# **MSDC Technical Memo**

July 2018

# Polyethylene Chemical Resistance Chart

MSDC uses only the highest quality raw materials available. These raw materials have outstanding resistance to both physical and chemical attack. The following chart should be used as a guide for evaluating the suitability of our products with the chemical agent you plan to use. Special consideration must be given to the expected service temperature, stress involved in the application, as well as the length and type of exposure (i.e. intermittent or continuous).

#### **CODES**

- A Resistant no indication that serviceability would be impaired.
- B Variable resistance, depending on conditions of use.
- C Unresistant, not recommended for service applications under any conditions.
- Information not available.

#### # Plasticizer.

Certain types of chemicals are absorbed to varying degrees by polyethylene causing swelling, weight-gain, softening and some loss of yield strength. These plasticizing materials cause no actual chemical degradation of the resin. Several of these chemicals have a strong plasticizing effect (e.g. aromatic hydrocarbons benzene), whereas others have weaker effects (e.g. gasoline). Certain plasticizers are sufficiently volatile that if they are removed from contact with the polyethylene, the part will "dry" out and return to its original condition with no loss of properties.

#### + Oxidizers

| Acetone   | REAGENT                 | CONC.     | LDPE<br>70° 140° |   | HD<br>70° | PE<br>140° |
|---|-------------------------|-----------|------------------|---|-----------|------------|
| Acetic Acid*         100%         B         C         B         C           Acetic Acid*         10%         A         A         A         A           Acetic Acid*         60%         A         B         A         A           Acetic Anhydride*         C         C         C         C         C         C           Air         A         A         A         A         A         A         A           Aluminum Chloride         all conc         A         A         A         A         A           Aluminum Sulphate         all conc         A         A         A         A         A           Aluminum Sulphate         all conc         A         A         A         A         A           Aluminum Sulphate         all conc         A         A         A         A         A           Aluminum Sulphate         all conc         A         A         A         A         A         A           Aluminum Sulphate         all donc         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A </th <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>            |                         |           |                  |   |           |            |
| Acetic Acid*         100%         B         C         B         C           Acetic Acid*         10%         A         A         A         A           Acetic Acid*         60%         A         B         A         A           Acetic Anhydride*         C         C         C         C         C         C           Air         A         A         A         A         A         A         A           Aluminum Chloride         all conc         A         A         A         A         A           Aluminum Sulphate         all conc         A         A         A         A         A           Aluminum Sulphate         all conc         A         A         A         A         A           Aluminum Sulphate         all conc         A         A         A         A         A           Aluminum Sulphate         all conc         A         A         A         A         A         A           Aluminum Sulphate         all donc         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A </td <td>Acetone</td> <td></td> <td>В</td> <td>С</td> <td>В</td> <td>С</td> | Acetone                 |           | В                | С | В         | С          |
| Acetic Acid*         10%         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         B         A         A         A         A         B         A         A         A         B         A         A         A         B         A         A         A         B         B         A         A         A         B         A         A         A         B         A         A         A         B         A         A         A         B         A  | Acetaldehvde*           | 100%      | В                |   | В         |            |
| Acetic Anhydride*  Air  Air  A A A A A A A A A A A A A A A A A A A  | ,                       | 10%       | Α                | Α | Α         | Α          |
| Air A A A A A A A A A A A A A A A A A A   | Acetic Acid*            | 60%       | Α                | В | Α         | В          |
| Air Aluminum Chloride All conc A Aluminum Fluoride All conc A Aluminum Fluoride All conc A A A A A A A A A A A A A A A A A A A  | Acetic Anhydride*       |           | С                | С | С         | С          |
| Aluminum Fluoride all conc A A A A A A A A A A A A A A A A A A A  |                         |           | Α                | Α | Α         | Α          |
| Aluminum Sulphate all conc A A A A A A A A A A A A A A A A A A A  | Aluminum Chloride       | all conc  | Α                | Α | Α         | Α          |
| Alums         all types         A         A         A         A           Ammonia         100% dry gas         A         A         A         A           Ammonium Carbonate         A         A         A         A         A           Ammonium Chloride         sat'd         A         A         A         A           Ammonium Fluoride         sat'd         A         A         A         A           Ammonium Hydroxide         28%         A         A         A         A           Ammonium Hydroxide         28%         A         A         A         A           Ammonium Hydroxide         28%         A         A         A         A           Ammonium Hydroxide         sat'd         A         A         A         A           Ammonium Persulphate         sat'd         A         A         A         A           Ammonium Metaphosphate         sat'd         A         A         A         A           Ammonium Sulfide         sat'd         A         A         A         A           Amyl Acetate#*         100%         C         C         C         C         C         C         C         C  | Aluminum Fluoride       | all conc  | Α                | Α | Α         | Α          |
| Alums all types A A A A A A A A A A A A A A A A A A A   | Aluminum Sulphate       | all conc  | Α                | Α | Α         | Α          |
| Ammonia 100% dry gas A A A A A A A A A A A A A A A A A A A  | · ·                     | all types | Α                | Α | Α         | Α          |
| Ammonium Carbonate  | Ammonia                 |           | Α                | Α | Α         | Α          |
| Ammonium Fluoride sat'd A A A A A A A A A A A A A A A A A A A   | Ammonium Carbonate      | , 0       | Α                | Α | Α         | Α          |
| Ammonium Hydroxide 10% A A A A A A A A A A A A A A A A A A A  | Ammonium Chloride       | sat'd     | Α                | Α | Α         | Α          |
| Ammonium Hydroxide 28% A A A A A A A A A A A A A A A A A A A  | Ammonium Fluoride       | sat'd     | Α                | Α | Α         | Α          |
| Ammonium Nitrate sat'd A A A A A A A A A A A A A A A A A A A  | Ammonium Hydroxide      | 10%       | Α                | Α | Α         | Α          |
| Ammonium Persulphate sat'd A A A A A A A A A A A A A A A A A A A  | Ammonium Hydroxide      | 28%       | Α                | Α | Α         | Α          |
| Ammonium Sulphate sat'd A A A A A A A A A A A A A A A A A A A   | Ammonium Nitrate        | sat'd     | Α                | Α | Α         | Α          |
| Ammonium Metaphosphate sat'd A A A A A A A A A A A A A A A A A A A  | Ammonium Persulphate    | sat'd     | Α                | Α | Α         | Α          |
| Ammonium Metaphosphate sat'd A A A A A A A A A A A A A A A A A A A  | Ammonium Sulphate       | sat'd     | Α                | Α | Α         | Α          |
| Amyl Acetate#*         100%         C         C         C           Amyl Alcohol#*         100%         A         A         A         A           Amyl Chloride#         100%         C         C         C         C           Aniline#*         100%         A         C         C         B           Aqua Regia+         C         C         C         C         C           Arsenic Acid         all conc         A         A         A         A           Aromatic Hydrocarbons#*         C         C         C         C         C           Ascorbic Acid         10%         A         A         A         A           Barium Carbonate         sat'd         A         A         A         A           Barium Chloride         sat'd         A         A         A         A           Barium Sulphate         sat'd         A         A         A         A           Beer         A         A         A         A         A  |                         | sat'd     | Α                | Α | Α         | Α          |
| Amyl Alcohol#*         100%         A         A         A         A           Amyl Chloride#         100%         C         C         C         C           Aniline#*         100%         A         C         C         B           Aqua Regia+         C         C         C         C         C           Arsenic Acid         all conc         A         A         A         A           Arsenic Acid         all conc         A         A         A         A           Aromatic Hydrocarbons#*         C         C         C         C         C         C           Ascorbic Acid         10%         A         A         A         A         A           Barium Carbonate         sat'd         A         A         A         A         A           Barium Chloride         sat'd         A         A         A         A         A           Barium Sulphate         sat'd         A         A         A         A         A           Beer         A         A         A         A         A         A         A  | Ammonium Sulfide        | sat'd     | Α                | Α | Α         | Α          |
| Amyl Chloride#         100%         C         C         C           Aniline#*         100%         A         C         C         B           Aqua Regia+         C         C         C         C         C           Arsenic Acid         all conc         A         A         A         A           Aromatic Hydrocarbons#*         C         C         C         C         C           Ascorbic Acid         10%         A         A         A         A           Barium Carbonate         sat'd         A         A         A         A           Barium Chloride         sat'd         A         A         A         A           Barium Hydroxide         A         A         A         A         A           Barium Sulphate         sat'd         A         A         A         A           Beer         A         A         A         A         A   | Amyl Acetate#*          | 100%      | С                | С | С         | С          |
| Amyl Chloride# 100% C C C C Aniline#* 100% A C C B Aqua Regia+ C C C C Arsenic Acid all conc A A A A Aromatic Hydrocarbons#* C C C C Ascorbic Acid 10% A A A A Barium Carbonate sat'd A A A A Barium Chloride sat'd A A A A Barium Hydroxide A A A A Barium Sulphate sat'd A A A A Barium Sulphide sat'd A A A A Beer A A A   | Amyl Alcohol#*          | 100%      | Α                | Α | Α         | Α          |
| Aqua Regia+  Arsenic Acid  Aromatic Hydrocarbons#*  C C C C  Ascorbic Acid  Barium Carbonate  Sat'd  Barium Chloride  Sat'd  Barium Hydroxide  Barium Sulphate  Sat'd  A A  A A  A  Barium Sulphide  Sat'd  A A  A A  A  Barium Sulphide  Sat'd  A A  A A  A  Barium Sulphide  Sat'd  A A  A A  A  A  A  A  A  A  A  A  A  A  |                         | 100%      | С                | С | С         | С          |
| Arsenic Acid all conc A A A A A A A A A A A A A A A A A A A   | Aniline#*               | 100%      | Α                | С | С         | В          |
| Aromatic Hydrocarbons#*  C C C Ascorbic Acid 10% A A A A Barium Carbonate sat'd A A A A Barium Chloride sat'd A A A A Barium Hydroxide A A A A A Barium Sulphate sat'd A A A A Barium Sulphide sat'd A A A A Beer A A A A   | Aqua Regia+             |           | С                | С | С         | С          |
| Ascorbic Acid         10%         A         A         A         A           Barium Carbonate         sat'd         A         A         A         A           Barium Chloride         sat'd         A         A         A         A           Barium Hydroxide         A         A         A         A         A           Barium Sulphate         sat'd         A         A         A         A           Barium Sulphide         sat'd         A         A         A         A           Beer         A         A         A         A         A  | Arsenic Acid            | all conc  | Α                | Α | Α         | Α          |
| Barium Carbonate sat'd A A A A A A A Barium Chloride sat'd A A A A A A A A A A Barium Sulphate sat'd A A A A A A A Beer A A A A A A A A A A A A A A A A A A   | Aromatic Hydrocarbons#* |           | С                | С | С         | С          |
| Barium Chloride sat'd A A A A A A A A Barium Hydroxide Sat'd A A A A A A A A A Barium Sulphate Sat'd A A A A A A Beer A A A A A A A A A A A A A A A A A A   | -                       | 10%       | Α                | Α | Α         | Α          |
| Barium Hydroxide A A A A A A Barium Sulphate sat'd A A A A A A Beer A A A A A A A A A A A A A A A A A A   | Barium Carbonate        | sat'd     | Α                | Α | Α         | Α          |
| Barium Sulphatesat'dAAAABarium Sulphidesat'dAAAABeerAAAA  | Barium Chloride         | sat'd     | Α                | Α | Α         | Α          |
| Barium Sulphatesat'dAAAABarium Sulphidesat'dAAAABeerAAAA  | Barium Hydroxide        |           | Α                | Α | Α         | Α          |
| Barium Sulphide sat'd A A A A A Beer A A A  |                         | sat'd     | Α                | Α | Α         | Α          |
| Beer A A A  |                         | sat'd     | Α                | Α | Α         | Α          |
|   | -                       |           | Α                | Α | Α         | Α          |
| Benzene# <sup>*</sup> C C C   | Benzene#*               |           | С                | С | С         | С          |

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#### + Oxidizers.

| Benzoic Acid                    | all conc     | Α | Α | Α | Α |
|---------------------------------|--------------|---|---|---|---|
| Bismuth Carbonate               | sat'd        | Α | Α | A | Α |
| Bleach Lye                      | 10%          | A | A | A | Α |
| Borax                           | sat'd        | Α | A | A | Α |
| Boric Acid                      | all conc     | A | A | A | A |
| Boron Trifluoride               | an oono      | Α | A | A | A |
| Brine                           |              | A | A | A | A |
| Bromine+                        | liquid       | C | C | C | C |
| Bromine Water#                  | sat'd        | C | C | C | Č |
| Butanediol*                     | 10%          | A | A | A | A |
| Butanediol*                     | 60%          | A | A | A | A |
| Butanediol*                     | 100%         | A | A | A | A |
|                                 | 100%         | A | A | A | A |
| Butter*                         | 1000/        |   | C |   |   |
| n-Butyl Acetate#*               | 100%         | В |   | A | В |
| n-Butyl Alcohol*                | 100%         | A | A | A | A |
| Butyric Acid#                   | conc         | С | C | C | С |
| Calcium Bisulphide              | 41.1         | A | A | A | A |
| Calcium Carbonate               | sat'd        | Α | A | A | A |
| Calcium Chlorate                | sat'd        | Α | Α | Α | Α |
| Calcium Chloride                | sat'd        | Α | Α | A | Α |
| Calcium Hydroxide               | conc         | Α | Α | Α | Α |
| Calcium Hypochloride            | bleach sol   | Α | Α | Α | Α |
| Calcium Nitrate                 | 50%          | Α | Α | Α | Α |
| Calcium Oxide                   | sat'd        | Α | Α | Α | Α |
| Calcium Sulphate                |              | Α | Α | Α | Α |
| Camphor Oil#*                   |              | C | С | В | С |
| Carbon Dioxide                  | all conc     | Α | Α | Α | Α |
| Carbon Disulphide               |              | C | С | С | С |
| Carbon Monoxide                 |              | Α | Α | Α | Α |
| Carbon Tetrachloride#           |              | C | С | В | С |
| Carbonic Acid                   |              | Α | Α | Α | Α |
| Castor 0il*                     | conc         | Α | Α | Α | Α |
| Chlorine+                       | 100% dry gas | В | С | С | С |
| Chlorine Liquid+                |              | С | С | С | С |
| Chlorine Water+                 | 2% sat'd sol | Α | Α | Α | Α |
| Chlorobenzene#*                 |              | С | С | С | С |
| Chloroform*#                    |              | С | С | В | С |
| Chlorosulphonic Acid            | 100%         | С | С | С | С |
| Chrome Alum                     | sat'd        | Α | A | Α | Α |
| Chromic Acid                    | 80%          | _ | - | _ | _ |
| Chromic Acid                    | 50%          | Α | В | Α | В |
| Chromic Acid                    | 10%          | Α | A | Α | A |
| Cider*                          | . 0 / 0      | Α | A | A | A |
| Citric Acid*                    | sat'd        | Α | Α | A | Α |
| Coconut 0il Alcohols*           | out a        | A | A | A | A |
| Coffee                          |              | Α | A | A | A |
| Cola Concentrate*               |              | A | A | A | A |
| Copper Chloride                 | sat'd        | Α | A | A | A |
| Copper Cyanide                  | sat'd        | A | A | A | A |
| Copper Fluoride                 | 2%           | A | A | A | A |
| Copper Nitrate                  | sat'd        | Ā | A | Ä | A |
| Copper Nitrate  Copper Sulphate | sat'd        | A | A | A | A |
| Corn 0il*                       | Satu         | Ā | A | Ä | A |
| Cottonseed 0il*                 |              | A | A | A | A |
| Cuprous Chloride                | sat'd        | A | A | A | A |
| •                               | sal u        | A | A |   | A |
| Detergents Synthetic*           |              |   |   | A |   |
| Developers Photographic         | oot'd        | A | A | A | A |
| Dextrin                         | sat'd        | A | A | A | A |
| Dextrose                        | sat'd        | Α | A | A | Α |

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#### + Oxidizers.

| Diazo Salts   |                          |       |   |   |   |   |
|---|--------------------------|-------|---|---|---|---|
| Dibutylphthalate*   | Diama Calta              |       | ۸ | ۸ | ۸ | ۸ |
| Dichlorobenzene#*   |                          |       |   |   |   |   |
| Diethyl Ketone#*  | , , ,                    |       |   |   |   |   |
| Diethylene Glycol*  |                          |       |   |   |   |   |
| Diglycolic Acid*         A         A         A         A         A         D         A         A         A         A         A         A         A         A         A         A         A         B         A  |                          |       |   |   |   |   |
| Dimethylamine   |                          |       |   |   |   |   |
| Disodium Phosphate  |                          |       |   |   |   |   |
| Emulsions, Photographic*  | Dimethylamine            |       |   | С |   |   |
| Ethyl Acetate#*   | Disodium Phosphate       |       | Α | Α | В | Α |
| Ethyl Alcohol*  | Emulsions, Photographic* |       | Α | Α | Α | Α |
| Ethyl Alcohol*   35%  | Ethyl Acetate#*          | 100%  | В | С | В | С |
| Ethyl Benzene#*   | Ethyl Alcohol*           | 100%  | Α | Α | Α | Α |
| Ethyl Benzene#*   | Ethyl Alcohol*           | 35%   | Α | Α | Α | Α |
| Ethylen Chloride#*  | Ethyl Benzene#*          |       | С | С | С | С |
| Ethylen Chloride#*  |                          |       |   | С |   |   |
| Ethylene Chloride#*   |                          |       |   |   |   |   |
| Ethylene Glycol*  |                          |       |   |   |   |   |
| Fatty Acids*  | 1                        |       |   |   |   |   |
| Ferric Chloride   |                          |       |   |   |   |   |
| Ferric Nitrate  |                          | sat'd |   |   |   |   |
| Ferrous Chloride  |                          |       |   |   |   |   |
| Ferrous Sulphate  |                          |       |   |   |   |   |
| Fish Solubles*  |                          | satu  |   |   |   |   |
| Fluoboric Acid  |                          |       |   |   |   |   |
| Fluosillcic Acid   Conc   |                          |       |   |   |   |   |
| Fluosillcic Acid   32%  |                          |       |   |   |   |   |
| Formic Acid   |                          |       |   |   |   |   |
| Fructose         sat'd         A <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td></t<>            |                          |       |   |   |   |   |
| Fruit Pulp*   |                          |       |   |   |   |   |
| Furtural#   |                          | sat'd |   |   |   |   |
| Furtury  Alcohol#*  | ·                        |       |   |   |   |   |
| Gallic Acid*         sat'd         A  |                          | 100%  |   |   |   |   |
| Gasoline#*   C C C B B B   Glucose  |                          |       | С | С | В | С |
| Glucose   |                          | sat'd |   |   | Α | Α |
| Glycerine*         A  | Gasoline#*               |       | С | С | В | В |
| Glycol*         A </td <td>Glucose</td> <td></td> <td>Α</td> <td>Α</td> <td>Α</td> <td>Α</td> | Glucose                  |       | Α | Α | Α | Α |
| Glycolic Acid*   30%  | Glycerine*               |       | Α | Α | Α | Α |
| Glycolic Acid*   30%  | Glycol*                  |       | Α | Α | Α | Α |
| Grape Sugar         A <td< td=""><td></td><td>30%</td><td>Α</td><td>Α</td><td>Α</td><td>Α</td></td<>    |                          | 30%   | Α | Α | Α | Α |
| n-Heptane#*         C         C         B         B           Hexachlorobenzene         A         A         A         A           Hexanol Tertiary*         A         A         A         A           Hydrobromic Acid         50%         A         A         A         A           Hydrochloric Acid         all conc         A         A         A         A           Hydrocyanic Acid         sat'd         A         A         A         A           Hydroffluoric Acid*         60%         A         A         A         A           Hydrogen         100%         A         A         A         A           Hydrogen Chloride         dry gas         A         A         A         A           Hydrogen Peroxide         10%         A         A         A         A           Hydrogen Sulphide         A         A         A         A         A           Hydroquinone         A         A         A         A         A           Hypochlorous Acid         conc.         A         A         A         A           Hypochlorous Acid         conc.         A         A         A         A   |                          |       |   |   |   |   |
| Hexachlorobenzene Hexanol Tertiary* Hydrobromic Acid S0% A A A A A A A A A A A A A A A A A A A  |                          |       |   |   |   |   |
| Hexanol Tertiary*  Hydrobromic Acid  Hydrochloric Acid  Hydrocyanic Acid  Hydrocyanic Acid  Hydrocyanic Acid  Hydrocyanic Acid  Hydrogen  100%  A  A  A  A  A  A  A  A  A  A  A  A  A   |                          |       |   |   |   | _ |
| Hydrobromic Acid         50%         A  |                          |       |   |   |   | Α |
| Hydrochloric Acid all conc A A A A A A A A A A A A A A A A A A A  |                          | 50%   |   |   |   |   |
| Hydrocyanic Acid         sat'd         A  | , ,                      |       |   |   |   |   |
| Hydrofluoric Acid*         60%         A  |                          |       |   |   |   |   |
| Hydrogen         100%         A <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td></td<>           |                          |       |   |   |   |   |
| Hydrogen Chloride         dry gas         A         A         A         A           Hydrogen Peroxide         30%         A         A         A         A         A           Hydrogen Peroxide         10%         A         A         A         A         A           Hydrogen Sulphide         A         A         A         A         A         A           Hydroquinone         A         A         A         A         A         A           Hypochlorous Acid         conc.         A         A         A         A         A           Inks*         A         A         A         A         A         A         A           Iodine+         in KI sol'n         B         C         B         -         -           Isopropyl Alcohol         100%         -         -         -         -         -           Lead Acetate         sat'd         A         A         A         A         A           Lactic Acid*         20%         A         A         A         A         A   | -                        |       |   |   |   |   |
| Hydrogen Peroxide         30%         A   |                          |       |   |   |   |   |
| Hydrogen Peroxide         10%         A         A         A         A           Hydrogen Sulphide         A         A         A         A         A         A           Hydroquinone         A         A         A         A         A         A         A           Hypochlorous Acid         conc.         A         A         A         A         A         A           Inks*         A         A         A         A         A         A         A           Iodine+         in KI sol'n         B         C         B         -  | , ,                      |       |   |   |   |   |
| Hydrogen Sulphide         A   |                          |       |   |   |   |   |
| Hydroquinone         A <t< td=""><td></td><td>10%</td><td></td><td></td><td></td><td></td></t<>         |                          | 10%   |   |   |   |   |
| Hypochlorous Acid         conc.         A         A         A         A           Inks*         A         A         A         A         A           Iodine+         in KI sol'n         B         C         B         -           Isopropyl Alcohol         100%         -         -         -         -           Lead Acetate         sat'd         A         A         A         A           Lead Nitrate         A         A         A         A         A           Lactic Acid*         20%         A         A         A         A   |                          |       |   |   |   |   |
| Inks*         A         A         A         A         A           Iodine+         in KI sol'n         B         C         B         -           Isopropyl Alcohol         100%         -         -         -         -           Lead Acetate         sat'd         A         A         A         A           Lead Nitrate         A         A         A         A         A           Lactic Acid*         20%         A         A         A         A   |                          |       |   |   |   |   |
| Iodine+         in KI sol'n         B         C         B         -           Isopropyl Alcohol         100%         -         -         -         -           Lead Acetate         sat'd         A         A         A         A           Lead Nitrate         A         A         A         A         A           Lactic Acid*         20%         A         A         A         A   |                          | conc. |   |   |   |   |
| Isopropyl Alcohol   |                          |       |   |   |   | Α |
| Lead Acetate         sat'd         A         A         A         A           Lead Nitrate         A         A         A         A         A           Lactic Acid*         20%         A         A         A         A  |                          |       | В | С | В | - |
| Lead Nitrate A A A A A Lactic Acid* A A A A A A   |                          |       | - |   |   | - |
| Lactic Acid* 20% A A A A  |                          | sat'd |   |   |   |   |
|   |                          |       |   |   |   |   |
| Linseed Oil* 100% B C B C   |                          |       | Α |   |   |   |
|   | Linseed Oil*             | 100%  | В | С | В | С |

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#### # Plasticizer.

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# + Oxidizers.

| Magnesium Carbonate           | sat'd  | Α      | Α | Α | Α |
|-------------------------------|--------|--------|---|---|---|
| Magnesium Chloride            | sat'd  | Α      | Α | Α | Α |
| Magnesium Hydroxide           | sat'd  | Α      | Α | Α | Α |
| Magnesium Nitrate             | sat'd  | Α      | Α | Α | Α |
| Magnesium Sulphate            | sat'd  | Α      | Α | Α | Α |
| Mercuric Chloride             | 40%    | Α      | Α | Α | Α |
| Mercuric Cyanide              | sat'd  | Α      | Α | Α | Α |
| Mercury                       |        | Α      | Α | Α | Α |
| Methyl Alcohol*               | 100%   | Α      | Α | Α | Α |
| Methylethyl Ketone#*          | 100%   | В      | С | В | С |
| Methylene Chloride#*          | 100%   | С      | C | В | В |
| Milk                          |        | A      | A | A | A |
| Mineral Oils#                 |        | В      | C | В | C |
| Molasses                      |        | A      | A | A | A |
| Naphtha#*                     |        | В      | C | В | C |
| Naphthalene#*                 |        | C      | C | В | - |
| Nickel Chloride               | conc   | Ä      | Ä | Ā | Α |
| Nickel Nitrate                | sat'd  | A      | A | A | Α |
| Nickel Sulphate               | conc   | A      | A | A | A |
| Nicotine*                     | dilute | A      | Α | A | A |
| Nitric Acid                   | 0-30%  | A      | A | A | A |
| Nitric Acid+                  | 30-50% | A      | В | A | В |
| Nitric Acid+                  | 70%    | A      | В | A | В |
| Nitric Acid+                  | 95-98% | C      | C | C | C |
| Nitrobenzene#*                | 100%   | Č      | Č | Č | Č |
| n-Octane                      | 10070  | A      | A | A | A |
| Oleic Acid                    |        | В      | Ĉ | В | Ĉ |
| Oxalic Acid*                  | sat'd  | A      | A | A | A |
| Perchloroethylene#            | Satu   | Ĉ      | Ĉ | Ċ | Ĉ |
| Phosphoric Acid               | 95%    | A      | В | A | A |
| Photographic Solutions        | 93 /6  | Ā      | A | A | Ā |
| Plating Solutions*            |        | ^      | ^ | ^ | ^ |
| Brass                         |        | Α      | Α | Α | Α |
| Cadmium                       |        | A      | A | A | A |
| Chromium                      |        | A      | Ā | A | Ā |
| Copper                        |        | A      | A | A | A |
| Gold                          |        | Ā      | Ā | A | Ā |
| Indium                        |        | A      | A | A | A |
| Lead                          |        | A      | Ā | A | Ā |
| Nickel                        |        | A      | A | A | A |
| Rhodium                       |        | A      | Ā | A | Ā |
| Sliver                        |        | A      | A | A | A |
| Tin                           |        | Ā      | Ā | A | A |
| Zinc                          |        | A      | A | A | A |
| Potassium Bicarbonate         | sat'd  | A      | Ā | A | A |
| Potassium Bromide             | sat'd  | A      | A | A | A |
| Potassium Bromate             | 10%    | A      | Ā | A | Ā |
| Potassium Carbonate           | 10 /6  | A      | A | A | A |
| Potassium Chlorate            | sat'd  | A      | Ā | A | Ā |
| Potassium Chloride            | sat'd  | A      | A | A | A |
| Potassium Chromate            | 40%    | A      | A | A | A |
| Potassium Cyanide             | sat'd  | A      | A | A | A |
| Potassium Dichromate          | 40%    | A      | A | A | A |
| Potassium Ferri/Ferro         | 40%    | A      | A | А | A |
|                               | sat'd  | Λ      | Α | Α | Α |
| Cyanide<br>Potassium Fluoride | sal U  | A<br>A | A | A | A |
| Potassium Hydroxide           | conc   | A      | A | A | A |
| Potassium Nitrate             | sat'd  | A      | A | A | A |
|                               |        |        |   |   |   |
| Potassium Perborate           | sat'd  | А      | А | А | Α |

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# + Oxidizers.

| Potassium Perchlorate  |                       |         |   |   |   |          |
|--|-----------------------|---------|---|---|---|----------|
| Potassium Permanganate   | Potassium Perchlorate | 10%     | Α | Α | Α | Α        |
| Potassium Persulphate  |                       |         |   |   |   |          |
| Potassium Sulphate   | _                     |         |   |   |   |          |
| Potassium Sulphite   |                       |         |   |   |   |          |
| Potassium Sulphite   |                       |         |   |   |   |          |
| Propaggyl Alcohol*   |                       |         |   |   |   |          |
| n-Propylene Dichloride#* 100%  |                       | COLIC   |   |   |   |          |
| Propylene Dichloride#*   |                       |         |   |   |   |          |
| Propylene GlyCol*  |                       | 1000/   |   |   |   | $\wedge$ |
| Pyridine*  |                       | 100 /6  |   |   |   | ^        |
| Resorcinol   |                       |         |   |   |   | А        |
| Salicylic Acid         sat'd         A   |                       | 0.047.d |   |   |   | _        |
| Sea Water         A  |                       |         |   |   |   |          |
| Selenic Acid   |                       | satu    |   |   |   |          |
| Shortening*  |                       |         |   |   |   |          |
| Silver Nitrate Sol'n   |                       |         |   |   |   |          |
| Soap Solutions*  |                       |         |   |   |   |          |
| Sodium Acetate         sat'd         A   |                       |         |   |   |   |          |
| Sodium Benzoate  |                       |         |   |   |   |          |
| Sodium Biscarbonate sat'd A A A A A A A A A A A A A A A A A A A  |                       |         |   |   |   |          |
| Sodium Bisulphate sat'd A A A A A A A A A A A A A A A A A A A  |                       |         |   |   |   |          |
| Sodium Bisulphite         sat'd         A  |                       |         | Α | Α | Α | Α        |
| Sodium Borate Sodium Bromide Sodium Bromide Sodium Carbonate Conc A A A A A A A A A A A A A A A A A A A  | Sodium Bisulphate     | sat'd   | Α | Α | Α | Α        |
| Sodium Bromide         dilute         A         A         A         A           Sodium Carbonate         conc         A         A         A         A           Sodium Chlorate         sat'd         A         A         A         A           Sodium Cyanide         sat'd         A         A         A         A           Sodium Dichromate         sat'd         A         A         A         A           Sodium Dichromate         sat'd         A         A         A         A           Sodium Dichromate         sat'd         A         A         A         A           Sodium Pluoride         sat'd         A         A         A         A           Sodium Hydroxide         conc         A         A         A         A         A           Sodium Hypochlorite         A   | Sodium Bisulphite     | sat'd   | Α | Α | Α | Α        |
| Sodium Carbonate sat'd A A A A A A A A A A A A A A A A A A A   | Sodium Borate         |         | Α | Α | Α | Α        |
| Sodium Chlorate         sat'd         A  | Sodium Bromide        | dilute  | Α | Α | Α | Α        |
| Sodium Chloride sat'd A A A A A A A A A A A A A A A A A A A  | Sodium Carbonate      | conc    | Α | Α | Α | Α        |
| Sodium Cyanide Sodium Dichromate Sat'd Sodium Ferri/Ferro Cyanide Sodium Fluoride Sat'd Sodium Hydroxide Sodium Hydroxide Sodium Hypoxide Sodium Hypoxide Sodium Hypoxide Sodium Nitrate Sodium Sulphate Sodium Sulphate Sodium Sulphide Sat'd Sodium Sulphide S | Sodium Chlorate       | sat'd   | Α | Α | Α | Α        |
| Sodium Dichromate Sodium Ferri/Ferro Cyanide Sodium Fluoride Sat'd Sodium Fluoride Sat'd Sodium Fluoride Sat'd Sodium Hydroxide Sodium Hypochlorite Sodium Hypochlorite Sodium Sulphate Sodium Sulphate A Sodium Sulphide Sat'd A Sodium Sulphide Sat'd A Sodium Sulphide Sat'd A Sodium Sulphide Sat'd A Sodium Sulphite Sodium Sulph | Sodium Chloride       | sat'd   | Α | Α | Α | Α        |
| Sodium Dichromate Sodium Ferri/Ferro Cyanide Sodium Fluoride Sat'd Sodium Fluoride Sat'd Sodium Fluoride Sat'd Sodium Hydroxide Sodium Hypochlorite Sodium Hypochlorite Sodium Sulphate Sodium Sulphate A Sodium Sulphide Sat'd A Sodium Sulphide Sat'd A Sodium Sulphide Sat'd A Sodium Sulphide Sat'd A Sodium Sulphite Sodium Sulph | Sodium Cyanide        |         | Α | Α | Α | Α        |
| Sodium Ferri/Ferro   Cyanide   Sat'd   A   A   A   A   A   A   A   A   A   |                       | sat'd   | Α | Α | Α | Α        |
| Cyanide         sat'd         A         A         A         A           Sodium Fluoride         sat'd         A         A         A         A           Sodium Hydroxide         conc         A         A         A         A           Sodium Hypochlorite         A         A         A         A         A           Sodium Nitrate         A         A         A         A         A           Sodium Sulphate         A         A         A         A         A           Sodium Sulphide         sat'd         A         A         A         A           Sodium Sulphite         sat'd         A         A         A         A           Sodium Sulphite         sat'd         A         A         A         A           Stannic Chloride         sat'd         A         A         A         A           Stannic Chloride         sat'd         A         A         A         A           Starch Solution*         sat'd         A         A         A         A         A           Sulphuric Acid*         100%         A         A         A         A         A         B         B         C <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td></td<>   |                       |         |   |   |   |          |
| Sodium Fluoride sat'd A A A A A A A A A A A A A A A A A A A  |                       | sat'd   | Α | Α | Α | Α        |
| Sodium Hydroxide         conc         A  |                       |         |   |   |   |          |
| Sodium Hypochlorite         A  |                       |         |   |   |   |          |
| Sodium Nitrate         A   |                       | 00110   |   |   |   |          |
| Sodium Sulphate Sodium Sulphide Sat'd Sodium Sulphide Sat'd Sodium Sulphite Sat'd Sa |                       |         |   |   |   |          |
| Sodium Sulphide sat'd A A A A A A A A A A A Sodium Sulphite sat'd A A A A A A A A A A A A A A A A A A A  |                       |         |   |   |   |          |
| Sodium Sulphite         sat'd         A         B         B         C         B         C         C         C         C         C         C         C         C         C         C  |                       | sat'd   |   |   |   |          |
| Stannic Chloride         sat'd         A   |                       |         |   |   |   |          |
| Stannous Chloride         sat'd         A         B         B         C         B         C  |                       |         |   |   |   |          |
| Starch Solution*         sat'd         A   |                       |         |   |   |   |          |
| Stearic Acid* 100% A A A A A A A Sulphuric Acid 0-50% A A A A A B Sulphuric Acid+ 70% A B A B A B Sulphuric Acid+ 80% A C A C Sulphuric Acid+ 96% B C B C Sulphuric Acid+ 98-conc B C B C Sulphuric Acid+ fuming C C C C C Sulphurous Acid A A A A A A A A A A A A A A A A A A A   |                       |         |   |   |   |          |
| Sulphuric Acid         0-50%         A         A         A         A         A         A         A         B         A         A         B         A         B         A         B         A         B         B         A         B         B         A         A         C         A         C         A         C         C         A         C         C         A         C         B         C         B         C         B         C         B         C         B         C         B         C         A   |                       |         |   |   |   |          |
| Sulphuric Acid+         70%         A         B         A         B           Sulphuric Acid+         80%         A         C         A         C           Sulphuric Acid+         96%         B         C         B         C           Sulphuric Acid+         98-conc         B         C         C         C         C           Sulphuric Acid+         fuming         C         C         C         C         C           Sulphurous Acid         A         A         A         A         A         A           Tallow#         A         B         A         -         -         -           Tannic Acid*         sat'd         A         A         A         A         A           Tetrolydrofuran#*         C         C         C         B         C           Titanium Tetrochloride         sat'd         C         C         C         C           Toluene#*         C         C         C         C         C         C           Triethylene Glycol*         A         A         A         A         A         A         A   |                       |         |   |   |   |          |
| Sulphuric Acid+80%ACACSulphuric Acid+96%BCBCSulphuric Acid+98-concBCBCSulphuric Acid+fumingCCCCSulphurous AcidAAAAATallow#ABA-Tannic Acid*Sat'dAAAATetrolydrofuran#*CCBCTitanium TetrochlorideSat'dCCC-Toluene#*CCBBTrichloroethylene#*CCCCTriethylene Glycol*AAAAA  |                       |         |   |   |   |          |
| Sulphuric Acid+         96%         B         C         B         C           Sulphuric Acid+         98-conc         B         C         B         C           Sulphuric Acid+         fuming         C         C         C         C           Sulphurous Acid         A         A         A         A         A           Tallow#         A         B         A         -           Tannic Acid*         Sat'd         A         A         A         A           Tartaric Acid         A         A         A         A         A           Tetrolydrofuran#*         C         C         B         C           Titanium Tetrochloride         sat'd         C         C         C         C           Toluene#*         C         C         C         C         C         C           Triethylene Glycol*         A         A         A         A         A         A   |                       |         |   |   |   |          |
| Sulphuric Acid+         fuming         C         C         C         C           Sulphurous Acid         A         A         A         A           Tallow#         A         B         A         -           Tannic Acid*         Sat'd         A         A         A         A           Tartaric Acid         A         A         A         A         A           Tetrolydrofuran#*         C         C         B         C           Titanium Tetrochloride         sat'd         C         C         C         C           Toluene#*         C         C         B         B           Trichloroethylene#*         C         C         C         C           Triethylene Glycol*         A         A         A         A   |                       |         |   |   |   | C        |
| Sulphuric Acid+         fuming         C         C         C         C           Sulphurous Acid         A         A         A         A           Tallow#         A         B         A         -           Tannic Acid*         Sat'd         A         A         A         A           Tartaric Acid         A         A         A         A         A           Tetrolydrofuran#*         C         C         B         C           Titanium Tetrochloride         sat'd         C         C         C         C           Toluene#*         C         C         B         B           Trichloroethylene#*         C         C         C         C           Triethylene Glycol*         A         A         A         A   |                       |         |   |   |   | C        |
| Sulphurous Acid         A         A         A         A           Tallow#         A         B         A         -           Tannic Acid*         sat'd         A         A         A         A           Tartaric Acid         A         A         A         A         A         A           Tetrolydrofuran#*         C         C         C         B         C           Titanium Tetrochloride         sat'd         C         C         C         -           Toluene#*         C         C         B         B           Trichloroethylene#*         C         C         C         C           Triethylene Glycol*         A         A         A         A  |                       |         |   |   |   | C        |
| Tallow#         A         B         A         -           Tannic Acid*         sat'd         A         A         A         A           Tartaric Acid         A         A         A         A         A           Tetrolydrofuran#*         C         C         C         B         C           Titanium Tetrochloride         sat'd         C         C         C         C           Toluene#*         C         C         B         B           Trichloroethylene#*         C         C         C         C           Triethylene Glycol*         A         A         A         A  |                       | fuming  |   |   |   |          |
| Tannic Acid*         sat'd         A         A         A         A           Tartaric Acid         A         A         A         A         A           Tetrolydrofuran#*         C         C         C         B         C           Titanium Tetrochloride         sat'd         C         C         C         C           Toluene#*         C         C         B         B           Trichloroethylene#*         C         C         C         C           Triethylene Glycol*         A         A         A         A  |                       |         |   |   |   | Α        |
| Tartaric Acid A A A A A A A A Tetrolydrofuran#* C C B C Titanium Tetrochloride sat'd C C C C - Toluene#* C C B B Trichloroethylene#* C C C C C Triethylene Glycol*   |                       |         |   |   |   |          |
| Tetrolydrofuran#*         C         C         B         C           Titanium Tetrochloride         sat'd         C         C         C         -           Toluene#*         C         C         B         B           Trichloroethylene#*         C         C         C         C           Triethylene Glycol*         A         A         A         A   |                       | sat'd   |   |   |   |          |
| Titanium Tetrochloride sat'd C C C - Toluene#* C C B B Trichloroethylene#* C C C Triethylene Glycol* A A A A   |                       |         |   |   |   |          |
| Toluene#*         C         C         B         B           Trichloroethylene#*         C         C         C         C           Triethylene Glycol*         A         A         A         A  |                       |         |   |   |   | С        |
| Trichloroethylene#* C C C C Triethylene Glycol* A A A A  |                       | sat'd   |   |   |   |          |
| Triethylene Glycol* A A A A  |                       |         |   |   |   |          |
|  |                       |         |   |   |   |          |
|  | Triethylene Glycol*   |         | Α |   | Α | Α        |
| Trisodium Phosphate sat'd A A A A  | Trisodium Phosphate   | sat'd   | Α | Α | A | Α        |

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# + Oxidizers.

Oxidizers are the only group of materials capable of chemically degrading polyethylene. The effects on the polyethylene may be gradual even for strong oxidizers and short-term effects may not be measurable. However, if continuous long-term exposure is intended, the chemical effects should be checked regularly.

| Turpentine#      |       | С | С | В | В |
|------------------|-------|---|---|---|---|
| Urea             | 0-30% | Α | Α | Α | Α |
| Urine            |       | Α | Α | Α | Α |
| Vanilla Extract* |       | Α | Α | Α | Α |
| Vinegar          |       | Α | Α | Α | Α |
| Water            |       | Α | Α | Α | Α |
| Wetting Agents*  |       | Α | Α | Α | Α |
| Whiskey*         |       | Α | Α | Α | Α |
| Wines*           |       | Α | Α | Α | Α |
| Xylene#          |       | С | С | В | В |
| Yeast            |       | Α | Α | Α | Α |
| Zinc Bromide     | sat'd | Α | Α | Α | Α |
| Zinc Carbonate   | sat'd | Α | Α | Α | Α |
| Zinc Chloride    | sat'd | Α | Α | Α | Α |
| Zinc Oxide       | sat'd | Α | Α | Α | Α |
| Zinc Stearate    |       | Α | Α | Α | Α |
| Zinc Sulphate    | sat'd | Α | Α | Α | Α |
|                  |       |   |   |   |   |

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