

# **An Overview of Regulations Regarding Rocket Motors**

## **Federal Agencies and Their Role**

### **Summary**

This section describes the role of various federal agencies relevant to the storage, shipment, and use of motors for sport rocketry. The storage, shipment, and use of motors for sport rocketry are regulated by a variety of Federal agencies, in addition to any state and local agencies you may have to deal with. Understanding the various regulations is important for two reasons: It helps ensure that you won't accidentally violate a regulation (which in the worst case scenario could have serious consequences) and it may help you make a persuasive case for local authorities, who may wish to be more restrictive than the law requires. Disclaimer: I am not a lawyer, and these are my own opinions.

### **The U.S. Consumer Product Safety Commission (CPSC)**

The CPSC regulates the sale of toy propellant devices, which includes small rocket motors. They are responsible for age requirements for purchasers of larger motors. The Consumer Product Safety Commission (CPSC) enforces the Federal Hazardous Substances Act. The act creates categories of "banned hazardous substance". The Consumer Product Safety Commission decided that rocket motors are a "banned hazardous substance" as defined by Congress:

"The term 'banned hazardous substance' means (A) any toy, or other article intended for use by children, which is a hazardous substance, or which bears or contains a hazardous substance in such manner as to be susceptible of access by a child to whom such toy or other article is entrusted..."

The Consumer Product Safety Commission then provided an exemption for small rocket motors as follows:

"Sec. 1500.85 Exemptions from classification as banned hazardous substances. (a) The term banned hazardous substances as used in section 2(q)(1)(A) of the act shall not apply to the following articles provided that these articles: ....

"(8) Model rocket propellant devices designed for use in light-weight, recoverable, and re-flyable model rockets, provided such devices: (i) Are designed to be ignited by electrical means. (ii) Contain no more than 62.5 grams (2.2 ounces) of propellant material and produce less than 80 newton-seconds (17.92 pound seconds) of total impulse with thrust duration not less than 0.050 second. (iii) Are constructed such that all the chemical ingredients are preloaded into a cylindrical paper or similarly constructed nonmetallic tube that will not fragment into sharp, hard pieces. (iv) Are designed so that they will not burst under normal conditions of use, are incapable of spontaneous ignition, and do not contain any type of explosive or pyrotechnic warhead other than a small parachute or recovery-system activation charge."

This is apparently the source of the ATF 62.5g limit: Below 62.5g, you can sell it to kids. Above 62.5g, it becomes explosive!

## **The Department of Transportation**

The DOT regulates the shipment of hazardous materials, including rocket motors of all types, in interstate commerce. The DOT works on an exemption basis: The way it works is that the shipment of all hazardous materials, including rocket motors, is forbidden, unless an exemption is granted by the DOT. A manufacturer wanting to ship a motor must therefore submit it to DOT, where it is evaluated and an exemption number, or EX number, is given. The EX number is issued in a letter that states how the material is classified, and the rules applicable to its shipment. Manufacturers may ask for additional relief, so that for example the DOT may approve the shipment of a substance normally classified as an explosive as if it were merely a flammable solid, provided specific quantity limits and packaging instructions are met. The typical sport rocketry enthusiast is not likely to run afoul of DOT regulations when driving around with motors in their car trunk, unless they are engaged in the commercial transportation of experimental motors which have not been issued an EX number.

However, knowledge of the EX number system and the applicable DOT shipment regulations *is* necessary in order to properly ship motors using the Postal Service, UPS, or other carrier. Rocket motors must never be loaded onto a passenger carrying airliner, either in checked baggage or in carry on luggage. Many motors *can* be shipped using the Postal Service, provided that the package is properly marked and documented and that the USPS has authorized the shipment. For practical purposes, it is extremely difficult for a private citizen to legally ship rocket motors of any size using USPS, but it isn't too hard for vendors to do so. If you have cause to send a motor back to a manufacturer, call and ask for instructions—many will send shipping materials to you that are designed to keep everyone compliant with the applicable regulations.

## **The Bureau of Alcohol, Tobacco, and Firearms (BATF)**

BATF regulates the use of explosive materials, including storage. Further, if the material is acquired in interstate commerce (which as of May 2003 will have an extremely broad definition), the users themselves must have an appropriate BATF permit. While the rules as of right now may enable you to launch rockets legally without this permit, if you are careful about what you launch and where you buy it, you must comply with BATF requirements for storage regardless. After May 2003, the situation will get much worse.

The regulations<sup>1</sup> in this area had changed in December 1998, but unfortunately, (or perhaps fortunately) the rule change was botched and the new regulations were not being enforced with regard to rocket motors, pending another formal rule-making process. In the meantime, the Homeland Security Act (HSA) was passed, and that included the provisions of the "Safe Explosives Act (SEA)" that go into effect March 20 and May 24, 2003 (depending on the provision). Further, the ATF has issued a Notice of Proposed Rulemaking, which will result in a new set of rules being promulgated that will specifically define (and probably further restrict) affected rocket motors.

Before HSA, the primary reason for the confusion is that the system for classifying hazardous

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<sup>1</sup> [http://www.access.gpo.gov/nara/cfr/waisidx\\_02/27cfr55\\_02.html](http://www.access.gpo.gov/nara/cfr/waisidx_02/27cfr55_02.html)

materials is changing worldwide, and the BATF didn't get all the details right. Now they are trying to fix that problem while implementing the rules required by the SEA, and things are very confusing indeed.

You need to know the details, both because the new rules are likely to be vigorously enforced, and because it is very possible that you will need to understand the issues so you can teach them to your local authorities. The BATF regulations can be found in the Code of Federal Regulations (CFR), Title 27, Part 55, which in shorthand is written 27 CFR 55. These regulations are officially used by BATF to interpret the public law (91-452) which requires them to regulate explosives.

### **What is covered by BATF regulations?**

It used to be the case that a lot of rocket motors were not.

*Prior to 12/98*, The BATF regulations, in. 27 CFR 55.141, which covers Exemptions, included in (a) (7)

"The importation and distribution of fireworks classified as Class C explosives and generally known as "common fireworks", and other Class C explosives, as described by U.S. Department of Transportation regulations in 49 CFR 173.100 (p), (r), (t), (u) and (x)." This latter citation is about toy propellant devices, defined broadly enough to include rocket motors using both cardboard and composite casings.

The BATF in 27 CFR 55.11 had already defined "Common Fireworks" as:

"Any small firework device designed to produce visible effects by combustion and which must comply with the construction, chemical composition, and labeling regulations of the U.S. Consumer Product Safety Commission, as set forth in Title 16, Code of Federal Regulations, parts 1500 and 1507. Some small devices designed to produce audible effects are included, such as whistling devices, ground devices containing 50 mg or less of explosive materials, and aerial devices containing 130 mg or less of explosive materials. Common fireworks are classified as Class C explosives by the U.S. Department of Transportation (DOT). 49 CFR 173.100(r)."

So, before 12/22/98, if US CPSC regulated it, and/or DOT regulated it as a toy propellant device, it was exempted from regulation by BATF. CPSC regulated everything under 62.5 grams.

However, DOT has been adopting a more refined classification of hazardous materials and is also adopting the United Nation's standard for classifying hazardous materials, which used to regulate world-wide shipments. Whereas explosives used to be classified as Class A, Class B, or Class C, along with a bunch of wordy definitions such as the one for "Common Fireworks" above, they are now classified in much greater detail, using a system of UN numbers as well as a set of numeric classes and compatibility groups. The new numeric classes designate the kinds of bad things that can happen when things go wrong in shipment, and the UN numbers describe the material itself.

For example, small BP and composite motors both used to be simply called Class C explosives. BP motors are now classified as UN0432, Class 1.4S, whereas Small (<30g) composite single use became UN0349 1.4S. There are lots additional classifications for various sizes and types of

motors. See Table 1 for a list of applicable UN numbers, and Tables 2 through 5 for how they apply to many of the current motor manufacturers.

When the system was first being used, there was a tendency to treat the new classifications just like the old ones. Aerotech has a letter from the DOT on their site, for example, issuing EX numbers for RMS kits and designating them UN0351 1.4C. And, "to facilitate translation to the UN system," the DOT helpfully adds the translation "Toy Propellant Devices."

So, before 12/98, these RMS kits were classified by DOT in a way that exempted them from regulation by BATF [because of the reference by BATF to DOT's 49 CFR 173.100 (u) and their own definition of Common Fireworks].

Then BATF changed the rules.

First, they deleted the definition of Common Fireworks in the rules that became effective 12/98. Instead, they substituted "Consumer Fireworks" which sounded a lot like the earlier definition EXCEPT that it lists specific UN numbers—in this case UN0336 and UN0337—instead of the more general Class C explosives. Neither UN0336 and UN0337 are relevant to rocketry, and in fact are used for materials classified as 1.4G. This is important for some states that regulate materials by class instead of specific UN number—for example, you may have much more of a problem complying with local standards for 1.4G than you do for 1.4S, which is what Estes motors are. Materials classified as 1.4G may be banned as fireworks!

BATF also changed our key exemption clause, 27 CFR 55.141 (a) (7), to exempt only:

"The importation, distribution, and storage of fireworks classified as UN0336, UN0337, UN0431, or UN0432 explosives by the U.S. Department of Transportation at 49 CFR 172.101 and generally known as "consumer fireworks" or "articles pyrotechnic."

UN0336 and UN0337 are for fireworks. UN0431 and UN0432 are "articles pyrotechnic." UN0432 in particular is the designation given by the DOT to small black powder rocket motors, so Estes and Quest are still exempt. However, none of the UN numbers used for composite propellant motors were included, even for those classified as 1.4S, just like Estes motors are. This is apparently not what the BATF intended.

As a result, a letter was issued on 1/5/99 to BATF Division Directors acknowledging the error and directing that, pending a new rule making process, no enforcement action be taken regarding the importation, distribution, and storage of a list of explosives including:

"Model rocket motors classified by the U.S. Department of Transportation at 49 CFR 172.101 as UN0349, UN0351, UN0471, NA0276, or NA0323; consisting of ammonium perchlorate composite propellant, black powder, or other similar low explosives; containing no more than 62.5 grams propellant weight; and designed as single use motors or as reload kits."<sup>2</sup>

Note that there has been some vagueness about the use of 62.5g of propellant criterion in the

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<sup>2</sup> ([http://www.aerotech-rocketry.com/customersite/resource\\_library/RegulatoryDocuments/ATF/letter\\_from\\_atf\\_1-13-99.pdf](http://www.aerotech-rocketry.com/customersite/resource_library/RegulatoryDocuments/ATF/letter_from_atf_1-13-99.pdf))

past. Aerotech complies with the law to the letter in shipping reload kits with multiple grains each less than 62.5g. The reason some of the grains in those kits are wrapped in additional layers of plastic is that from the DOT's perspective, the larger package contains several reload "kits." It appears that the BATF intends to regulate these reloads based on the motor they are designed to go into, not the size of the individual grains.

### **The NAR and TRA Lawsuit**

NAR and TRA filed a lawsuit against BATF to challenge BATF's listing of APCP as an explosive and to challenge BATF's use of a 62.5g propellant limit, arguing, among other things, that:

1. ATF lacked statutory authority to regulate APCP since it is not an explosive,
2. ATF illegally imposed regulations on users of motors containing more than 62.5g of propellant, since their imposition of the regulation did not follow rule-making procedures,

In July 2002, the court refused to dismiss these counts of the suit.

This suit is still pending.

### **The Homeland Security Act**

Congress passed the Homeland Security Act (HSA) in 2002, and included in its provisions the Safe Explosives Act (SEA). This act has caused a lot of pain to the rocketry community, and it is likely to get worse before it gets better. The following list summarizes the impact of the new regulations<sup>3</sup>, most of which take effect May 24, 2003.

- Prior to SEA, a LEUP was not needed for intrastate transactions (e.g., buying a motor at a local hobby store for use at a local launch in the user's state of residence). Such uses are now regulated.
- A new kind of permit, called the Limited Permit, is now available at a somewhat lower cost. It permits up to six transactions per year, but only intrastate transactions are allowed.
- The excluded list for permits (minors, those convicted of or indicted for major crimes, unlawful users of controlled substances, mental patients) now includes aliens and those dishonorably discharged from the military.
- Those applying for permits must submit photos and fingerprints and agree to background checks
- Businesses engaged in handling or transfer of explosive materials must have all of their employees vetted in the same way that individual permit holders are.

The last provision has caused all the grief with regards to shipping motors lately. The ATF is

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<sup>3</sup> [http://www.atf.treas.gov/regulations/final-interim/atf\\_1.pdf](http://www.atf.treas.gov/regulations/final-interim/atf_1.pdf)

asserting that the new rules apply to materials it classifies as explosive, regardless of DOT exemptions. Thus employees of shipping companies all have to be vetted, and those that do not meet the ATF's requirements must be kept away from explosives shipments. Estes motors, for example, are classified as explosives but have an exemption to be shipped as flammable solids. Shipping companies are worried that they will run afoul of the regulators, and are simply refusing to ship questionable materials.

Senate Bill 724<sup>4</sup>, sponsored by Mike Enzi and cosponsored by eight other senators, including Norm Coleman, would provide legislative relief from ATF regulation via an exemption for rocketry materials that is analogous to that already provided for black powder for use in antique firearms (but not for rocketry!). Black powder for rocketry would be limited to two pounds on the ground and 3/4 of an ounce in the air.

### **ATF Notice of Proposed Rulemaking (NPRM) 968**

ATF issued a new NPRM<sup>5</sup> on January 29, 2003 that includes several provisions that will affect model rocketry. It appears to be designed, at least in part, to moot the NRA/TRA lawsuit, especially in regards to its regulation of APCP on the basis of weight. Among other changes,

- they propose the following exemption language for model rocketry:

"55.141 (a)(7) (v) Model rocket motors consisting of ammonium perchlorate composite propellant, black powder, or other similar low explosives; containing no more than 62.5 grams of total propellant weight and designed as single use motors or as reload kits capable of reloading no more than 62.5 grams of propellant into a reusable motor casing."

This definition removes all mention of UN codes, DOT categories, and the like, and essentially means that anything over 62.5g in a single use motor, and, worst case, all 24mm and larger reload kits, will require the user to have a LEUP. It also reifies the ATF's definition of APCP as an explosive.

- They require padlocks with 1/2" shackles, instead of 3/8" shackles, which sounds benign until you actually try to find 1/2" padlocks (they're rare and expensive). This would also require upgrading hasps for most padlock users.
- They changed the definition of "manufacturer" to " to "Manufacturer. (a) Any person engaged in the business of manufacturing explosive materials for purposes of sale or distribution or for his own use; or (b) Any person engaged in the business of assembling explosive materials from explosive and/or non-explosive materials for purposes of sale or distribution or for his own use." This leaves open the possibility that assembling an RMS reload kit might count as "manufacturing", which requires another whole level of licensing and regulation.

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<sup>4</sup> see <http://capwiz.com/c-span/webreturn/?url=http://thomas.loc.gov/cgi-bin/query/z?c108:S.724>;  
see also <http://capwiz.com/c-span/issues/bills/?billnum=S.724&congress=108&size=full>

<sup>5</sup> [http://www.atf.treas.gov/explarson/notices/notice\\_968.pdf](http://www.atf.treas.gov/explarson/notices/notice_968.pdf)

Members of the public have until April 29 to submit comments, after which ATF will take between several months and several years to issue revised rules.

## **Getting a LEUP**

All in all, what does this mean for ATF regulation of rocketry? Here's my interpretation:

As of May 24, 2003, a LEUP (or a Limited Permit for intrastate use) will be needed to buy, store, and use high power rocket motors. Until either a) the NAR loses the suit or b) the final rule is issued subsequent to comments on NPRM 968, this is most likely to be enforced for Class B (non-Easy Access, 1.3C) motors. Black powder for ejection charges will also require a permit. The shipping problems will continue for both model rocket and high power motors.

If Senate Bill 724 is enacted, these regulations will go away, but that almost certainly won't happen before May 24. The NAR lawsuit also has the potential to eliminate regulation of APCP (but not black powder). On the other hand, ATF may merely be ordered to complete the NPRM process, which will delay but not prevent tighter regulation.

In summary, until and unless Senator Enzi's bill passes, if you want to be absolutely, positively legal in using reloadable motors, single use motors over 62.5g, and black powder ejection charges, you're going to need a LEUP.

The first step in getting a LEUP is to make sure that your local authority having jurisdiction (typically the fire marshal or fire chief) is aware of and will approve your plans. BATF will require this. See information below for State of Minnesota (which follows NFPA 1127) and Minneapolis, or talk to your local officials. Be prepared to educate them about the regulations; you may well be the first person to ask them about it!

Assuming you wish to store motors, you will need a low explosive storage magazine. The requirements for these are in the regulations available from BATF<sup>6</sup>. Unless you live on a large plot of land and wish to store hundreds of pounds of motors, the easiest solution is to have a Type 4 indoor magazine secured in an uninhabited outbuilding, such as a detached garage. This will permit you to store up to 50 pounds of material without being subject to distance regulations. There is conflicting information about whether ATF is still allowing (on a case-by-case waiver basis) magazines in attached garages. Apartment-dwellers are out of luck.

A magazine can be made fairly inexpensively from an ammunition can and sturdy hasps and hinges from a hardware store. You'll need two hefty locks-- 3/8" shackle, five pin tumblers, 1/4" steel hoods--or you'll have to rig up mortise locks that are equally secure. It will need to be lined with a non-sparking material (if you're lucky, the original ammo box lining will be sufficient).

Make sure your local fire marshal approves it, and then apply for the LEUP using the form on the ATF web site<sup>7</sup>. Some advice for filling it out is available on the TRA web site<sup>8</sup>. After May

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<sup>6</sup> Navigate from the web site cited above; construction requirements are at:  
<http://frwebgate.access.gpo.gov/cgi-bin/get-cfr.cgi?TITLE=27&PART=55&SECTION=210&YEAR=2002&TYPE=TEXT>

<sup>7</sup> <http://www.atf.treas.gov/forms/pdfs/f540013.pdf>

24, you'll need to submit a photo and fingerprints as well. The fee for a LEUP is \$100 for first time applicants, and \$50 for renewals. The fee for a Limited Permit is \$50 for first time applicants, and \$25 for renewals.

## **State of Minnesota**

Minnesota is governed by the Minnesota Fire Code, which is a modified version of the Uniform Fire Code (UFC), which does not discuss rocketry. In the absence of local codes or standards (see below), both model rocketry and high power rocketry should be carried out in conformance with NFPA 1122 and NFPA 1127, respectively, in addition to any applicable Federal regulations.

In the opinion of the Minnesota Fire Marshal, The Explosive Materials rules (Article 77) do not come into play unless activities fall outside those NFPA standards. The most obvious example is if you wish to exceed the 50 lb limit on rocket motor storage. The fire marshal's citation for reliance on NFPA is UFC Article 1, Section 101.3, "Subjects Not Specifically Regulated by this Code," which permits adopted NFPA standards to be used in the absence of UFC guidance.

Of course, when the BATF rules are more restrictive than NFPA 1127, the BATF rules need to be followed--but that's not an enforcement issue at the state level.

There are no use or storage permits required at the state level: The permit clauses in the UFC were deleted in the Minnesota fire code.

As far as I can tell, the only case in which NFPA 1127 is more restrictive than BATF in the storage of quantities under 50 lbs is in the specification of painting and lettering of the magazine.

The MN SFM phone is 651 215 0500

The person I spoke to is Kevin Kelly.

## **City of Minneapolis**

Minneapolis residents are currently required to have a commercial Hazmat permit. The fee for this went from \$25 to \$100 this year. I am told that I am the only person in the city with a commercial hazmat permit for a dwelling. The City Fire Marshal says their hands are tied; one of these days soon I'll see if my City Council member can help with this foolishness .

The Minneapolis Park Board has a regulation [PB2-30] that could be read to technically prohibit launches in city parks, but regularly violates this with their own summer camp activities, and I've seen (and in some cases supervised) a lot of school group launches which proceed without incident. One of these even had a park permit. We intend to do an INSciTE rocket league launch in a park this spring, and they're quite happy to issue a permit for it.

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<sup>8</sup> [http://www.tripoli.org/motors/LEUP\\_filing.html](http://www.tripoli.org/motors/LEUP_filing.html)



## Appendix I: Explosives classification systems

**Table 1. UN Codes applicable to sport rocketry.**

Code	Description	What is covered
UN0432	Articles, pyrotechnic	Small black powder motors.
UN0349	Articles, explosive, n.o.s.	Ammonium Perchlorate (AP) Single use (SU) <30g total propellant
UN0471	Articles, explosive, n.o.s.	AP SU >30g but <62.5g total propellant
UN0186	Rocket motors	AP SU >62.5g total propellant
UN0351	Articles, explosive, n.o.s.	AP reloads <62.5g per propellant grain
UN0275	Cartridges, power device	AP reloads >62.5g per propellant grain

**Table 2: Black powder motors**

Manufacturer	Motor Types	UN#	DOT EX#	Class	Comments
Estes	1/4A to D	UN0432	EX-9806052 to 53 EX-9001146 to 66 EX-8007022 to 25	1.4S	May ship up to 20 pounds per 4G box as UN1325 4.1 Flammable Solids per DOT E-7887  <b>Exempted from regulation by BATF per 27 CFR 55.141 (a) (7)</b>
Quest	Micro max	UN0432	EX-9810082		
Quest	A to C	UN0432	?		

**Table 3: Small Composite motors**

Manufacturer	Motor Types	UN#	DOT EX#	Class	Comments
Aerotech	SU D to E <30 g propellant	UN0349 NA0323	EX8205051	1.4S	May ship up to 20 pounds per 4G box as UN1325 4.1 Flammable Solids per DOT E-7887
Apogee	SU D to E <30 g propellant	UN0349 NA0323	?	1.4S	These motors are technically affected by BATF regulation; however, enforcement is on hold pending another rule making cycle.

**Table 4: Large Composite motors and reload kits**

Manufacturer	Motor Types	UN#	DOT EX#	Class	Comments
North Coast	F62 >30, <62.5 grams of propellant total	UN0471 NA0276	EX-9610090	1.4C	See Notes.
Aerotech	SU F to G >30 g, <62.5 g propellant total	UN0471 NA0276	EX8205051	1.4C	See Notes.
Aerotech	RMS D to J <62.5 g propellant per grain	UN0351	EX9305148  EX9305149  EX9305150	1.4C	White Lightning reloads and J260HW, J390HW EFX™ and Turbo™ hybrid reload kits)  Blue Thunder reloads and J145H, J170H and J210H hybrid reload kits)  Black Jack reloads.  See Notes.

Note 1: May ship up to 20 pounds per 4G box as UN1325 4.1 Flammable Solids per DOT E-7887.

Note 2: All of these motors are technically affected by BATF regulation; however, enforcement is on hold pending another rule making cycle.

**Table 5: Regulated motors and reload kits**

<b>Manufacturer</b>	<b>Motor Types</b>	<b>UN#</b>	<b>DOT EX#</b>	<b>Class</b>	<b>Comments</b>
Aerotech	SU >G  >62.5 g propellant total	UN0186	EX8604200	1.3C	May ship up to 12 pounds per 4G box as UN0351 1.4C Articles Explosive n.o.s. per DOT E-10996
Aerotech	RMS >J  >62.5 g propellant per grain	UN0275	EX9404152  EX9404153  EX9404154  EX9502046 EX9502047 EX9807120  EX9807121	1.3C	J90W, J275W, J415W, K550W, K458W, L952W, M1419W, M1939W, K700W M845HW, N2000W reload kits  J180T, J460T, J800T, K1100T reload kits  I112J, I154J reload kits with large propellant grains (no longer made this way)  J135W reload kit  K185W reload kit  75mm White Lightning reload kits using 669 g propellant grains  98mm Blue Thunder reload kits using 1,176 g propellant grains

## Excerpts from the DOT's Explosive Classification system

173.50(a) Explosive. For the purpose of this subchapter, an explosive means any substance or article, including a device, which is designed to function by explosion (i.e., an extremely rapid release of gas and heat) or which, by chemical reaction within itself, is able to function in a similar manner even if not designed to function by explosion, unless the substance or article is otherwise classed under the provision of this subchapter.

173.50(b) Explosives in Class 1 are divided into six divisions as follows:

...

173.50(b)(3) Division 1.3 consists of explosives that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard.

173.50(b)(4) Division 1.4 consists of explosives that present a minor explosion hazard. The explosive effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package.

173.51 Authorization to offer and transport explosives.

173.51(a) Unless otherwise provided in this subpart, no person may offer for transportation or transport an explosive, unless it has been tested and classed and approved by the Associate Administrator for Hazardous Materials Safety (§173.56).

173.51(b) Reports of explosives approved by the Department of Defense or the Department of Energy must be filed with, and receive acknowledgement in writing by, the Associate Administrator for Hazardous Materials Safety prior to such explosives being offered for transportation.

173.52 Classification codes and compatibility groups of explosives.

173.52(a) The classification code for an explosive, which is assigned by the Associate Administrator for Hazardous Materials Safety in accordance with this subpart, consists of the division number followed by the compatibility group letter. Compatibility group letters are used to specify the controls for the transportation, and storage related thereto, of explosives and to prevent an increase in hazard that might result if certain types of explosives were stored or transported together. Transportation compatibility requirements for carriers are prescribed in §§174.81, 175.78, 176.83 and 177.848 of this subchapter for transportation by rail, air, vessel, and public highway, respectively, and storage incidental thereto.

173.52(b) Compatibility groups and classification codes for the various types of explosives are set forth in the following tables. Table 1 sets forth compatibility groups and classification codes for substances and articles described in the first column of Table 1. Table 2 shows the number of classification codes that are possible within each explosive division. Altogether, there are 35 possible classification codes for explosives.

**Table A-1. Classification Codes**

Description of substances or article to be classified	Compatibility group	Classification code
Primary explosive substance	A	1.1A
Propellant explosive substance or other deflagrating explosive substance or article containing such explosive substance	C	1.1C, 1.2C, 1.3C, 1.4C
Substance or article so packed or designed that any hazardous effects arising from accidental functioning are limited to the extent that they do not significantly hinder or prohibit fire fighting or other emergency response efforts in the immediate vicinity of the package	S	1.4S

173.53 Provisions for using old classifications of explosives.

Where the classification system in effect prior to January 1, 1991, is referenced in State or local laws, ordinances or regulations not pertaining to the transportation of hazardous materials, the following table may be used to compare old and new hazard class names:

Current classification Class name prior to Jan. 1, 1991

Division 1.1 Class A explosives.

Division 1.2 Class A or Class B explosives.

Division 1.3 Class B explosive.

Division 1.4 Class C explosives.