



INFORMATION SHEET – PHOSPHATING

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MP Eastern provide Class 1 – heavyweight manganese phosphate coatings and Class 3 light weight zinc phosphate coatings, see below for a description of coating class.

Phosphate coatings are used as a pre treatment for paint bonding, to aid with cold forming, and to improve corrosion resistance in conjunction with supplementary treatments.

Generally the method for specifying phosphate coatings is by expressing the coatings requirements as a coating weight in either g/m^2 or mg/ft^2 as opposed to a film thickness.

Phosphate coatings are typically graded by class;

- Class 1 coating – For maximum corrosion protection $> 7.5 \text{ g/m}^2$ coating weight – usually heavy weight manganese or zinc phosphates.
- Class 2 coating – For general protective purpose $> 4.5 \text{ g/m}^2$ – usually zinc phosphate, however you can substitute a Class 1 coating for a Class 2 coating except on thin sheet material.
- Class 3 coating – Pre-treatment of thin sheet steel sections zinc phosphate 1.5 to 4.5 g/m^2 .
- Class 4 coating – Lightweight zinc or iron phosphate 0.2 to 1.5 g/m^2 .

Components that are high tensile or have been heat treated to certain hardness may require stress relieving before phosphating and baking after phosphating for the relief of hydrogen embrittlement

When specifying phosphating on drawings or orders it is recommended that wherever possible national, international or defence standards are used to provide the processing instructions to your supplier, typically the following information should also be provided;

- Specification reference
- Material grade and condition (hardness, UTS)



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- Significant surfaces and areas where measurements of coating thickness are to be made.
- Any areas that must not be used as contact points for jiggging/wiring
- Supplementary treatments such as baking, oiling.
- Any special inspection requirements
- Any special packing requirements

In the table below we have summarised information from the standards we typically process to. We also hold a large library of customer specific, superseded/legacy specifications so contact us if you need any help.

Typical standards for specifying phosphating

Standard	Notes	Comments
BS EN ISO 9717:2013	<p>Plating is specified using a 6 part code in the form <i>c/e/g/i/e/Tn</i> ;where;</p> <p>c = Chemical symbol of the base material e = coating type where; Znph = Zinc phosphate, Mnph = Manganese phosphate ZnCaph = Calcium modified zinc phosphate Feiph = Iron (II) phosphate, Feiph = Iron (II) phosphate alkali g = The function of the coating indicated by one of the following symbols; r = adhesion and/or corrosion protection, z = to facilitate cold forming, g = to facilitate sliding action, e = sliding actions i = A number indicating coating mass in g/m² with a tolerance of +/- 30 % Tn = Indicates any phosphate after treatment where;</p> <p>T1 = Application of paint, varnishes or similar coating T2 = Application of organic or inorganic sealants T3 = Dyeing T4 = Application of grease or oil T5 = Application of wax T6 = Application of soap</p>	Supersedes; BS EN 12476 BS 3189
AMS 03-11	<p>Phosphate treatment is defined by reference to a particular class;</p> <p>Class I : Manganese phosphate > 7.5 g/m² coating weight Class II : Zinc phosphate > 4.5 g/m² coating weight Class III : Zinc phosphate 1.5 to 4.5 g/m² coating weight Class IV : Zinc phosphate 0.2 to 1.5 g/m²</p> <p><i>Note:</i> A Class I coating may be used in place of a Class II coating, except on thin sheet materials. Supplementary treatments are to be specified on the drawing or order, if no supplementary treatment is specified then temporary corrosion protective oil is to be applied.</p>	Supersedes; DEF29A Def Stan 03-11 High tensile materials > 1100 and <= 1450 MPa require de embrittlement, and may require stress relieving prior to phosphating. For steel of tensile strength > 1450 MPa see AMS 03-4 for embrittlement relief details