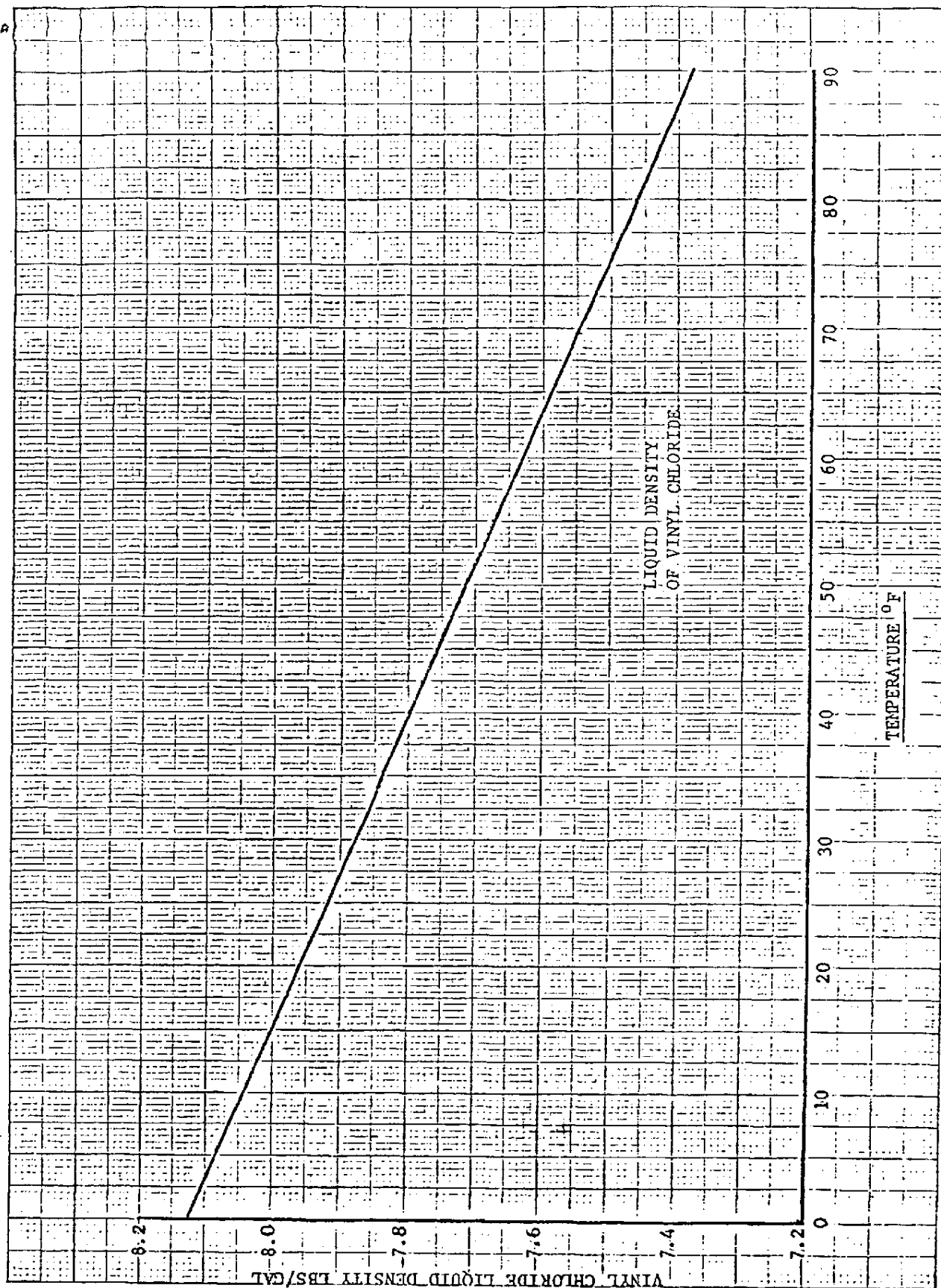


VAPOR PRESSURE OF VINYL CHLORIDE



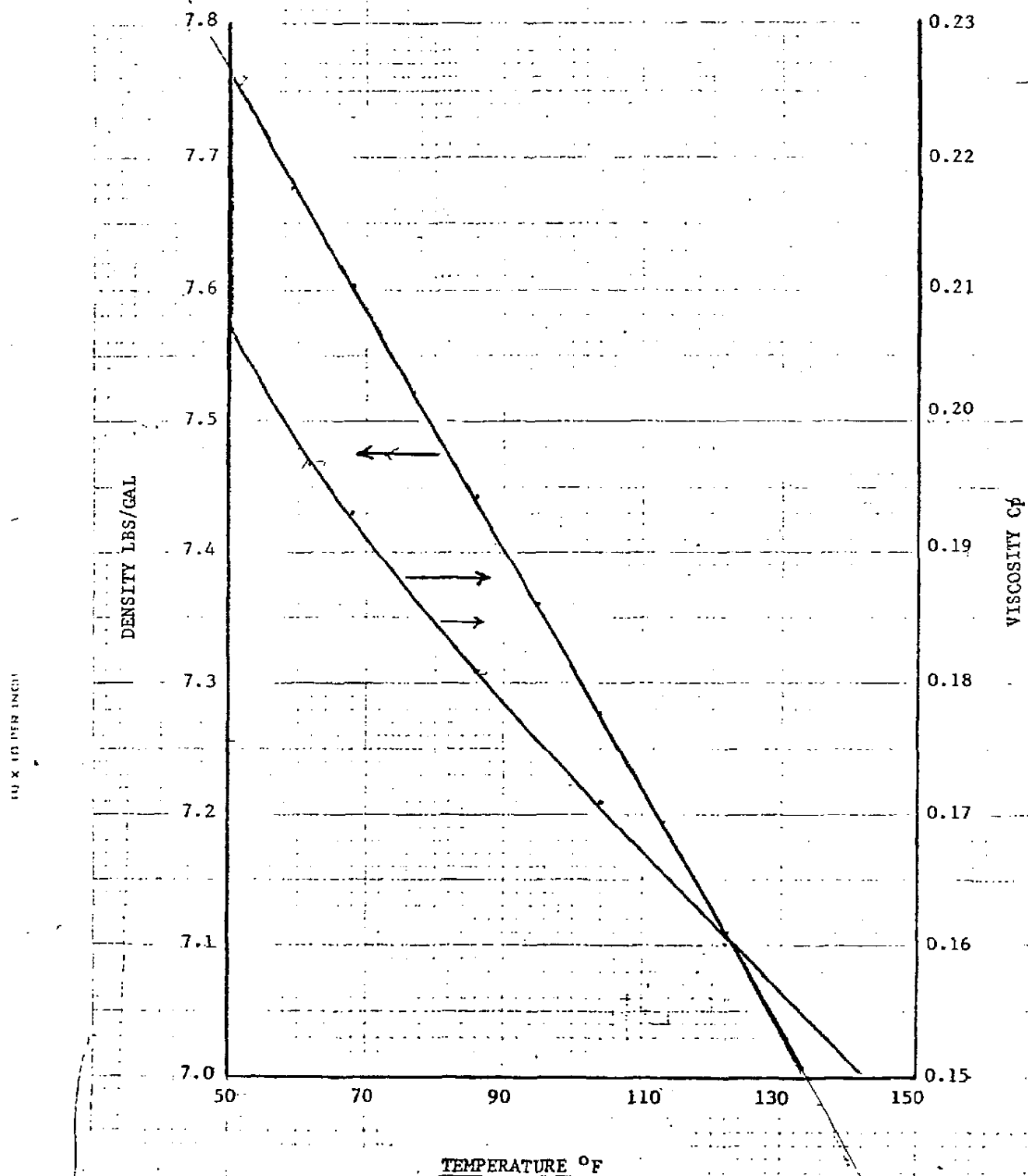
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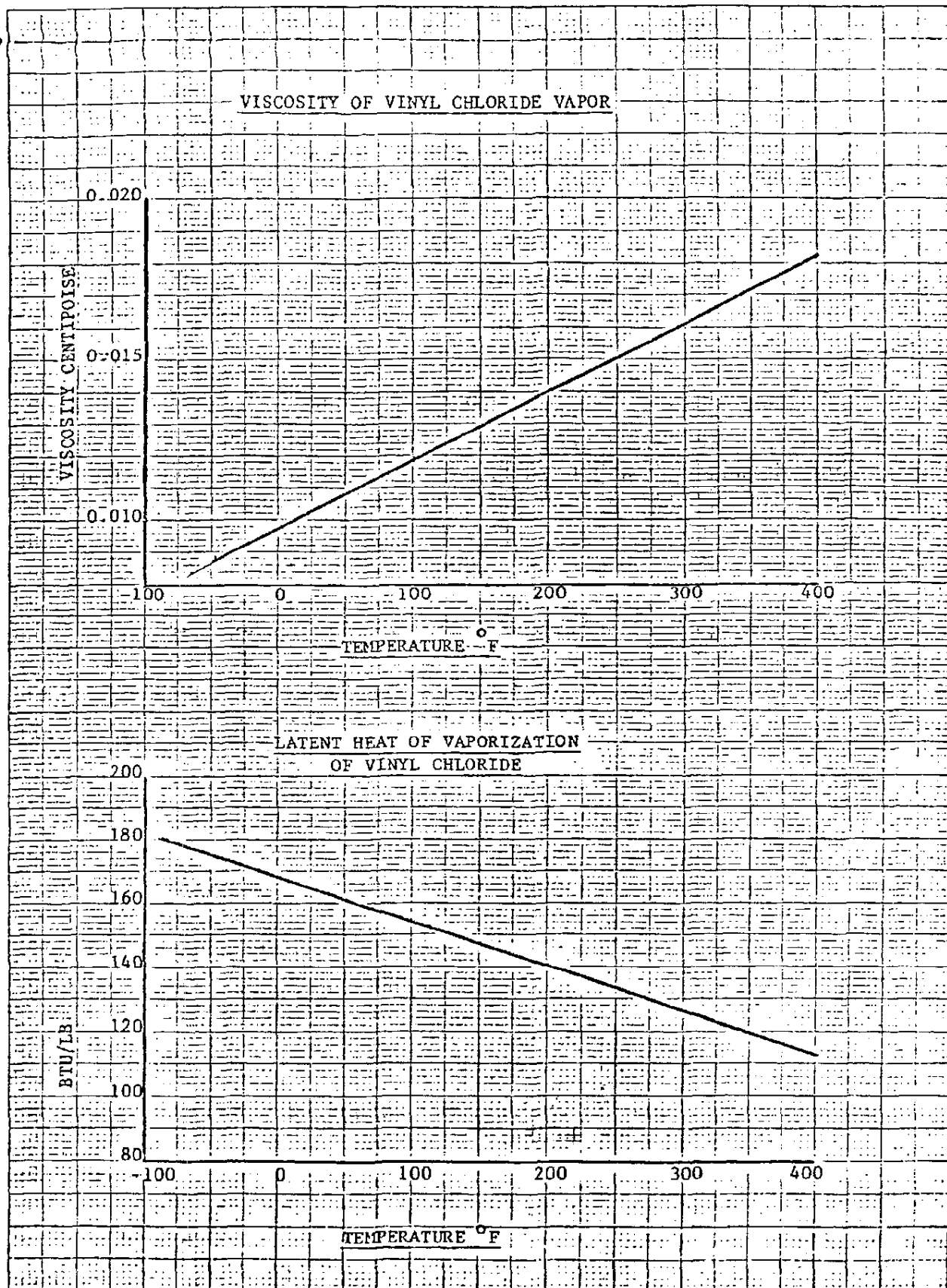
7 x 10 INCHES  
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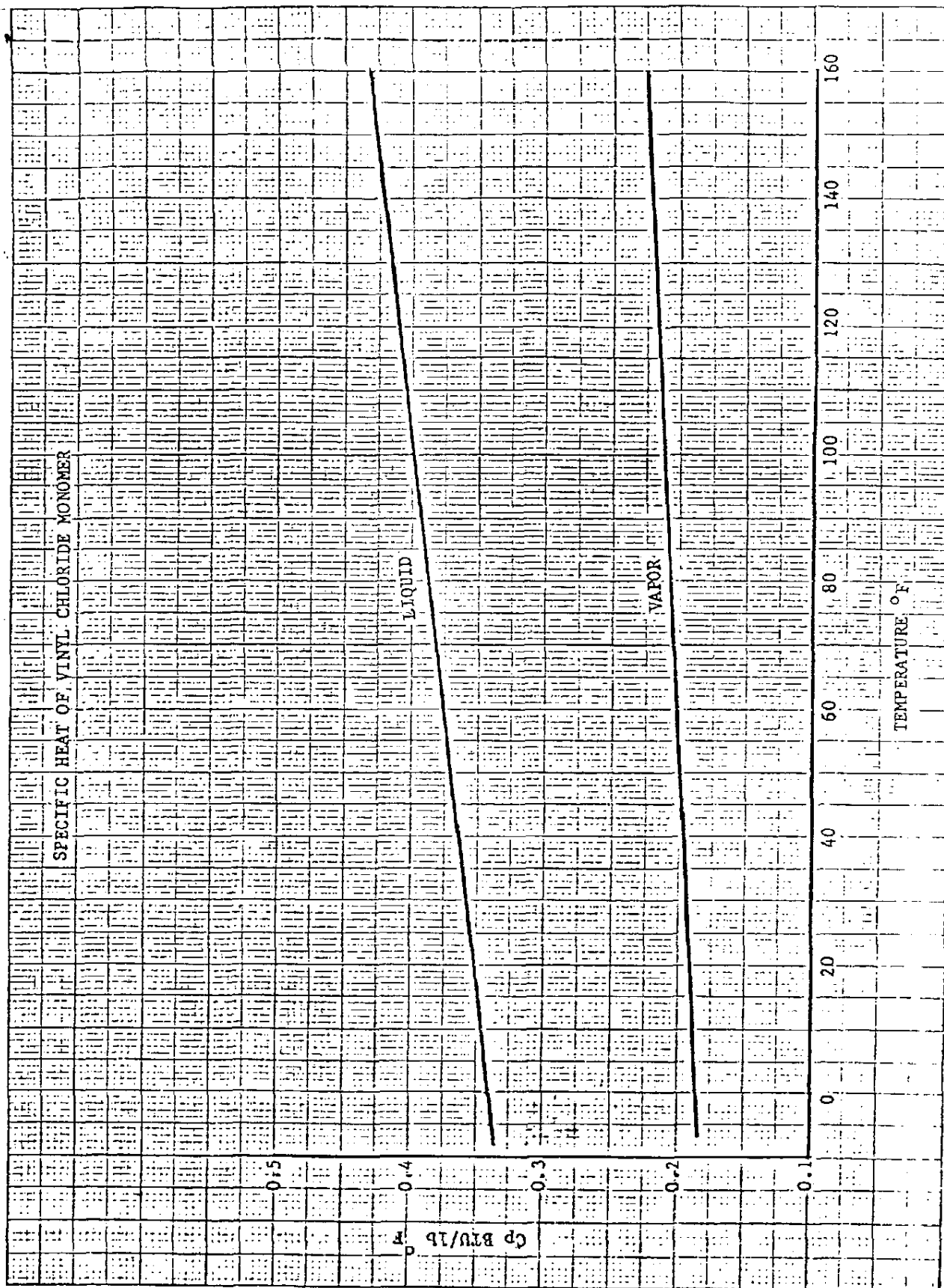


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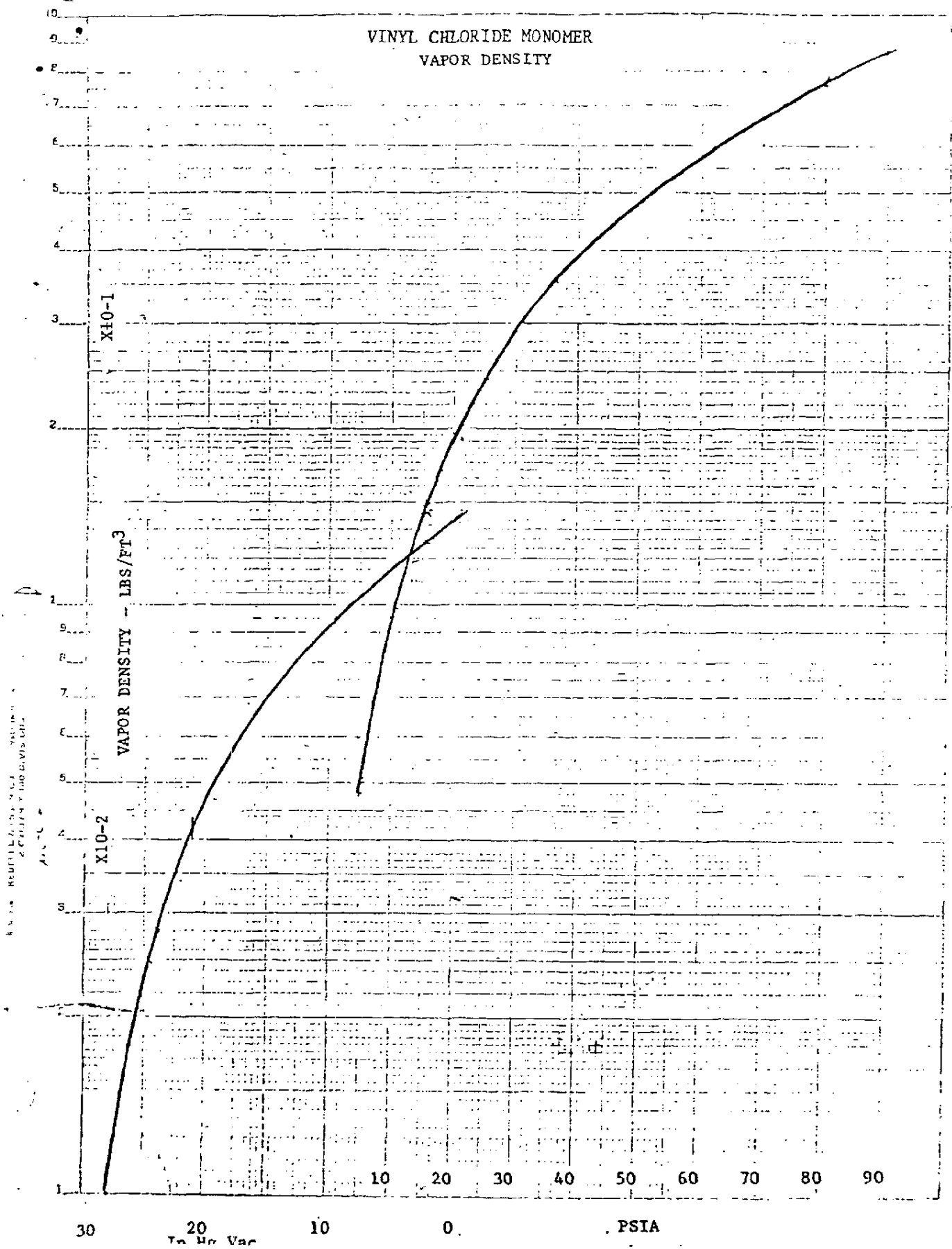
VINYL CHLORIDE  
(LIQUID)

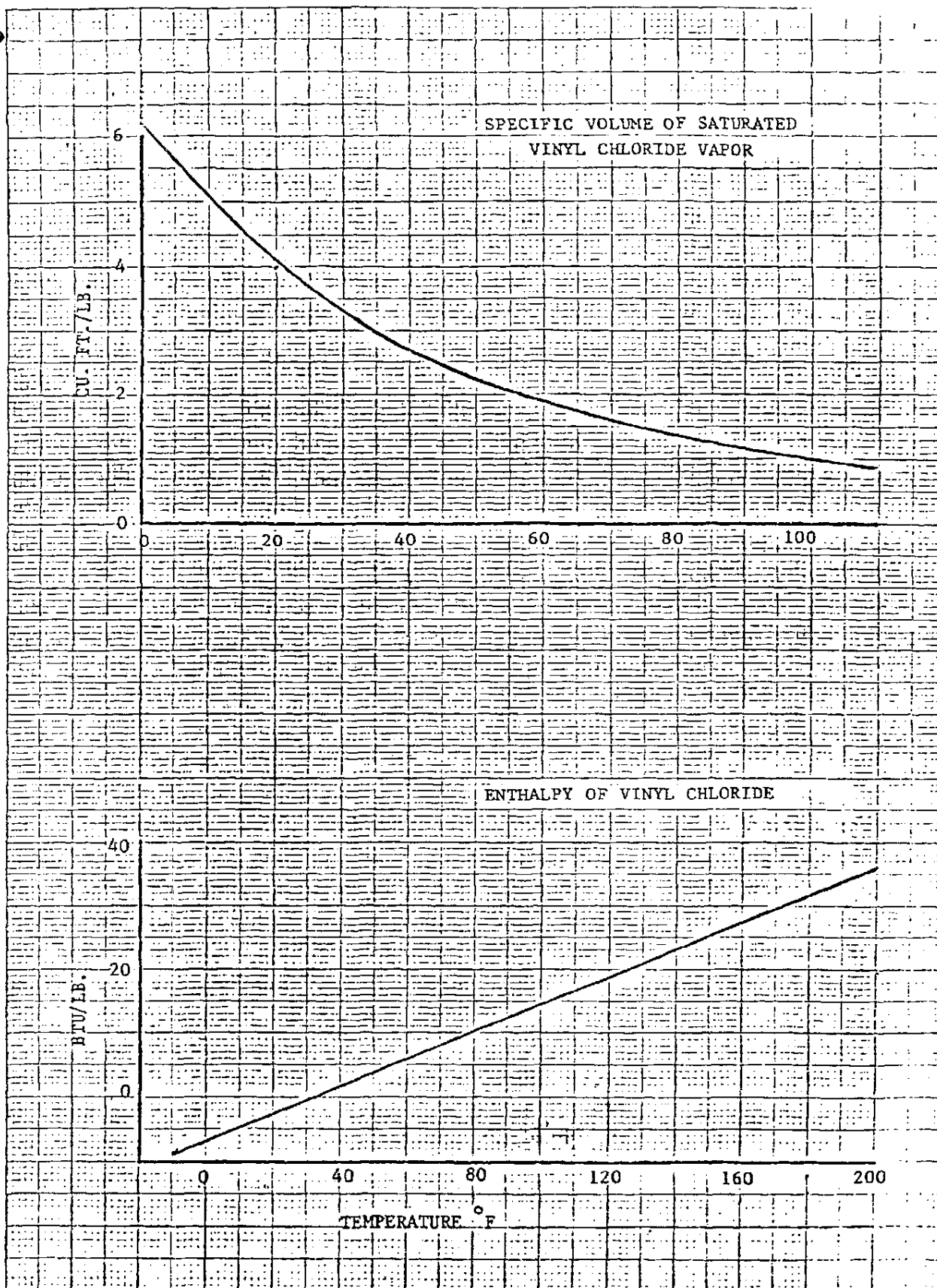






# VINYL CHLORIDE MONOMER VAPOR DENSITY





PHYSICAL PROPERTIES OF VINYL CHLORIDE MONOMER

Formula  $\text{CH}_2 = \text{CHCl}$

Molecular weight 62.501

Density, liquid  $\frac{\text{g}}{\text{ml}}$   $\frac{\text{lb}}{\text{gal}}$

|    | $^{\circ}\text{F}$ |        |       |
|----|--------------------|--------|-------|
| at | 14                 | 0.9649 | 8.052 |
|    | 32                 | 0.9471 | 7.904 |
|    | 50                 | 0.9293 | 7.755 |
|    | 59                 | 0.9201 | 7.678 |
|    | 68                 | 0.9109 | 7.601 |
|    | 77                 | 0.9014 | 7.522 |
|    | 86                 | 0.8918 | 7.442 |
|    | 95                 | 0.8820 | 7.360 |
|    | 104                | 0.8721 | 7.278 |
|    | 113                | 0.8620 | 7.193 |
|    | 122                | 0.8517 | 7.107 |

$$d \text{ (g/cc)} = 0.9471 - 0.001746t \text{ (}^{\circ}\text{C)} - 0.00000324 \text{ (-2 (}^{\circ}\text{C))}$$

Refractive index,  $d_D^{15}$  1.398  
Dielectric constant

at 100 kc/s and 17.2C/63 $^{\circ}\text{F}$  6.26

Freezing point,  $^{\circ}\text{C}/^{\circ}\text{F}$  -153.7/-244.7  
Boiling point at 760 mm Hg,  $^{\circ}\text{C}/^{\circ}\text{F}$  -13.37/7.9

Viscosity of liquid, absolute, cP

|    | $^{\circ}\text{F}$ |       |
|----|--------------------|-------|
| at | -4                 | 0.274 |
|    | 14                 | 0.248 |
|    | 32                 | 0.225 |
|    | 50                 | 0.207 |
|    | 68                 | 0.193 |
|    | 86                 | 0.181 |
|    | 104                | 0.171 |
|    | 122                | 0.161 |

Viscosity of vapor

Specific heat, liquid, at 25 C, kcal/kg, C; or Btu/lb, F 0.38  
vapor, at 25 C ( $c_p$ ), kcal/kg-mole, C 12.83  
or Btu/lb-mole, F  
vapor, at 25 C ( $c_v$ ), kcal/kg-mole, C 10.84  
or Btu/lb-mole, F

Heat of fusion, Btu/lb 33.12  
cal/g 18.14

Surface tension, dynes/cm

| <u>°F</u> |      |
|-----------|------|
| at -22    | 23.9 |
| - 4       | 22.3 |
| 14        | 20.9 |
| 32        | 19.4 |
| 50        | 18.0 |
| 68        | 16.4 |
| 86        | 14.8 |
| 104       | 13.3 |
| 122       | 12.0 |

|                         |        |
|-------------------------|--------|
| Critical temperature, K | 431.4  |
| Critical pressure, atm. | 52.7   |
| Critical viscosity, cP  | 0.0369 |
| Critical volume, ml/g   | 2.70   |
| Critical density, g/ml. | 0.370  |

|                                                                                           |      |
|-------------------------------------------------------------------------------------------|------|
| Solubility in water at 40 C (104°F) and<br>autogenous pressure, grams/100 grams (approx.) | 2-3  |
| atmospheric pressure, grams/100 grams (approx.)                                           | 0.5  |
| Solubility of water in vinyl chloride, grams/100 grams                                    | 0.11 |

Solubility Dichloroethane and Ethyl Alcohol:

| <u>Press.</u><br><u>mm Hg</u> | <u>C<sub>2</sub>H<sub>4</sub>Cl<sub>2</sub></u><br><u>g/100 g of solvent (0°C.)</u> | <u>C<sub>2</sub>H<sub>5</sub>OH</u><br><u>g/100 g of solvent (0°C.)</u> |
|-------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| 400                           | 23.2                                                                                | 17.2                                                                    |
| 300                           | 16.7                                                                                | 12.1                                                                    |
| 200                           | 10.5                                                                                | 8.05                                                                    |
| 100                           | 5.25                                                                                | 3.76                                                                    |

Vapor pressure, psia

| <u>°F</u> |     |
|-----------|-----|
| at - 4    | 12  |
| 14        | 18  |
| 32        | 26  |
| 50        | 35  |
| 70        | 48  |
| 85        | 66  |
| 104       | 88  |
| 122       | 115 |
| 140       | 147 |
| 158       | 180 |

$$\text{Log } P = 0.8420 - 1150.9/T + 1.75 \log T - 0.002415T$$

PV/RT

| <u>°C</u>  | <u>°F</u> |        |
|------------|-----------|--------|
| at - 13.37 | - 11.93   | 0.9640 |
| 25         | 77.0      | 0.9178 |
| 156.5      | 313.7     | 0.264  |

Change (dt/dp) in boiling point with pressure, C/mm Hg

| $\frac{^{\circ}\text{F}}{\text{at}}$ |         |
|--------------------------------------|---------|
| -11.93                               | 0.03423 |
| 77.0                                 | 0.01355 |

$c_p/c_v$

| $\frac{^{\circ}\text{F}}{\text{at}}$ |       |
|--------------------------------------|-------|
| 32                                   | 1.1   |
| 50                                   | 1.146 |
| 68                                   | 1.132 |
| 86                                   | 1.124 |
| 104                                  | 1.119 |
| 122                                  | 1.120 |
| 140                                  | 1.124 |
| 158                                  | 1.130 |
| 176                                  | 1.140 |
| 194                                  | 1.153 |
| 212                                  | 1.163 |
| 248                                  | 1.176 |
| 302                                  | 1.183 |

Heat of combustion to form

|                                                                                            |      |
|--------------------------------------------------------------------------------------------|------|
| $\text{H}_2\text{O}(\text{l}), \text{CO}_2(\text{g}), \text{HCl}(\text{g}), \text{Btu/lb}$ | 8750 |
| kcal/mol(gas)                                                                              | 2826 |

Free energy of formation, Btu/lb -3310

Heat of formation kcal/mol(gas 025°C) 7.5  
kcal/mol(log 0 18°C) 4.1

Heat of vaporization @ 57°F, Btu/lb 158.4

Estimated Latent Heats

| $\frac{^{\circ}\text{F}}{\text{at}}$ | Btu/lb |
|--------------------------------------|--------|
| - 4                                  | 159    |
| 32                                   | 147    |
| 68                                   | 140    |
| 122                                  | 126    |

Heat of polymerization, Btu/lb -720  
kcal/kg -400  
kcal/g-mole - 25

Entropy, 5° cal/°C/mol 63.06

Thermal conductivity of vapor, Btu/ft, h, F

| <u>°F</u> |        |
|-----------|--------|
| at 32     | 0.0057 |
| 50        | 60     |
| 68        | 63     |
| 86        | 66     |
| 104       | 69     |
| 122       | 73     |
| 140       | 78     |
| 158       | 83     |
| 176       | 88     |
| 194       | 93     |
| 212       | 98     |
| 248       | 108    |
| 302       | 121    |

Thermal conductivity of liquid, Btu/ft, h, F

Weber correlation  $k = 0.864 \cdot c_p \cdot \text{sp.gr.} \cdot (\text{sp.gr./mole wt})^{1/3}$

Palmer correlation  $k = \frac{(41.4) \cdot (T_R) \cdot (\text{sp.gr.}) \cdot (c_p)}{H_v} \times (\text{sp.gr./mole wt})^{1/3}$

at 30°C./86°F

Weber 0.073

Palmer 0.0932

Polymer shrinkage, vol.% 34

Vapor density (air = 1.00) 2.15

Explosive limits in air

Lower, vol.% 4

wt.% 8.3

g/m<sup>3</sup> 112

grains/cu.ft. 40

Upper, vol.% 22

wt.% 37.8

g/m<sup>3</sup> 613

grains/cu.ft. 219

Flash point, °C/°F(cleveland open cup) -78/-108.4

Ignition temperature (autogenous), C 472.22

, F 882

Odor (pure vinyl chloride)  
(inhibited)

Faint sweet odor

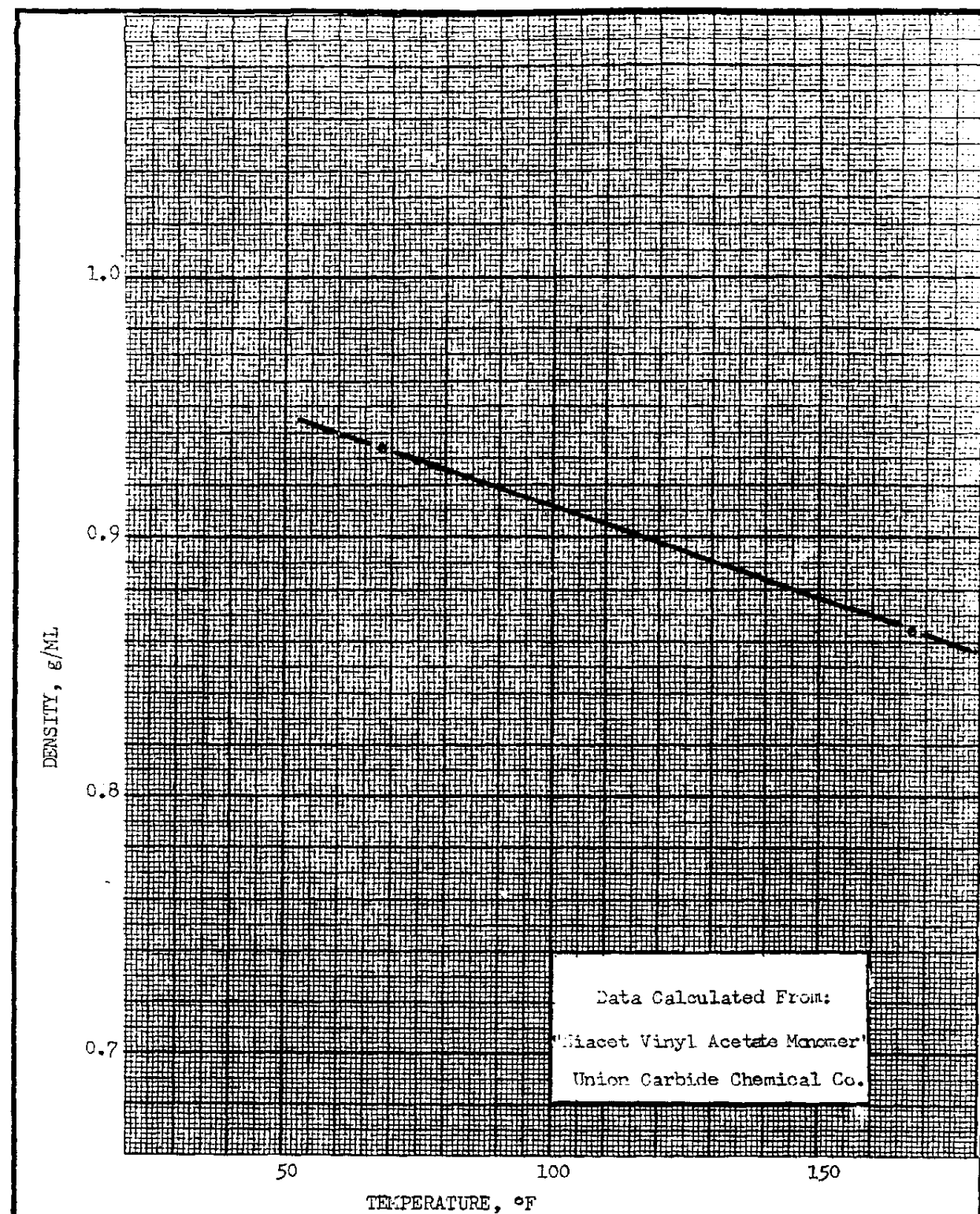
Faint phenolic odor

Color

Colorless

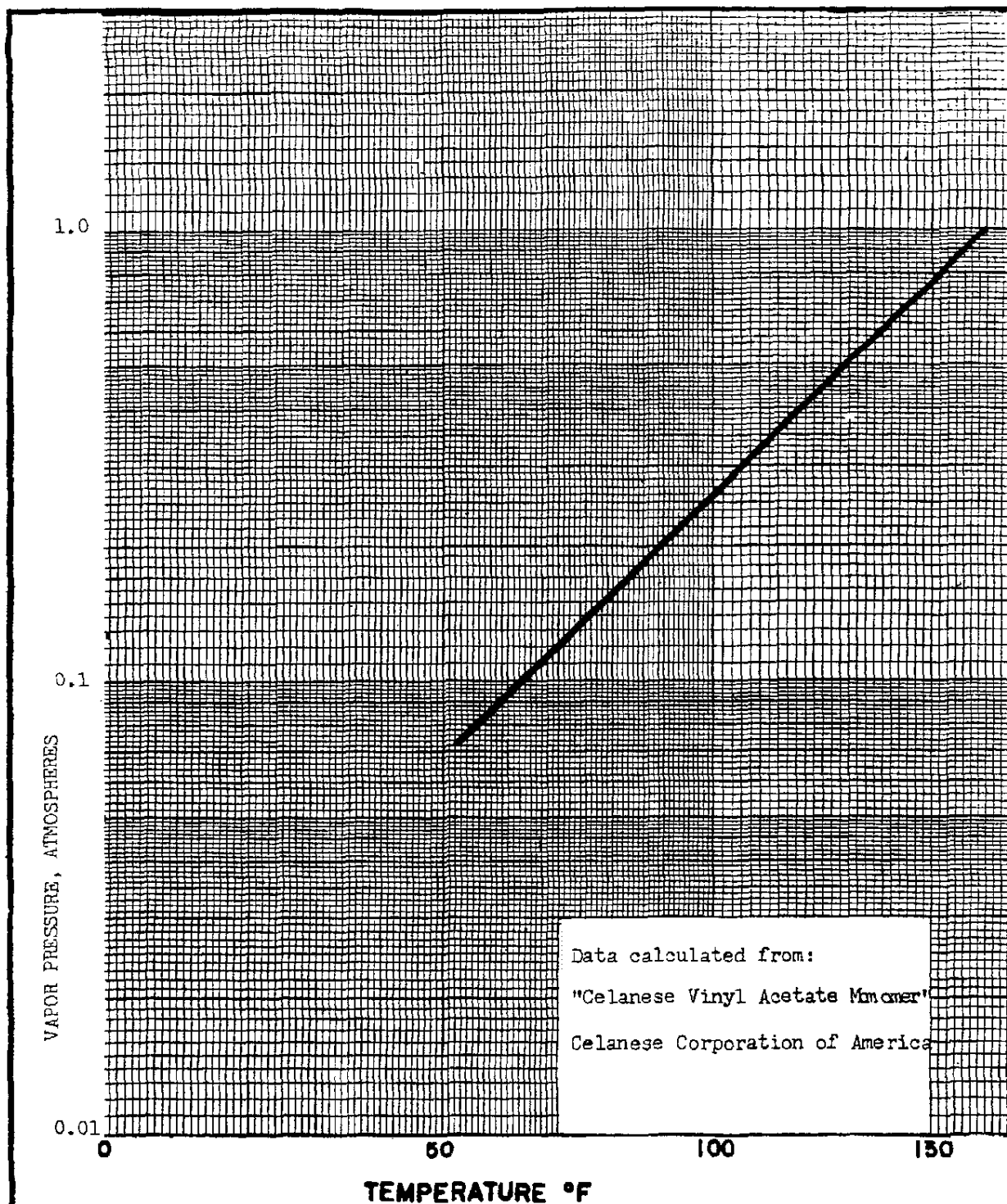
Corrosivity

Noncorrosive when dry at  
ambient temperature. Acet-  
lene impurities react with  
copper.



|       |         |                                 |                                                       |          |      |
|-------|---------|---------------------------------|-------------------------------------------------------|----------|------|
| DR    | 3/17/61 | VINYL ACETATE<br>LIQUID DENSITY | CRAWFORD & RUSSELL<br>INCORPORATED<br>STAMFORD, CONN. |          |      |
| CHK   |         |                                 | CONTRACT                                              | DWG. NO. | REV. |
| APP   |         |                                 |                                                       | SFC-2.2  | 0    |
| SCALE |         |                                 |                                                       |          |      |

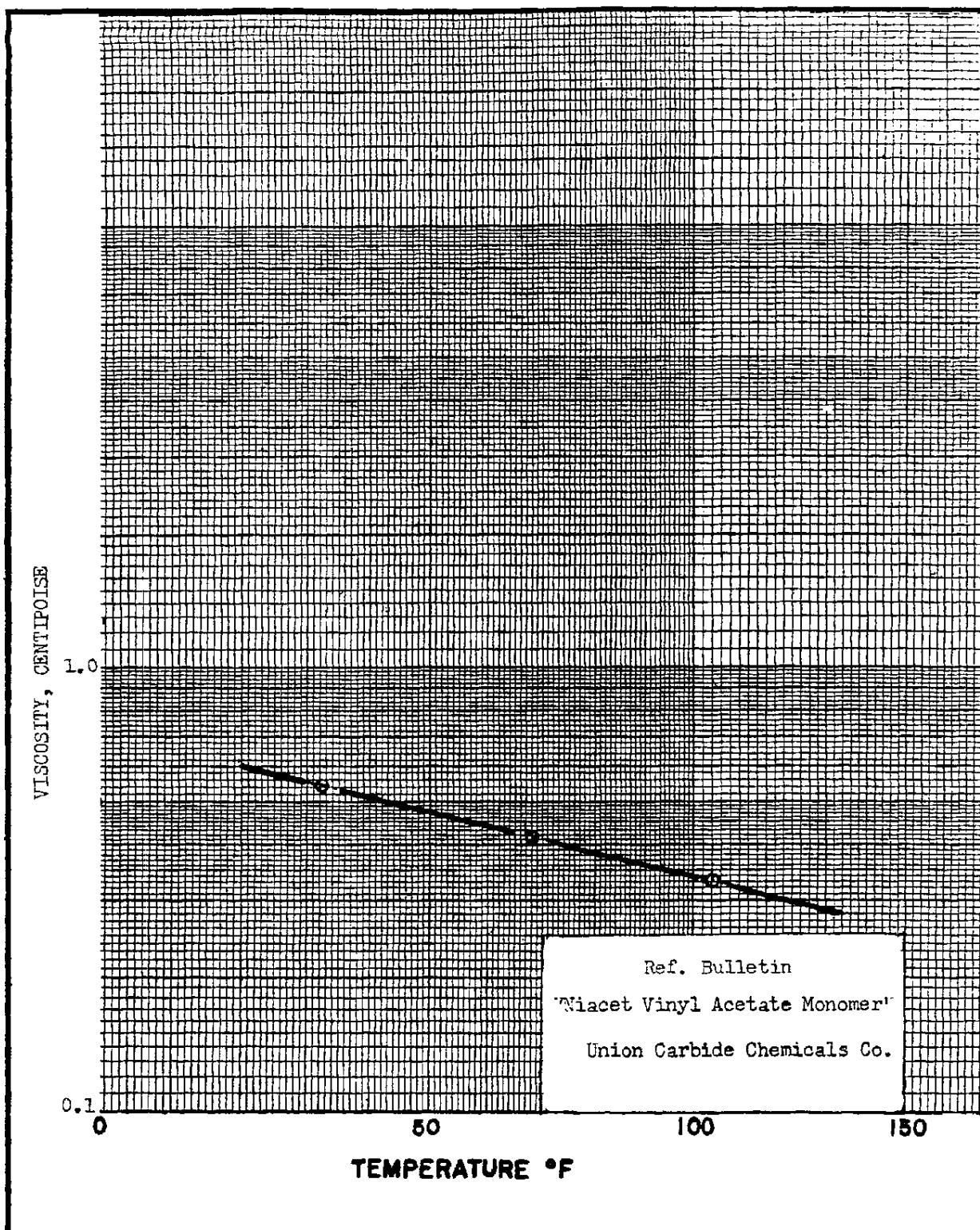
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|       |  |         |                                 |                                                       |          |      |
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| DR    |  | 3/17/61 | VINYL ACETATE<br>VAPOR PRESSURE | CRAWFORD & RUSSELL<br>INCORPORATED<br>STAMFORD, CONN. |          |      |
| CHK   |  |         |                                 | CONTRACT                                              | DWG. No. | REV. |
| APP   |  |         |                                 |                                                       | SFC-2.3  | 0    |
| SCALE |  |         |                                 |                                                       |          |      |

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|       |  |         |                                   |                                                       |          |      |
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| DR    |  | 3/17/61 | VINYL ACETATE<br>LIQUID VISCOSITY | CRAWFORD & RUSSELL<br>INCORPORATED<br>STAMFORD, CONN. |          |      |
| CHK   |  |         |                                   | CONTRACT                                              | Dwg. No. | REV. |
| APP   |  |         |                                   |                                                       | SFC-2.4  | 0    |
| SCALE |  |         |                                   | FOR                                                   |          |      |

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## STANDARD SPECIFICATION

Physical PropertiesPotassium Persulfate

- |                         |                |                |
|-------------------------|----------------|----------------|
| 1. Formula:             | $K_2S_2O_8$    |                |
| 2. Molecular Weight:    | 270.3          |                |
| 3. Physical State:      | White Crystals | Lbs. per       |
| 4. Solubility in Water: | Temp. °F       | 100 lbs. Water |
|                         | 68             | 4.7            |
|                         | 86             | 7.5            |
|                         | 104            | 10.5           |
|                         | 122            | 15.3           |
|                         | 140            | 20.5           |
|                         | 158            | 27.3           |
5. Storage & Handling:
- Aluminum or stainless steel scoops, shovels, etc. are suitable for removal of  $K_2S_2O_8$  from shipping containers.
  - Storage tanks, pipelines, etc. for aqueous solutions should be Type 304 or 316 stainless steel. (Chemical Stoneware & Glass are suitable). Do not use monel metal, copper, brass, or iron to prevent corrosion and decomposition.
  - Cool dry storage should be provided.

Ref: Bull. No. 11, "Potassium Persulfate" Becco Chemical Division,  
Food Machinery and Chemical Corporation.

## STANDARD SPECIFICATION

Physical PropertiesLauroyl Peroxide

1. Formula:  $(C_{11}H_{23}CO)_2O_2$
2. Active Oxygen: Pure compound -4.01%; Min. Spec. 3.76%
3. Molecular Weight: 398.6
4. Physical State: Soft White Granules
5. Melting Point: 120-122°F dec.
6. Solubility in Water: less than 0.1 part/100 parts of water  
@ 68°F.
7. Storage and Handling:  
Lauroyl peroxide is a flammable solid and should be kept away from heat, sparks, radiators, steam pipes, fire, open flames, direct rays of the sun, and other sources of heat. It may be stored at room temperature (80°F) but prolonged storage should be at refrigerator temperatures to preserve its active oxygen. Do not frictionally grind unless a solvent be used to take up the heat or other means of heat dissipation be used.
8. Packing & Shipping:  
Shipment is made under yellow label via express, truck, or railroad.  
Mail shipments are forbidden.

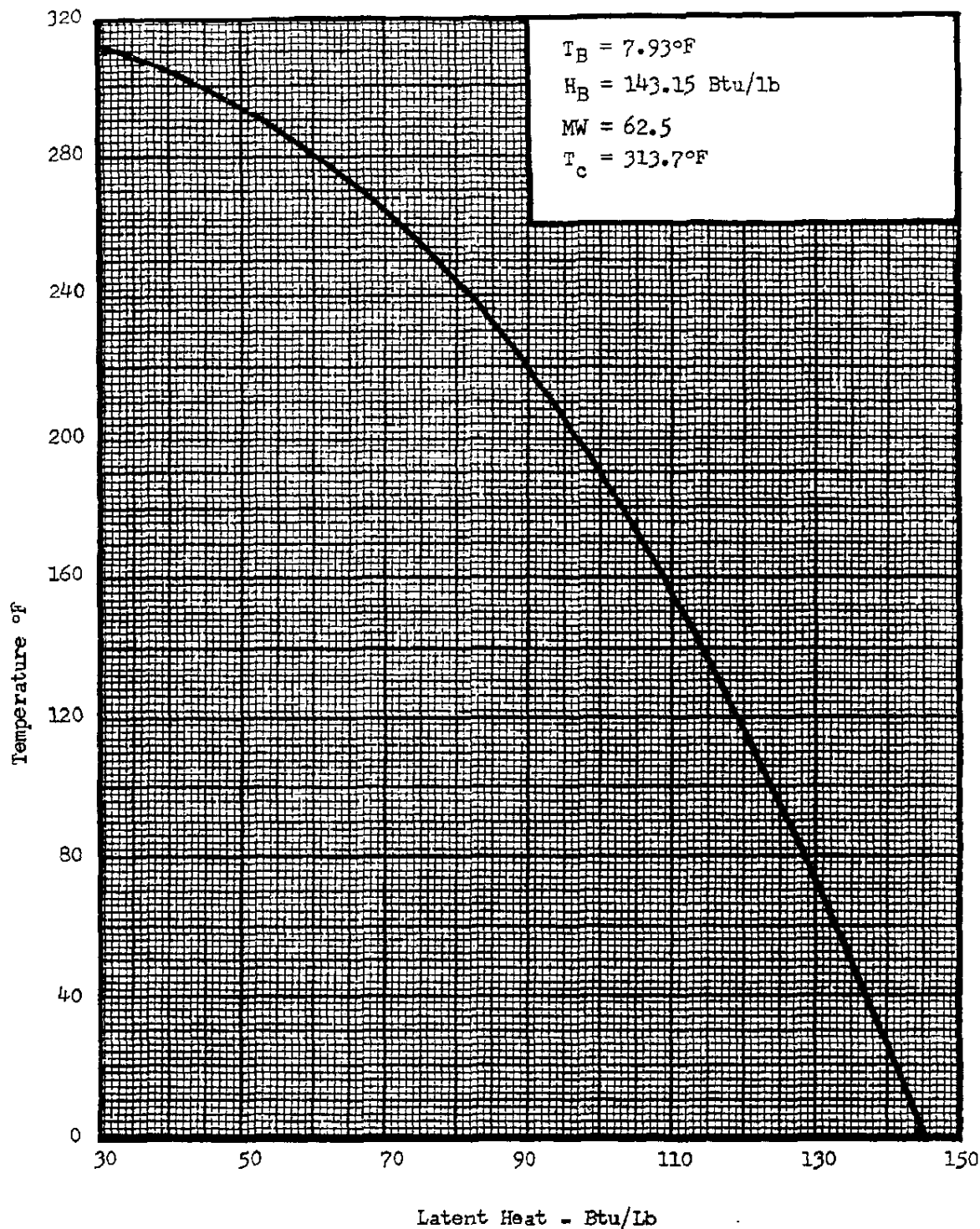
Ref: Technical Data Bulletin No. 10A, Cadet Chemical Corporation.

## STANDARD SPECIFICATION      Physical Properties

Vinyl Chloride (Chloroethylene)

| 1. Formula:                      | CH <sub>2</sub> =CHCl                                                                                                                                                  |     |                     |     |       |    |       |    |       |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---------------------|-----|-------|----|-------|----|-------|
| 2. Molecular Weight:             | 62.5                                                                                                                                                                   |     |                     |     |       |    |       |    |       |
| 3. Boiling Point (Normal):       | +7.93°F.                                                                                                                                                               |     |                     |     |       |    |       |    |       |
| 4. Freezing Point:               | -244.82°F.                                                                                                                                                             |     |                     |     |       |    |       |    |       |
| 5. Specific Gravity:             | 1.00 g/ml. @ -22°F.<br>0.914 g/ml. @ 68°F.                                                                                                                             |     |                     |     |       |    |       |    |       |
| 6. Viscosity:                    | <table><tr><th>°F.</th><th>Centipoise (Liquid)</th></tr><tr><td>-40</td><td>0.34</td></tr><tr><td>32</td><td>0.225</td></tr><tr><td>86</td><td>0.181</td></tr></table> | °F. | Centipoise (Liquid) | -40 | 0.34  | 32 | 0.225 | 86 | 0.181 |
| °F.                              | Centipoise (Liquid)                                                                                                                                                    |     |                     |     |       |    |       |    |       |
| -40                              | 0.34                                                                                                                                                                   |     |                     |     |       |    |       |    |       |
| 32                               | 0.225                                                                                                                                                                  |     |                     |     |       |    |       |    |       |
| 86                               | 0.181                                                                                                                                                                  |     |                     |     |       |    |       |    |       |
| 7. Surface Tension:              | <table><tr><th>°F.</th><th>Dynes/Cm</th></tr><tr><td>-22</td><td>23.87</td></tr><tr><td>-4</td><td>22.27</td></tr><tr><td>14</td><td>20.88</td></tr></table>           | °F. | Dynes/Cm            | -22 | 23.87 | -4 | 22.27 | 14 | 20.88 |
| °F.                              | Dynes/Cm                                                                                                                                                               |     |                     |     |       |    |       |    |       |
| -22                              | 23.87                                                                                                                                                                  |     |                     |     |       |    |       |    |       |
| -4                               | 22.27                                                                                                                                                                  |     |                     |     |       |    |       |    |       |
| 14                               | 20.88                                                                                                                                                                  |     |                     |     |       |    |       |    |       |
| 8. Index of Refraction:          | $n_D^{15} = 1.398$                                                                                                                                                     |     |                     |     |       |    |       |    |       |
| 9. Specific Heat:                | Liquid = 0.38 BTU/lb./°F.<br>$C_p = 12.83$ BTU/lb.mol/°F. @ 77°F.<br>$C_v = 10.84$ BTU/lb.mol/°F @ 77°F.<br>$C_p/C_v = 1.183$                                          |     |                     |     |       |    |       |    |       |
| 10. Heat of Vaporization:        | 128.27 BTU/lb. @ 77°F.                                                                                                                                                 |     |                     |     |       |    |       |    |       |
| 11. Flash Point:                 | Cleveland Open Cup = 108°F                                                                                                                                             |     |                     |     |       |    |       |    |       |
| 12. Auto Ignition Temperature:   | 841°F.                                                                                                                                                                 |     |                     |     |       |    |       |    |       |
| 13. Explosive Limits:            | 4 to 22% by volume in air                                                                                                                                              |     |                     |     |       |    |       |    |       |
| 14. Critical Properties:         | $T_c = 313.7^\circ\text{F.}$<br>$P_c = 55.2$ atm.<br>$D_c = 0.370$ g/ml.<br>$V_c = 2.70$ ml/g.                                                                         |     |                     |     |       |    |       |    |       |
| 15. Solubility in Water:         |                                                                                                                                                                        |     |                     |     |       |    |       |    |       |
| 16. Solubility of Water In:      | 0.11%                                                                                                                                                                  |     |                     |     |       |    |       |    |       |
| 17. Max. Allowable Conc. in Air: | 500 ppm for 8 hr. exposure                                                                                                                                             |     |                     |     |       |    |       |    |       |
| 18. Heat of Formation:           | $H_f = 216$ BTU/lb.                                                                                                                                                    |     |                     |     |       |    |       |    |       |
| 19. Heat of Polymerization:      | $H_p = 490$ BTU/lb.                                                                                                                                                    |     |                     |     |       |    |       |    |       |
| 20. Thermal Conductivity:        | 0.08 BTU/hr. ft. <sup>2</sup> (°F/ft.)                                                                                                                                 |     |                     |     |       |    |       |    |       |

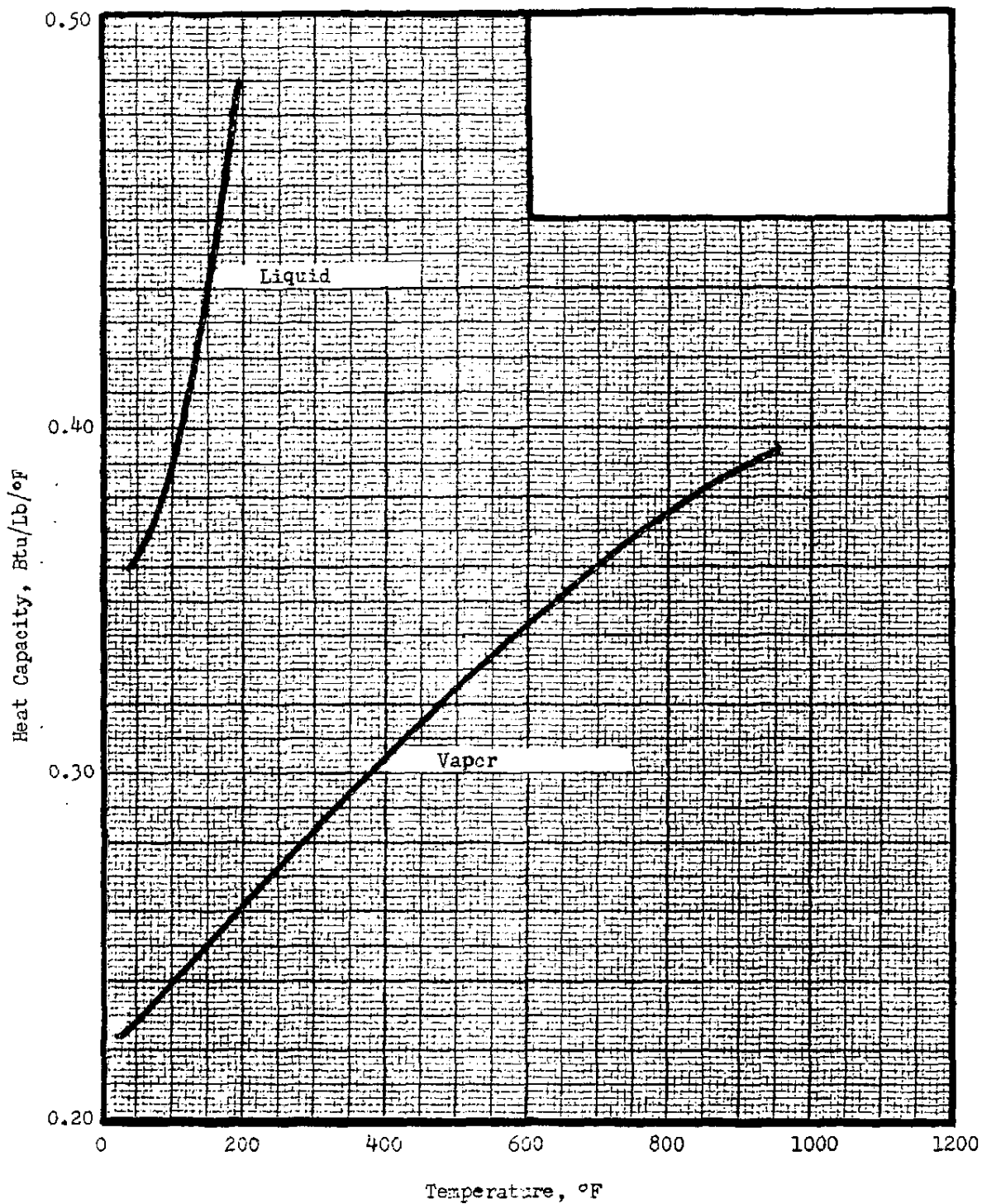
NOTE: Refer to Dow Chemical Company bulletin on Vinyl Chloride Monomer for detailed discussion of hazards, handling procedures, etc.



|       |         |                                               |                                                       |                      |           |
|-------|---------|-----------------------------------------------|-------------------------------------------------------|----------------------|-----------|
| DR    | 4/17/66 | Latent Heat of Vaporization<br>Vinyl Chloride | CRAWFORD & RUSSELL<br>INCORPORATED<br>STAMFORD, CONN. |                      |           |
| CHK   |         |                                               | CONTRACT                                              | Dwg. No.<br>SFC-10.2 | REV.<br>0 |
| APP   |         |                                               |                                                       |                      |           |
| SCALE |         | FOR                                           |                                                       |                      |           |

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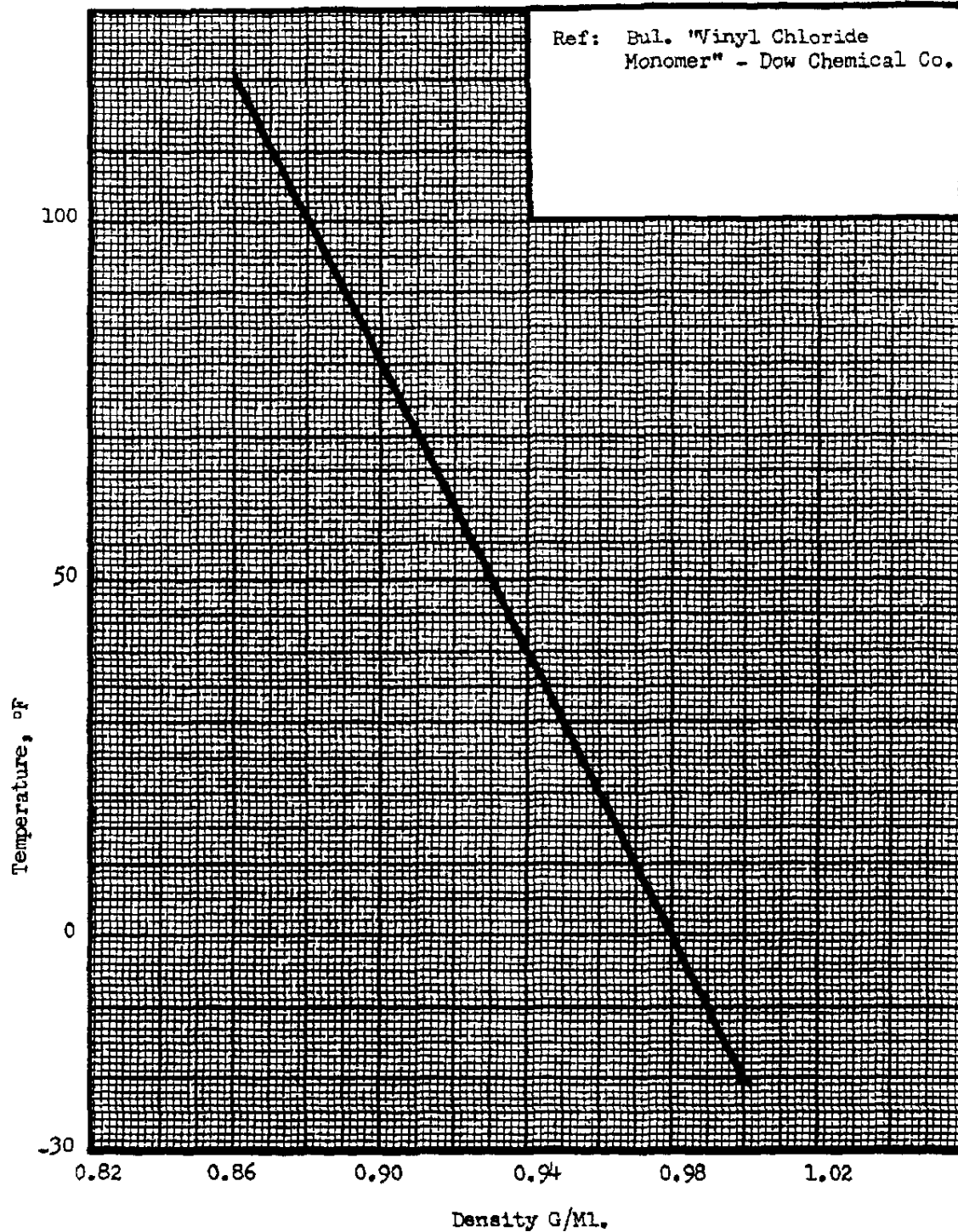
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|       |  |         |                                    |          |                                                                  |      |  |
|-------|--|---------|------------------------------------|----------|------------------------------------------------------------------|------|--|
| DR    |  | 3/17/61 | Heat Capacity<br>Of Vinyl Chloride |          | <b>CRAWFORD &amp; RUSSELL</b><br>INCORPORATED<br>STAMFORD, CONN. |      |  |
| CHK   |  |         |                                    |          |                                                                  |      |  |
| APP   |  |         | For                                | CONTRACT | Dwg. No.                                                         | REV. |  |
| SCALE |  |         |                                    |          | SFC-10.3                                                         | 0    |  |

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|       |  |         |                                  |                                    |          |      |
|-------|--|---------|----------------------------------|------------------------------------|----------|------|
| DR    |  | 3/17/61 | Vinyl Chloride<br>Liquid Density | CRAWFORD & RUSSELL<br>INCORPORATED |          |      |
| CHK   |  |         |                                  | STAMFORD, CONN.                    |          |      |
| APP   |  |         |                                  | CONTRACT                           | Dwg. No. | REV. |
| SCALE |  |         |                                  |                                    | SFC-10.4 | 0    |

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## STANDARD SPECIFICATION

Physical PropertiesSodium Bisulfite

|                               |                                   |                  |
|-------------------------------|-----------------------------------|------------------|
| 1. Formula                    | NaHSO <sub>3</sub>                |                  |
| 2. Molecular Weight           | 104.06                            |                  |
| 3. Physical State             | White powder - yellow in solution |                  |
| 4. Specific Gravity           | 1.561 - 1.539                     |                  |
| 5. Melting Point              | 302°F. (-7H <sub>2</sub> O)       |                  |
| 6. Solubility, g./100 ml. of: | <u>Cold Water</u>                 | <u>Hot Water</u> |
|                               | 32.8 @ 32°F.                      | 196 @ 104°F.     |

Ref: Handbook of Chemistry &amp; Physics

## STANDARD SPECIFICATION

Physical PropertiesBenzoyl PeroxideReference

- |                      |                                                                |     |
|----------------------|----------------------------------------------------------------|-----|
| 1. Formula           | (C <sub>6</sub> H <sub>5</sub> CO) <sub>2</sub> O <sub>2</sub> |     |
| 2. Molecular Weight  | 242.22                                                         | (1) |
| 3. Melting Point     | 103-106°C dec. 108°C<br>217.4-222.8°F dec. 226.4°F             |     |
| 4. Boiling Point     | dec. explosive                                                 |     |
| 5. Solubilities:     | g/100g solvent at 68°F                                         | (2) |
|                      | in Acetone - 18.5                                              |     |
|                      | Ethyl Alcohol - 1.2                                            |     |
|                      | Methyl Alcohol - 1.7                                           |     |
|                      | MEK - 19                                                       |     |
|                      | MIK - 12.4                                                     |     |
|                      | Toluene - 12.7                                                 |     |
|                      | Water - <0.1                                                   |     |
| 6. Shipping:         | Yellow label                                                   | (1) |
|                      | 1, 5, 20 and 50 lbs. net in                                    | (3) |
|                      | wooden cases pure or as paste                                  |     |
|                      | mixed with other substances                                    |     |
| 7. Fire Hazard:      | Moderate, by virtue of its                                     | (1) |
|                      | oxidizing ability                                              |     |
| 8. Explosion Hazard: | May explode spontaneously.                                     |     |
|                      | Should be kept either bone                                     |     |
|                      | dry or with > 30% water.                                       |     |

Ref. 1. Sax, N. I. Dangerous Properties of Industrial Materials,  
(1957) Reinhold Publishing Corp., N. Y.

2. Encyclopedia of Chemical Technology, 2.

3. Manufacturer's literature.

11 March 1977  
~~2 Feb 1977~~

Estimate Explosion Potential  
PVC Expansion Project

Ref: FIA 'Vapor Liquid L. Potential Estimation Guide',  
 Revision 2, Oct. 30, 1975.

Basis: VCM Spill from One Homopolymer Charge

VCM Charge 72000 lb. =  $W_L = W_G$

Cloud Size:

$$D_c = 22.19 \sqrt{\frac{W}{h M_V}}$$

when:  $h = 10$  ft. (assumed)

$M = \text{Mol. Wgt.} = 62.5$

$$V = \frac{LEL(\%) + UEL(\%)}{2 \times 100\%} = \frac{3.6 + 33}{200} = 0.183$$

$W = 72000$  lb

$$D_c = 22.19 \sqrt{\frac{72000}{10 \times 62.5 \times 0.183}} = 556 \text{ FT. DIA OF VAPOR CLOUD}$$

Energy Released:

$$W_e = \frac{W \Delta H_c F}{4 \times 10^6} \quad \Delta H_c \approx 7496 \text{ Btu/lb}$$

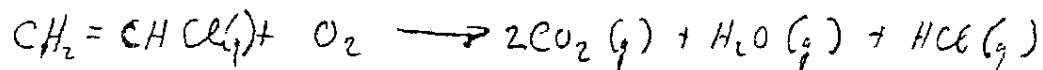
$$W_e = \frac{(72000)(7496)(0.02)}{4,000,000} = \underline{\underline{2.66 \text{ TONS}}}$$

1/2  $W = 21,200$

$$W_e = 1.7 \times \frac{21.2}{\sqrt{2}} = 0.5 \text{ TONS}$$

## Heat of Combustion

VC14



$$\Delta H_f \quad \left( -1.35 \times 10^4 \text{ Btu/lbmol} \right) \quad (2)(-16.7 \times 10^4) + (-10.4 \times 10^4) + (-3.9 \times 10^4)$$

ESTIMATED.

$$\Delta H_c = (-48.2 \times 10^4) - (-1.35 \times 10^4) = -46.85 \times 10^4 \text{ Btu/lbmol} = 299,100$$

$$\Delta H_c = \frac{-46.85 \times 10^4}{62.5} = -7496 \text{ Btu/lb}$$